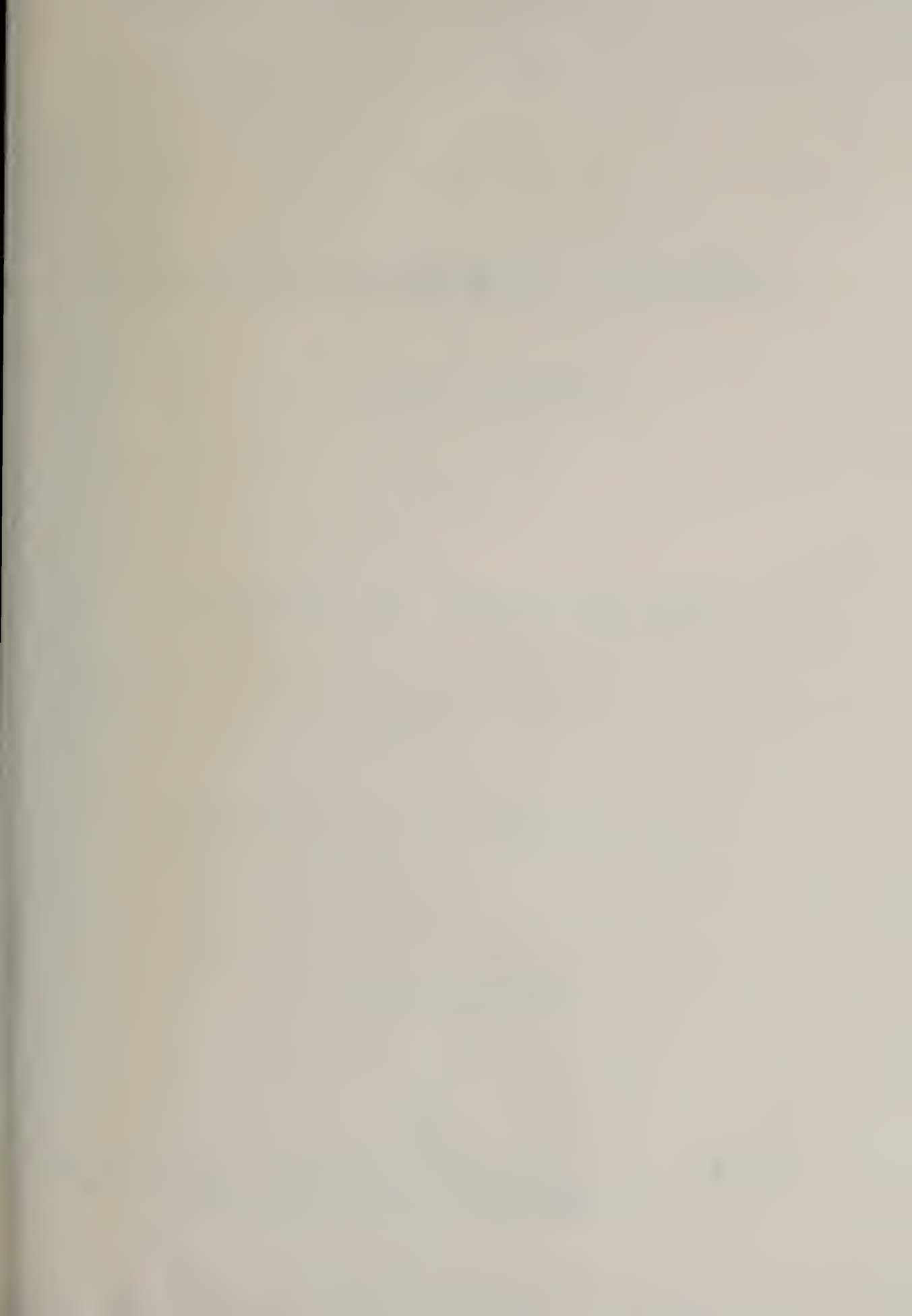


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THE
PHOTOGRAPHIC NEWS:

A WEEKLY RECORD

OF THE

PROGRESS OF PHOTOGRAPHY.

VOLUME XV.

EDITED BY G. WHARTON SIMPSON, M.A., F.S.A.

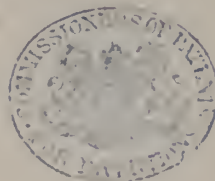
Nulla recordanti lux est ingrata.—MARTIAL.

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THE preface to a volume is generally the last duty an author undertakes in relation to his work before sending it into the world, and is intended to explain, or qualify, or enforce, or justify some portion of the contents of the work, or, at least, to give its *raison d'être*. Our duty in writing these after-words has none of these purposes. The work which has reached the reader in fifty-two instalments is now before him in its integral form. It has been read and pondered, examined and tested, approved or condemned, week by week for twelve months. Such right to existence as the work possesses has already been demonstrated. Its immediate good or evil has been effected, and explanation or qualification would effect little now. "What is writ is writ:" and a preface will avail us nothing if the work itself be wanting. Further, in these lines we are not in the position of the author who prefaces his own work. The Volume completed is only in a small sense ours; it contains the experience, the judgment, the suggestion, the dicta of the master-spirits associated with photography throughout the world. It is in this fact which we feel bold, and present the Fifteenth Volume of the PHOTOGRAPHIC NEWS to the photographic world with no misgivings: without plea, protest, or qualification. We have been so freely and so ably assisted by contributors and correspondents in laying before our readers detail and results of experiment; suggestion and teaching of practice; discovery, modification, and improvement in every branch of the art, and every phase of every branch, that it would be an ungrateful affectation of humility if we underrated the value of the work. Not only at home have we received such assistance, but through correspondents, regular and occasional, throughout Europe, India, Australia, and America, we have constant contributions to the common fund of photographic intelligence upon which progress depends. From America, not only are we kept supplied with the earliest and most practical information by our esteemed *collaborateur*, Mr. E. L. Wilson, but, through his courtesy in forwarding us advance sheets, we have the practical access, prior to their issue, to the contributions and intelligence of two admirable American journals, the *Philadelphia Photographer* and the *Photographic World*, journals to which the *élite* of the American photographic community contribute.

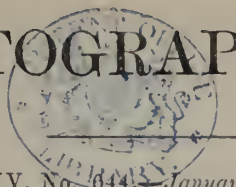
With the research of investigators and experimentalists in the branches of mathematical, physical, and chemical science, associated with photography, thus recorded; the experiences of practical workers set down; the hints, suggestion, and stimulus of art teachers enforced; the

student's difficulties stated and solved; the social, industrial, and commercial aspects of the art and its works discussed and elucidated; the aim and effort, as well as the achievement in every branch of the art, and its applications chronicled, the elements of advancement must be secured. To effect these things is, in our view, a primary aim of photographic journalism; and to carry out this view we steadily labour. So much of the work is that of others, so little, comparatively, beyond gathering, selecting, garnering, and organizing facilities for obtaining the fullest, the best, the earliest intelligence, is our own, that we can speak without diffidence of the result. And if we had any doubt as to the issue of our effort, the tribunal to which we appeal, the public, for whom we labour, leave us little ground for misgivings. The generous recognition in the constant aid and encouragement, the abounding evidence of approval in the growing extent of our *clientelle*, and the commercial success of our enterprise, give us the highest assurance that our aim is approved, and that it is, at least in some degree, achieved.

For the future, we can simply say that it shall not fall short of the past. The aid which has enabled us hitherto to announce progress, to test its reality and value—at times to be its pioneer, and always its aid and advocate—will not be wanting. Where our own personal effort—in experiment and investigation; examination, proof, and test; suggestion, advice, information, admonition—are available, it shall not be wanting. The duty involved here is our life-work, to which all our energies, experience, culture, capacity have been for many years, and will be, devoted. We believe the work is worthy of the effort, and that it cannot wholly fail; and we accept the spirit of Dryden's line that "They, too, had crowns who but endeavoured well." What has been possible in the past shall still be effected; where new elements of efficiency can be secured, they shall not lack. With cordial thanks to many thousands of valuable adjutors—contributors, correspondents, and readers, we conclude, wishing each a happy and prosperous coming year.

JANUARY, 1872.

THE PHOTOGRAPHIC NEWS.



Vol. XV. No. 644. January 6, 1871.

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THE PAST YEAR.

PHOTOGRAPHY during the past year, as in several preceding years, has not been distinguished by any especially noteworthy discovery or startling novelty. Its progress has, however, been steady and satisfactory. The active brains and lissome fingers which at one time were engaged in searching out its novelties and possibilities have, of late years, been more especially devoted to securing its highest excellence within its known range, and also to extend that range of excellence. Besides this, the extent and multiplicity of the applications of the art have been much increased, and, in some respects, its capabilities have been satisfactorily enlarged.

Whilst no cardinal changes have been made in the general practice of photography during the year, many modifications, materially influencing results, have received attention, and some have been generally adopted. The manufacture or preparation of collodion has not been much modified during the year. The free use of bromides continues with advantage. In some cases there has been a tendency amongst men of experience to abandon the system of maturing collodion by keeping before use, the employment of alkaline salts in the collodion, and its use within a few weeks after iodizing, being adopted; but in the majority of hands the ripening system is found to answer well. The nitrate bath has not been the subject of any proposed modification during the year: its use as nearly neutral as possible, and, in some cases, alkaline, has been found by many photographers to possess advantages, although with a freely bromized collodion the addition of nitric acid is not found to reduce sensitiveness. Developing solutions remain in the position they have occupied for a few years. The use of organic additions is occasionally found valuable where great intensity is required, but for the most part a simple iron solution with acetic acid newly mixed, or nearly so, is found the most valuable developer for ordinary purposes.

Dry collodion processes have not undergone much change. Estimated by results by the majority of experiences of trustworthy authorities, the gum-gallic process of Mr. Gordon appears to be the favourite. Next in order of favour comes the coffee process, or the coffee and gum process of M. de Constant, the rapidity and excellence of which promise great advantages. The collodio-bromide process has undergone considerable modification during the year in the hands of Mr. Carey Lea, and we have seen very fine results obtained by it. The Taupenot, the Fothergill, and several of the old processes continue to be practised with much success, and generally without modifications.

Printing processes, as usual, have been the subject of more experiment, and, in some respects, more improve-

ment. Silver printing has attained such a high pitch of excellence that, except in the matter of permanency, little room has existed for improvement. The question of permanency in relation to silver stands unchanged. In the production of the prints some modifications of importance have been made. The removal of the free nitrate of silver from sensitized albuminized paper is well known to increase the keeping qualities, no discolouration arising for many days; but it has been found that the paper so washed has yielded feeble, flat prints, without vigour or brilliancy. It has been found that fuming the paper so washed just previous to using it for printing, or using fumed papers in the frame, restores all its capacity for yielding vigorous and fine prints, whilst some other advantages are incidentally gained. Collodio-chloride printing is gaining ground, especially in America and on the Continent.

Carbon printing has been the subject of further improvement. Mr. J. R. Johnson has patented some important improvements in the manufacture of carbon tissues or pigmented papers. By the substitution of saponaceous bodies for sugar in the gelatine solution, greater sensitiveness, greater permanency in the sensitized tissue, and some other advantages are gained, whilst by a still further modification of the same principle, printing ink, oil paint, or other fatty pigment may be introduced into the tissue, and eventually pictures in oil colours developed by means of hot water. Some other improvements are included in Mr. Johnson's patent. His improved methods of working have gradually come into practice amongst carbon printers. Methods of permanent printing have not as yet been very generally adopted by portraitists, but signs of a change in this respect are beginning to be manifest, whilst the Autotype Company has found it necessary to enlarge its constitution to meet the necessities of its growing success. Amongst its licensees, Mr. Sarony has been one of the most successful in producing fine work, and the Military Photographic Establishments at Woolwich and Chatham work the process with the most satisfactory results.

Photo-mechanical printing processes have been active. Mr. Woodbury's process has, after all its commercial mishaps, finally attained a position which promises to secure for it the commercial success which the excellence of the results undoubtedly merits. It has also steadily grown in practical value, greater simplicity, certainty, and excellence, following prolonged experience. Mr. Woodbury has also, during the year, worked out some other novelties in connection with the original idea. A method of impressing a water mark design on paper by simply submitting it to pressure in contact with a gelatine relief is very elegant. A method of preparing a copper-plate for ordinary intaglio printing also possesses much promise.

The photo-colographic processes, with that of Herr

Albert at their head, have multiplied during the year. Herr Albert's process has produced exceedingly perfect results, and on the Continent appears to be successful, but has not been introduced commercially into this country. The *heliotype* process of Mr. Ernest Edwards, introduced just twelve months ago, has attained a high degree of success, both as regards the delicacy, vigour, and perfect half-tone in the results, and the apparently unlimited number of impressions which may be obtained from one prepared printing surface. We believe that it has also been commercially successful.

Modes of ameliorating the inherent or accidental crudities of photographic portraiture have been tried. In the United States, printing through a medium, printing from negatives taken on ground glass, printing from two identical negatives superposed one upon the other, and printing from negatives retouched in various ways, have been attempted. In this country the retouching of the negative has been chiefly resorted to, water-colour and lead-pencil being employed for the work, the latter chiefly, and generally most satisfactorily, as more rarely leading to excessive modifications or injury of the likeness. Various modes of securing a tooth for the pencil have been tried, the chief of which have been the rubbing of the bright varnished surface with cuttle-fish powder or powdered resin, or the use of varnishes drying with a matt surface.

The production of enamel or burnt-in photographs has received attention during the year, but has not yet become general. Mr. Henderson has attained very high proficiency by a secret method, the results of which equal anything of the kind hitherto produced. Mr. Solomon has organized a plan of instruction in the two known methods of enamelling.

An important feature of practice has, during the year, been gaining ground; we refer to the use of a preliminary coating of albumen, tunicare, or some similar body as a succedaneum for the uncertain and difficult process of cleaning plates so as to secure chemical cleanliness. The general verdict appears to be favourable to the new method.

The idea of shortening exposures by the supplementary action of diffused light has been revived during the year, and plausible arguments offered in its favour. Experiment, in the hands of M. de Constant and others, has demonstrated that red light gives the best results, and that a real gain is secured by using it as an adjunct to the white light reflected from the object.

Combination-printing, and methods producing combined negatives, have received attention during the year, and the legitimacy of such combination seems to be generally accepted now by the best photographic authorities. A printing-frame patented by Mr. B. J. Edwards has reduced combination-printing to a mechanical certainty, and offers considerable facilities for prosecuting this class of work.

Improvements in backgrounds have received attention during the year, the conical background of Mr. Kurtz and his system of reflectors, and the alcove background and reflecting adjuncts of M. Adam-Salomon, forming most valuable aids to lighting the sitter, and to a satisfactory distribution of light and shade on background of the portrait, and so helping the production of relief and harmonious balance of tones.

The practice of employing photography as a means of identifying prisoners on their second appearance in any prison, which has for some years been voluntarily and successfully adopted by the governors of several gaols, has now been by order adopted as a part of the general prison practice of the country, and a strange rogues' gallery will be collected, which, possibly, may prove useful to some future Lavater in working the facts of physiognomy into a science.

The imperfections of the present standard sizes of plates used in photography was pointed out by Dr. Liesegang, and a new series of sizes proposed combining convenience,

economy, and symmetry. As yet no specific result has followed the suggestion. A new size of portraiture has been proposed and partially adopted in the United States. It is between the usual *cu t* size and that of the cabinet portrait, the print measuring four inches and three-eighths by three inches and a quarter. It has some desirable points, but has not yet been adopted in this country.

The photographic exhibitions of the year have been generally successful. That in Paris was unfortunately brought to a sudden termination by the war; that of the National Association in America was very successful; that in Conduit Street, under the auspices of the Photographic Society, was the best we have seen, having an unusually fine collection of pictures of high artistic merit in every style. Minor exhibitions in the provinces have generally been good.

An important eclipse of the sun, total from various stations in the Mediterranean, was anticipated by men of science as an opportunity of settling various moot points. The photographic observations were successful.

Photographic societies have not declined during the year; in most cases they have preserved the *status quo ante*. The Photographic of London is decidedly reviving, and looks now more promising than it has done for some years. The renewal of the system of holding an annual exhibition may be regarded as having chiefly initiated this improvement.

Photography has played its part in the terrible continental war which has raged for six months between Germany and France, as well as suffered by the war. Besides the use of photography for multiplying maps and similar documents, it has been employed to produce microscopic copies of letters and dispatches, for transmission by carrier pigeon and otherwise, and has been of great service. The suspension of production, in France, of many articles of photographic use, has been a cause of inconvenience and loss to photographers.

REMBRANDT EFFECTS.

MR. KURTZ, in the advance sheet of the *Philadelphia Photographer* with which we have just been favoured, discusses the subject of "Rembrandt effects" in photographic portraiture, the desirableness of the said effects, and the fitness of the name by which they have been distinguished, having been called in question by various writers. Mr. Kurtz, who is, as our readers know, the originator of the style, and one of the most artistic portraitists in the photographic world, ably defends the effects and their nomenclature. The name is not, we think, open to much objection. It is striking enough to attract attention, and is not inappropriate. Rembrandt was a great master of light and shade, delighting in the magic brilliancy obtained by a small proportion of light amid masses of half shadow and deep gloom. In the Rembrandt portraits, flesh and light draperies are kept, as much as possible, in mezzotint, instead of a tint light enough to rob them sometimes of roundness and detail, and render them chalky, a style too common in photography. There is generally a small portion of pure light, which, by its concentration, gives a Rembrandtish characteristic to the picture.

Our chief object, however, in referring to Mr. Kurtz's able defence of these effects, is to quote his reply to the remarks made a short time ago by the "Old Photographer." After protesting against a judgment on the subject being formed upon isolated, and possibly inferior, examples of this style, and pleading the approval of high authorities in evidence that he has not, in carrying it out, "o'erstepped the modesty of nature," Mr. Kurtz quotes the "Old Photographer's" words, that "ordinary faces, lighted in an ordinary manner, will always be ordinary." To this he rejoins, "Very true; I am also of this opinion; but he should, however, have done me the justice to remember that, in that same letter (the one written to the *Berlin Photo-*

graphic Journal), I distinctly stated that it will be an absurdity to light all faces in this way. I believe it is generally known that my sitters are placed upon a movable platform, which allows of being so adjusted that the light on the sitter may be varied at pleasure. In order to further convince your correspondent that I do not light all my subjects in what is called the Rembrandt style (although I was the first to introduce it, which naturally creates an interest in this direction), I will send you a dozen or so of my imperial cards, that you may plainly see the *old style of lighting* (!) is not neglected, and that the pictures which consist chiefly of shadows and half-shadows, and in which the lights are sparingly introduced, are not such absurdities as your 'Old Photographer' makes them out to be."

Referring, further, to the incongruities which unusual lighting is alleged, by the "Old Photographer" and some others, to produce, he adds: "If they think my manner of lighting 'makes the cook suggest the idea of a Lady Macbeth,' I am very much afraid that *their* style of lighting will make the Lady Macbeth suggest the cook."

The truth here, as in many other matters, is found in seeking the *juste milieu*. Mr. Kurtz has introduced a very effective style of portraiture, which, in his own hands, we feel sure will never be misused. He has also suggested to many of his brethren that photography is capable of much more variety of effect than they imagined; and, in trying their new-found power, some of them may possibly, at times, produce curious incongruities. This certainly derogates in no wise from the value of the novelty, which, judiciously used, is effective and pleasing, and affords much scope for the exercise of taste and judgment in portraiture. We shall report on the further examples of Mr. Kurtz's style when we receive them.

BROMIDE IN THE TONING BATH.

A CORRESPONDENT of our excellent contemporary, the *Philadelphia Photographer*, Mr. C. E. Taylor, in the advance sheet with which we are favoured, states that he has found bromide of sodium a valuable agent in the toning bath. His instructions are as follows:—

Neutralize sufficient gold with bicarbonate of soda, for your prints, and when ready to tone, add to the water the prints are immersed in, three or four drops of bromide of sodium. Then add the gold. Tone the prints, leaving them warmer in tone than desired, as they dry up darker. Fix as usual.

I keep the bromide of sodium in solution, about seventy-five grains to the ounce of water. This amount will last three or four months. I have always found this bath to tone readily, and give rich brown or chocolate tones. The more sodium the more red the tone. Use a fresh bath every time. When prints are over-printed, this bath is excellent, as you can add a little more sodium and gold, and the richness will be preserved and the prints toned as light as you want. It gives no harsh contrasts. This bath also gives beautiful tones to porcelain pictures.

This addition to the toning bath is altogether a novelty. The presence of iodine—or, rather, of iodide of silver—is well-known to be inimical to toning operations, the use of an old negative bath from which the iodide has not been thoroughly eliminated often arresting toning operations altogether. The mode in which the bromide acts appears to be as a restrainer, the advantage being, apparently, that being able to add a definite limited proportion to the bath, sufficient restraining action is obtained to secure rich warm tones without arresting altogether, or too seriously retarding, the deposition of gold.

PHOTOGRAPHY AND THE ECLIPSE.

NORWITHSTANDING the unfavourable weather which prevailed at most of the posts of observation, the photographic operations of at least one of the observing parties were completely

successful. Lord Lindsay writes to Mr. Browning at follows:—

"DEAR MR. BROWNING.—We have had very good success. Nine photographs during totality—two of corona, flames, &c., and one having Baily's beads, corona exposures 17.5 sec. and 20 sec.

"Polariscope.—Plano of polarization 23 deg. from Vestes towards the west. No appearance of polarization just before and after.

"Mr. Brown could not find any line in the corona, but a continuous spectrum—no dark or bright lines.

"I had four gentlemen sketching the corona, and one with a position circle and a telescope, measuring the angles of the prominent streamers of the corona. These, compared with naked-eye drawings, tally remarkably well.

"No time for more.—Yours very truly,

(Signed)

"LINDSAY."

Mr. Beasley, who was with the party at Gibraltar, was not able to effect anything, nor have we heard of any photographic results elsewhere.

ENLARGING BY ARTIFICIAL LIGHT.

BY M. HARNECKER, OF WRIEZEN.*

A good stout paper of a rough description, and sized, is in the first place prepared with a facing of gum and sal-ammoniac, made up according to the following formula:—

Best gum-arabic	...	...	1 ounce
Sal-ammoniac	...	...	1 "
Citrate of soda	...	...	1 "
Distilled water	...	...	50 ounces

To this mixture is added, drop by drop, as much of a saturated solution of citric acid in distilled water as will impart to the former an acid reaction.

The paper is treated with this solution by floating thereon for a couple of minutes, and may, in this condition, be preserved for any desired period. For sensitizing, the prepared sheet is treated with a silver solution made up of—

Water	..	...	100 parts
Nitrate of silver	...	...	5 "

to which ten drops of the saturated solution of citric acid are added for every fifty ounces of liquid. The operation of sensitizing requires a period of three minutes, and should be conducted by the light of a small taper; a slight artificial warmth is required to dry the silvered paper.

Before enlarging, the picture should, in the first instance, be sharply focussed, by means of the artificial light, upon a plain sheet of paper, and a small proof obtained, for the purpose of testing the nature of the image. The amount of pose is governed entirely by the quality of the negative, and, according as this is more or less opaque, so the exposure varies from five to fifteen minutes. No evidence of the image is seen before development, the sheet of paper, after exposure, being placed in a mixture of two solutions, to induce its appearance. It is thus compounded:—

No. 1.—Distilled or rain water	...	266 ounces
Acetate of lead	...	3 "
Solution No. 2	...	½-ounce

The whole mixed and filtered.

No. 2.—Alcohol	...	8 ounces
Tannin	...	1 ounce
Gallic acid	...	1 "
Glacial acetic acid	...	½ "

This second mixture, when perfectly dissolved, is filtered, and added to No. 1 in the proportion above specified.

The silvered side of the exposed sheet is placed upon the developing solution, care being taken that no traces of the liquid soil the back of the paper, or that the bare fingers come into contact with it, as stains and spots will inevitably result therefrom.

The operation of development must be carefully watched;

* *Photographische Mittheilungen.*

the image will appear of a clear and delicate nature, and when the necessary amount of vigour has been attained, the process is at once discontinued. The print is withdrawn from the developing bath, and placed forthwith into a vessel of fresh water, the impression being washed with great care, and the water supply renewed from time to time, until all trace of the solution has been removed.

The tone of the picture, in this condition, will be found to be that of a brilliant red; should a more blue or violet tint be desired, the picture may be toned in an old gold bath in which albuminized prints have been manipulated, diluting the bath in the first instance with water to the extent of about one-third its original bulk. The toning-bath must on no account be a strong one, for in this case the delicate whites of the picture are lost—or, at any rate, injured—and the print assumes an unpleasant grey tone.

The apparatus which I employ for enlarging is furnished with the same kind of lighting arrangement as I described, some time since, to the members of the Berlin Society for the Advancement of Photography, excepting that the magnesia cylinders are produced in a somewhat different manner. Carbonate of magnesia and carbonate of lime are taken in equal proportions, and of burnt chalk one eighth part; these are powdered, and moistened with a very little water, and then formed into cylinders, which serve for burning in the ordinary way in the oxy-hydrogen flame.

HOW TO TAKE PICTURES OF THE SUN AND ITS SPOTS AT A VERY LOW COST.

MR. S. R. HATCH sends to the *Photographic Bulletin* the particulars of the very simple method by which the spots of the sun may be photographed.

He says:—"I had an old $\frac{1}{2}$ -size camera-tube, from which I removed the back lens; the front lens was $13\frac{3}{16}$ inches focus. At this point of focus is placed a lens of $\frac{1}{4}$ -inch focus; one quarter of an inch in front of this lens is placed a diaphragm of $\frac{1}{16}$ inch aperture; two inches back of front lens I use another diaphragm of $\frac{3}{8}$ of an inch aperture. The whole is mounted in a tube made of stout brown paper, pasted several thicknesses around a pattern whittled from a stick of wood, making quite a nice tube. This I mounted on a camera-box, the same as any camera-tube. The focus is obtained by the rack on the front tube, and the size of object by moving ground glass. In regulating time of exposure, I use a piece of cardboard, with a slit $\frac{1}{2}$ of an inch, and rubber spring, same as has been published a number of times, a weak developer, and collodion with as much contrast as possible.

"Of course, this instrument is not achromatic, and a picture made at the visual focus will be anything but sharp. Focussing at the yellow ray, just tinged with blue, will make the sharpest picture. A sharp image of the sun, 15 inches across on the ground glass of my camera, can be got; I have not tried to make a negative of that size.

"By putting a piece of white cardboard in place of the ground glass, and looking into an aperture in the top or side of the camera, you can show a very bright and clear image of the sun and its spots."

ON THE VALUE OF UNSERVICEABLE COLLODION.

At a recent meeting of the Photographic Society of Berlin M. Kruger drew attention to the value of unserviceable collodion, and the best means of utilizing it. With some operators, the quantity of this material which accumulates is so small as, perhaps, scarcely to warrant any particular consideration; but in some of the larger firms, in the principal cities of Europe, the amount of waste collodion is, from time to time, very great indeed. Hitherto the only employment made of old collodion has been for plate cleaning, and as a source of burning in the spirit lamp. Irrespective of the

danger of its application in the last-named capacity, from the highly volatile nature of the ether, there are two other very serious drawbacks to its use in that direction, viz., the evaporation of the iodine contained in the collodion, and the tendency of the pyroxiline to stop the action of the wick.

M. Kruger proposes to throw down the pyroxiline in unserviceable collodion by the addition of a large quantity of water, and to use this material again, after thorough washing and careful drying, in the preparation of a further quantity of collodion. The liquid portion, consisting of alcohol, ether, and water, is treated with a large quantity of common salt, and well shaken, an operation which has the effect of separating the mixture into two separate layers, the lower one being a watery solution of salt, and the upper one a compound of ether and alcohol, containing some water in admixture.

These two liquids are separated from each other by means of a separating funnel, or syphon, or other available means, and placed in two vessels, the ether and alcohol being afterwards shaken up with highly burnt potash, to absorb all the water still existing in combination with the spirits. In this way of proceeding the alcohol and ether are extracted in good condition, and the pyroxiline also, so that both these costly ingredients may be used again for the preparation of fresh collodion: the only thing actually lost is the iodizing solution.

In reference to M. Kruger's remarks, M. George observed, Hardwich had given the matter his consideration, and proposed to shake up the collodion with caustic potash, so as to effect the saving of the ether and the alcohol, without, however, paying regard to the gun-cotton. M. Pfeiffer was of opinion that the pyroxiline thus separated would, in all probability, exhibit different qualities from those possessed by it originally, and might not, possibly, be suitable for the preparation of collodion. According to the recent observations of M. Camuzet, pyroxiline, on its solution in alcohol and ether, is separated into three bodies of a different nature, one of them being soluble in water; and if this is really the case, the pyroxiline recovered from old collodion would not contain in its composition the body known to be soluble in water.

M. Kruger, in reply, stated that he could not implicitly rely upon Camuzet's results, and believed it probable that the employment of precipitated pyroxiline from old collodion would be an improvement in the manufacture of a new material; and Dr. Stolze was of opinion that no decision could be arrived at on the subject until actual experiment had been made of the two descriptions of gun-cotton, an investigation which will be undertaken by the experimental committee of the Berlin Society.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

NEW YEAR'S GREETINGS—THE WEATHER—PHOTO-MICROSCOPIC DESPATCHES—COPYRIGHT—DEATH'S DOINGS—THE ECLIPSE AND PHOTOGRAPHY.

BEFORE my greetings can reach those to whom they are addressed, the Christmas bells and the new year chimes will alike have ceased to echo, and the new year will be a week old; nevertheless, I avail myself of the opportunity to offer very cordial new year's wishes for success and prosperity to all my readers. The aspect of matters does not, unfortunately, do much to second the cheery character of greetings. The month which is just passed has been, without exception, one of the least favourable, photographically, that I remember during my experience in the art, and it is not now, nor promises to be very speedily, any better. With the thermometer at zero, and thick fog in the atmosphere, the photographer cannot very well be jolly, and I must confess that I derived very little consolation from the remark of a friend in my studio, to the effect that the weather was worse even for trench-work or out-post duty before Paris than for the photographer.

Photography, it seems, continues to play its part in the war. Photo-microscopic copies of communications are now regularly employed by the beleaguered citizens for communication by pigeons and by other means. Let us hope that some of these doves will shortly reach Paris with an olive leaf in place of a war dispatch.

If the question of copyright has not been discussed *usque ad nauseam* in your pages, I should like to say one or two words in rejoinder to Mr. Cunnington, who comments on some of my remarks. He thinks that the discussion has not illustrated the uncertainty and complexity of the copyright laws. He thinks these laws could scarcely be made more simple. This is certainly an odd opinion. The fact that Mr. Cunnington, who writes ably, has taken, and been granted, I scarcely like to say how many columns to elucidate the subject, and that it will probably require nearly as much space to point out many of his manifest errors, I cannot accept as evidence of simplicity in the subject; nor can I, apart from such evidence, believe that a matter which should be as clear as a man's right to the crop he has sown on his own land, which yet requires reference to something like fifteen distinct Acts of Parliament, is as simple as it can and should be. In one sense the matter is simple: if Mr. Graves, or Mr. Brooks, or other art publisher, purchase the right to publish a picture of the producer of that picture, it is very clear to the simplest comprehension that if William Sykes or the Artful Dodger, neither of whom have paid for any right in the matter, make copies and sell them to the detriment of Mr. Graves or Mr. Brooks, they are guilty of dishonesty. It may be that owing to some irregularity, or omission, or other flaw in the title, the legal remedy may not be easily applicable, but the dishonesty is just the same. Than this, I think, nothing could be more simple and clear.

Death has thinned the ranks of photography seriously this year, and has been especially busy with the initial men. Niepce St. Victor was essentially one of this class himself, apart from his connection with Nicéphore Niepce, the first successful photographer. There is no doubt, I think, that Mr. Bingham was the first to use collodion in photography, although he did not invent the collodion process. Now the Rev. J. B. Reade has left us, and to him, I think, there can be no doubt, is due the production of the first developed photograph of which there is any record. The solar microscope image of a flea, which Dr. Diamond can remember seeing on the day of King William the Fourth's death—in June, I think, 1837—was produced by the aid of gallo-nitrate of silver. How great the discovery, how transcendantly important, it is probable he did not estimate; but we know now, and should honour the shrewd and untiring experimentalists to whose labours the existence of the art is due.

It is satisfactory, after the narrow escape which England had of being recreant in the cause of science, and neglecting to take steps for observing the late eclipse, to learn that photography has played so successful a part in obtaining the results of at least one of the parties. In the advices from Catania, where I believe Mr. Brothers was in attendance, no mention is made of the photographic results. In a communication from Oran, I notice that "a photographer, with a camera arranged so as to follow the sun's motion, was ready to obtain views." Photography is of too little importance, apparently, to render it worth while to mention the name of the photographer, although the names of all the other observers of the party are mentioned. However, the elements were unpropitious; a dense bank of clouds obscured the sun during the most important part of its eclipse. A photograph was taken of the earlier stages; but that was all. Professor Janssen, who had escaped from Paris in a balloon in order to be present at the best point of observation, had his labour for nothing. Lord Lindsay and

his party appear to have been the only successful observers, and he, I understand, obtained nine photographs during totality, and these will be of vast importance in aiding to settle the still mooted points as to the nature of the corona.

Every now and then thoughtful photographers appear to devote themselves to considering the possibility of producing photographs in natural colours, and the tendency of thought is undoubtedly opposed to the idea that photographs in natural colours will ever be produced. Mr. Thomas's able communication is very conclusive. And yet I have heard some, in commenting upon the matter, dispose of all objections by the remark, "But the thing has been done; photographs in colours have been produced by Niepce de St. Victor and others;" and your own results, Mr. Editor, have been mentioned as confirming the possibility. I must confess myself one of the sceptics: I do not think that photographs in natural colours will ever be produced, nor do I think that any of the results yet produced afford evidence that they will. I think it was Mr. Swan who first pointed out that all the reproduction of colours as yet effected were simply the result of variation in intensity in the action of light, and where they chanced to repeat a natural colour, it was due to coincidence. Further, it is to be remembered that the colours which have been obtained are a few crude positive colours without gradation or mixture of tints, and that such results are valueless in art.

The South London Photographic Society held its annual dinner the other day at St. James's Hall Restaurant, and spent a pleasant evening, M. Adam Salomon being one of the guests. These occasions are so pleasant that I think it is a pity that they are not the rule with all photographic societies. The annual meeting of the Society was held during the month, and afforded an admirable example of activity. The annual report of the committee, and that of the treasurer, were read; the officers were elected, and various points of a business character attended to; and in addition to this two papers were read, and an interesting discussion on combination printing carried on. At the Parent Society Mr. Pritchard's capital paper on the use of collodio-chloride of silver for reproducing negatives from faded prints was the feature of the evening, the admirable examples exhibited at once carrying conviction. The paper on xylonite, with its new facts about gun-cotton, was very interesting. The provincial societies have also had very interesting meetings.

AMERICAN CORRESPONDENCE.

PRINTING TRANSPARENCIES ON GUM-TANNIN PLATES—
ANOTHER HELP TO RETOUCHING THE NEGATIVE—PERFECT
NEGATIVES WITHOUT RETOUCHING—ON SOME CAUSES OF
FAILURE IN PORCELAIN PRINTING—THE RYE PROCESS
PATENT.

Printing Transparencies on Gum-Tannin Plates.—It would be a great advantage if one could have an easy and simple method of printing transparencies for the lantern that could be taken up at any time and worked without much preparation. Again, it would be very convenient to be able to use such a process in the evening or on dark days; particularly at this season of the year, when those who know the charms and pleasures of a good lantern, and how much it contributes towards relieving the tedium of these long winter evenings, have time to devote to such work, would such a process be found a precious boon. I think I can place such a one in their hands, and if they will try it, I think they will agree with me that it is good.

At the last meeting of the Photographic Society of Philadelphia, and of the Pennsylvania State Photographic Society (Phila.), Mr. Wm. Bell, one of our best photo-

graphers, exhibited in the lantern some admirable transparencies of Western and Yo Semite Valley scenery, which were praised by all the members present for their excellent qualities, and especially for their sharpness and beautiful tone and colour. They were printed in contact with the negatives by means of magnesium light or gumm-tannin dry plates, and as Mr. Bell has kindly favoured me with the details, I append them pretty much in his own words.

Collodion.—Any old and thin collodion will answer.

Silver Bath, forty grains, acidified with nitric acid.

Preservative Solution.

Gum-arabic	...	...	20 grains
Rock-candy	...	...	5 "
Tannin	...	...	10 "
Water	...	...	1 ounce

Developer.

Pyrogallie acid	...	...	3 grains
Citric acid	...	...	1½ "
Water	...	...	1 ounce
Gelatin solution	...	...	5 drops

Silver and Citric Acid Solution.

Nitrate of silver	...	...	10 grains
Citric acid	...	...	5 "

Coat an albuminized glass, sensitize, and then put it in a dish of water, film uppermost. Move the dish about until the water flows smoothly over the plate, then take it out and wash it under a stream of water. Now take the washed plate and flow over it the filtered preservative solution. Flow it back and forth well on the plate, drain, flow over it once more the preservative solution, drain, and set it up to dry. Dry spontaneously. Print in a common pressure-frame, the negative and dry plate in contact, by the magnesium light. One inch of single magnesium ribbon is used for each. I also exposed some in diffused light, in my skylight, five seconds, and I think they are equally good.

Now wet and drain the exposed plate, then pour over the plate one ounce of the pyro solution, drain off, and add five to ten drops of the silver and citric acid solution to it. Mix well, flow it over the plate. When developed, fix in hyposulphite of soda, wash well, and dry without heat. When dry, wet the plate with water, and flow over it an acid solution of chloride of gold, one grain to four ounces of water. When toned, dip the plate once more in hypo for a minute, wash well again, dry, and the transparencies are ready for mounting. The gold is not to be neutralized.

Another Help to Retouching the Negative.—As you will notice, continued effort is being made to render the process of retouching the negative easy and popular. I described "Grit Varnish" to you some time ago, and now we have another varnish for rendering a proper surface to work upon to the negative, which was patented in this country December 6th, 1870. I do not suppose it has been patented in England, so I give you the details of its manufacture. The patentee is Mr. J. W. Morgenciu. Two solutions are compounded:—

No. 1.—Absolute alcohol	...	2½ ounces
Picked gum sandarac	...	1½ "
Venetian turpentine	...	1½ drachms
Oil of lavender	...	1 drachm
No. 2.—Absolute alcohol	...	5½ drachms
Sulph. ether conc.	...	1½ "
Gum camphor	...	1½ "
Pure rain water	...	2½ "

Mix the two solutions together by thoroughly shaking them; let the varnish thus made stand a day or two, when it is ready for use, when it may be applied to a contact plate in the same manner as collodion in the ordinary wet process. After the negative is developed, intensified, fixed with cyanide of potassium, washed, and dried, the

plate is coated with the varnish, drained, and set to dry in a cool current of air. When dry it will present a hard, dead, and lustreless surface, resembling ground glass, which can be retouched and worked with great ease and celerity with any grade of pencil from one to five (Faber), or with water colours, or stippling or otherwise.

In varnishing solar negatives, let the plate drain well, and lie, with the varnish side upward, on a perfect level, to avoid streaks. The film on solar negatives does not lengthen the time required for printing.

The photographer should observe the following rules to produce the best results:—

Use no other intensifier than pyrogallie acid, and do not intensify too much, as the negative is intensified to a certain extent by the varnish.

In extremely hot, cold, or damp weather the varnished plate, when dry, may appear spotted; by varnishing it again the spots will disappear.

If necessary to use the plate immediately, allow the varnish to set a few minutes after drawing the plate, and then dry over a moderate heat; but in all cases, the plate must be cool when the varnish is applied.

If the negative has been touched too intensely, the work can be removed without injury to the film by using a soft round camel's-hair brush dipped in water.

This varnish will not crack or peel in the hottest weather, nor will the paper stick to the plate.

Perfect Negatives without Retouching.—As I have said frequently, the retouching mania, so to speak, is liable to work evil, unless care be taken not to use it as a shield for covering careless and imperfect manipulation—i. e., resting upon it, and trusting to it, as the magic power by which all faults arising from haste, laziness, dirty dark room work, &c., may be hidden. I am glad to see, however, that there are some who are endeavouring to make the most perfect negatives in their power without resorting to after-work upon them. Among such is Mr. Chas. Evans, who last evening (Dec. 12) exhibited some unusually fine work from his negatives, which, he rightly claims, are nearly good enough without retouching. I mail you a few of his prints, and you shall be the judge. The following is his method of working:—

Plain collodion	...	...	8 ounces
Iodide of ammonium	...	...	32 grains
Iodide of sodium	...	...	8 "
Bromide of potassium	...	...	8 "
Bromide of cadmium	...	...	16 "
Bath, neutral	...	...	40 " strong.

Developer.

Water	...	64 ounces	} stock solution
Protosulph. iron	...	3 "	
Epsom salts	...	2 "	

Acetic acid about ¼-ounce to 12 ounces of the stock solution. Expose fully and develop slowly.*

The Rye Process of Photolithography.—Mr. Emil Rye has at last secured a patent for his process in this country, and, as his specifications differ considerably from the English specifications already published in the NEWS, I send you a few extracts from the same.

He first describes a peculiar apparatus for drying his "printing plates." It is a rectangular-formed closed vessel on legs, with a post at each corner about a foot in height. Between these four posts canvas is suspended in such a manner that a perfectly inclosed space is formed, which serves as an open or drying space, from which light is partly, and dust entirely, excluded. The lower part of the vessel is filled with water, which is heated by a lamp below, and thus the steam is produced by which the plates in the apartments above are dried. The plate is first albuminized, then "corroded" in a solution of chrome acid, and, while it is still wet, the plate is flowed with a solution consisting of one part of ichthyocollo and

* The examples are very fine.—Ed.

ten parts water, then dried in the vessel described above. After it is dried, it is again made wet with a solution consisting of the following ingredients: water, ichthyocollo, white sugar, chromate of ammonia, albumen, and ox-gall; to this composition add lupulin, myrrh, benzole, and tolu-balsam, dissolved in spirit vini, and further add some drops of a composition consisting of iodide of cadmium, bromide of cadmium, and some more water. The plate is then dried again as before, and after that it is ready to receive the impression from the negative.

The process of transferring to stone or other substance is performed in the usual manner. After the transfer the plate is submerged in water to wash out the salt, and when dry it is ready for printing in a lithographic press in the usual way. I should think it ought to be after such treatment, and I suppose infringers on Mr. Rye's elaborate process will rise up in all directions. The price of ichthyocollo, and tolu-balsam, and lupulin, and spirit vini will also rise—if the others do. Fix it.—Yours truly,

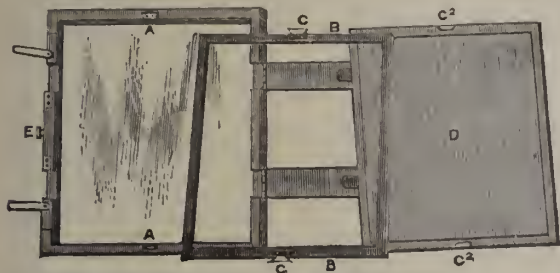
EDWARD L. WILSON.

Philadelphia, December 15th, 1870.

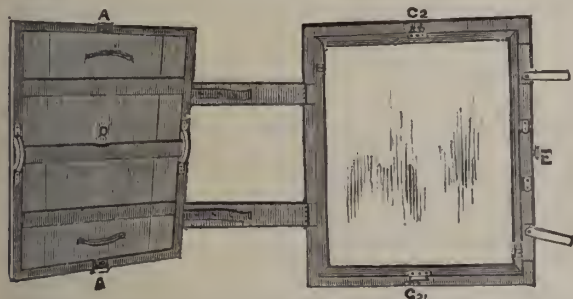
COMBINATION PRINTING FRAME.

BY COL. STUART WORTLEY.

IN an ordinary printing-frame a groove is cut from the top of the wood down to the glass at each of the ends (see A A.) A light frame of thin wood, B B, is then cut and



fitted with two small blocks, either of wood or metal, C C, which work into the grooves A A. This frame is then let down into the printing-frame, and the negative placed in it. The negative is thus prevented moving in any way from side to side, and is further clamped tight by a small screw, E, passing through the side of the frame. D is an



This shows the frame, B B, in the printing frame, and the negative in it. D has then only to be put down on it, and the back springs of the frame closed.

ordinary block for stretching paper on, such as artists use, and on its two ends two small blocks, C2 C2, which are cast from the same model as C C, are fixed, and they also work in the grooves A A. Thus the negative being rigidly held in B B, and the paper stretched on D, the little blocks, C C and C2 C2, working with exactitude into the grooves, A A, cause the same relation between negative and paper to be always borne.

The two frames being fitted exactly alike, the four grooves being all cast from one model, and the eight little

blocks all from one model, the figure negative is placed in one frame, and the background negative in the other, and the two backs, D D, of the two frames being interchangeable, a composition picture can be printed, and the two backs shifted from frame to frame as often as may be liked during the printing, being certain always to return to the same exact position.

An arrangement like this was first made by me to print opal glass pictures some years since, the opal glass being secured by a small catch on to the board; but since, during the past few months, composition printing on paper has attracted so much notice, it may be of use to printers of composition pictures on paper.

I should mention that the ordinary springs of the printing-frame when closed down press the board, D, against the negative in the same way as they would the ordinary back; and when common, and not composition, printing is required, all the apparatus I have described takes out, and the frame is used in its ordinary way.

PHOTOGRAPHY AT CHATHAM.

BY W. DE W. ABNEY, R.F.

PHOTOGRAPHY is, most undoubtedly, double-faced; or, perhaps, to speak more correctly, double-garbed. Her garments are the artistic and scientific. It is the former she chiefly dons in places like the Conduit Street Exhibition, where poetic landscapes and the human face divine are seen as drawn by her pencil. Even there she cannot hide her other dress entirely, but now and then it will peep out unknown. It is of the former dress then that the public knows the most; pure and beautiful, in the productions of a Blanchard or Robinson, or soiled, torn, and almost undistinguishable in the work of the cheap "Photographic Artist." It is on eclipse expeditions, or on such like occasions, that she wears her dress of science outside, and here it is that, if she is not most beautiful, she is most useful. An application of her resources in this aspect I have lately had to make with good success. Some few months ago a Special Committee of Royal Engineers was appointed to take the subject of torpedoes under consideration. To investigate the laws which govern explosions of (Professor Abel's compressed) gun-cotton has been their principal aim. Experiments were instituted by the Committee to practically ascertain these laws, and here photography has stepped in and aided the enquiry. The Royal Engineer Photographic Staff at Chatham were called upon to register the columns of water raised by different charges at different depths of submergence. The following details of experiments may prove interesting:—

Towards the end of September, at about three in the afternoon, was the first experiment. It took place in the Medway, off Chatham. The charge was ignited from, and the photographers on board the torpedo ship *Volta*. The day was bright, and the light highly actinic; using Dallmeyer's rapid rectilinear lens, with No. 2 stop, the picture of the column of water was over-exposed. But still the negative was very fair. The time of exposure was as instantaneous as we could make it. The photographic staff were next called on to photograph the explosion of Whitehead's locomotive torpedo against the hulk, the *Aigle*, at Sheerness. Unfortunately for us, the sea was high, and the officials on board the *Oberon* (the vessel from which the experiment was made) were unacquainted with photographic requirements. The result was, we had seven minutes, after scrambling on board, to get our traps unpacked and a plate sensitized. The sailors had left our tent legs behind! Even under these difficulties we got fair results; if not quite perfect, at all events quite sufficient to register the volume of water thrown up. It must also be borne in mind that the *Oberon* was approaching the hulk some eight or nine knots an hour. As we were placed at her bows, a most decided upheaving was perceptible. The next explosion we registered was in the end of October, and took place

before Mr. Cardwell and H.R.H. the Duke of Cambridge, off Chatham and from the *Volta*. This time we used No. 3 stop with good result, as the day was free from haze, and the light actinic.

The last explosion of which I will give details took place in the snowy weather. We were landed on the banks of Saltpan Reach, off Sheerness, and the charge was fired from the *Volta*, which had been moored there for the experiment. The explosion took place at nine in the morning, before the sun was well up in the heavens. During the exposure it was snowing slightly. We used No. 1 stop with the same lens, and got a good picture. In this last case I had calculated that we should require about twelve times the exposure we had required before. I made it equivalent by using the larger stop, and getting away from the charge double the previous distances. In each case we endeavoured to get the volume of water thrown up at its greatest elevation. This we succeeded in doing in every case, by means of using more than one camera. The exposure given would have fixed a gull on the plate with ease, and these experiments have confirmed me in my previous opinion that Mr. Robinson's gulls were not stuffed. The developer we used is as follows:—

Proto-sulphate iron	...	...	60 grains
Glacial acetic acid	...	...	10 minims
Water	...	...	1 ounce

The nitrate of silver baths were forty grains to the ounce. The collodions used were Thomas's for some plates, and a sample I had specially prepared for the rest. To Q.M. Sgt. Instructor Phillips is due, in a great measure, the success of the records.

Interesting as these pictures are as photographs, they are of more practical value than at first sight appears. Previous to these experiments I had endeavoured to investigate mathematically the explosive effects of gun-cotton fired under water. So little being known of the quantity or quality of the gas generated and heat evolved, it required some practical measure of force to make the formula I had deduced applicable. This measure I got from the photograph of the first explosion, for then, as on each subsequent occasion, a known length placed across the flag, indicating the locality of the centre of the charge, was marked on the ground glass, and thence a scale of feet drawn up for each separate negative.

I am happy to say that every explosion has fixed more certainly the truth of the formula, and I could never have arrived at a practical solution of the problem had I not called in photography to my aid.

I see in Mr. Baden Pritchard's remarks on carbon printing he mentions that the whites of prints are injured by new plates. This I can fully confirm. The enclosed specimen shows the adherent dirt. I have also sent the print in order to point out a remedy for the crapiness that exists frequently in carbon proofs after the second transfer. The print was covered with a network all over the shadows and background (which you see is dark). I soaked the print for two or three minutes in water of 110°. The gelatine swelled, and, after drying it, you see the result obtained. The cracks are filled up, and I doubt much if you could tell that it had previously been faulty. I find that this plan answers well in most cases.

We use the ready sensitized tissue, which we find a great economy in labour.

DEVELOPMENT PRINTING BY ARTIFICIAL LIGHT.

BY W. T. BOVEY.

It was once remarked by an eminent economist, that a man who succeeds in making two blades of corn grow where only one could previously be produced is, to all intents and purposes, a benefactor to his race. By a similar rule, but in a more limited sense, it might be said

of those who have taught photographers the way to turn the dulness of drear winter to profitable account, by substituting artificial for solar light, that they also are benefactors who are deserving of the best thanks of all who profit by the gratuitous instructions they have received. The number of photographic practitioners who avail themselves of the opportunities offered of remunerative employment in the practice of development printing is, doubtless, very limited. This, I believe, is not due to indifference, but to difficulties which make the working of the process a source of uncertainty and loss, rather than one of satisfaction and gain. The causes which lead to failure are, however, within reach, and an examination of those causes at once shows that photographers have only to modify their mode of working to make development printing an operation as easy and certain as the producing of a collodion positive.

Having devoted several evenings, recently, to experiment, and in studying the conditions that lead to success, it has occurred to me that a few remarks, bearing on the subject, from my pen, might render some assistance to those who try, and fail.

Approaching the subject at its beginning, I am compelled to observe that the course usually taken by those who engage in development printing is nothing short of wrong. If, for a moment, they would devote attention to the similarity that exists in the production of a developed image on a collodion plate and one produced by like means on paper, it would directly be observed that the means usually adopted to obtain the latter would, if employed in the former instance, insure nothing but fog and disaster. Instance the silver bath used in development printing, how inordinately large is the amount of acid recommended. Apply such a solution to a collodion plate, and judge the increase of exposure such addition would make imperative. Again, examine the empiricism exposed by some of the salting formulæ. Of what possible use can be an addition of chlorides? Why, none whatever, as artificial light, except an unnecessarily long exposure is given, does not make any impression on chloride of silver. An addition of a chloride can, therefore, effect no good, even though it may not work any positive harm.

The brushing and messing with a sparing quantity of solution I like not: it is an economy that often combines with loss. A very reasonable reply to my objection might be found in the assertion that brushing on the silver solution prevents a large bulk of bath from being contaminated with organic matter. I reply, that an organic tissue that combines chemically with silver should never be employed in connection with printing wrought by developers; for not only does the organic matter render temporarily useless the silver solution, but it also occasions the staining of the paper whilst under development, to a degree that admits of no subsequent remedy. The reason why mention is made of an organic addition in the formulæ for development printing is to provide against the sinking of the image into the body of the paper. The cause of the picture being in, and not on, the surface of the paper is easily shown: the prominent fibre that makes the paper surface absorb but little of the sensitive medium, whilst the pores are filled to saturation; consequently the strength of the image rests where the largest amount of building material is provided; hence the cause of a strong image being seen when the paper is viewed by transmitted light; thus the reason why reflected light exhibits a picture faint and useless. This explanation certainly proves the necessity of filling up the pores of the paper previous to sensitizing. I must, however, for reasons given, question the propriety of employing such materials as gelatine, isinglass, or arrowroot, or, indeed, any substance that combines chemically with silver to the detriment of its working qualities. There are, certainly, papers which need no extra sizing; unfortunately, such papers, on account of their non-absorbent properties, are the least sensitive; the

softer papers are, therefore, the most suitable, and, under proper treatment, are best capable of producing the most satisfactory image. I must not, however, dwell further on this matter, or space will be exhausted ere I enter on details of a practical nature.

Concerning the preparation of paper, for obvious reasons I am compelled to silence. Few prepare it for themselves, and I have a decided aversion to touch on matters of "shop;" I therefore proceed with the working directions I have to offer.

In strength and purity the silver solution should in all respects be similar to one intended for a negative bath; one drop of acetic acid, pure, to five or six ounces of solution is ample. Float the paper not exceeding one minute, if an unsized paper is used, but a paper which has its pores blocked should be floated from four to five minutes. In either case, expose whilst the paper is damp, better wet. And here follow remarks on exposure, to which careful attention is requested, as the quality and colour of a developed print depend more on exposure than on any previous or subsequent operation.

The characteristic of prints as usually produced by development is a granular coarseness and an displeasing colour; these defects arise chiefly from under-exposure. Although a great latitude in exposure is doubtless admissible, yet it should be borne in mind that the right treatment will always give the best results. The range of tints that depends on exposures is from an unpleasant dusky green to absolute red; between these two extremes lie black, purple-black, chestnut-brown, and so on as with the colours produced with a gold toning bath. With such a wide choice before us, it would prove advantageous to the printer if, by way of experiment, he were to modify his exposures, and run the whole scale through; the proper time of exposure to secure the required colour would then be understood. The most satisfactory result is given when the image develops red up to a few points within the finish; the black deposit which follows tones and imparts the requisite depth to the picture at one and the same time.

And now for the developer. Concerning the work of development I repeat. Float. Making the print into a tray may answer in skilled hands, but I am writing for the instruction of those who have no time to master the sleight-of-hand work. The kind of developer used must depend on the paper. A saturated gallic acid solution might in most instances be adopted, and with the generality of prepared papers its use is unquestionably the safest. In my own experiments I have employed pyrogallic acid in these proportions—

Pyro	...	...	...	...	2 grains
Citric acid	...	...	...	...	3 "
Water	...	...	...	...	3 ounces

I have not, as yet, completed my experiments with iron, but hope soon to do so, and to report thereon.

It is at all times best to stop the development of a well-exposed picture a shade or two within the depth the finished image is required, and the washing previous to fixing should be very brief, as development continues even when the paper is immersed in plain water. A little common salt added to the water acts as a break, but I prefer washing briefly, and immersing the print at once into a fixing bath composed of hypo, five or six ounces to one pint of water.

Concerning time of fixing, no time need be stated; the print must be thoroughly divested of unreduced iodide of silver. On many occasions I have received examples of under-fixed prints with a request for information concerning the cause of the yellowness. It must be taken as a rule that as long as the primrose tint is visible, when the paper is viewed by transmitted light, so long does the print remain unfixed. If, when dried, the print shows up yellow, plunge it again into the hypo, and when the print is fixed, if a pleasing finish is desired, a coating of

albumen or encaustic paste improves the picture wonderfully.

I enclose for the Editor's inspection a small print, from a very indifferent negative, which was produced by development. No gold toning nor touching was resorted to. The result differs but little, if anything, from one produced by direct printing. Gaslight was used in its production.

A word in conclusion concerning cleanliness. Success only waits on clean solutions and clean handling. Filter the solutions, wash well the dishes, conduct the operations of sensitizing and developing in a chemically dark place. Observe these precautions, and there remains no reason why success should lie beyond the ability of anyone who may desire to try his hand at printing by artificial light by a process of development.

HOW TO FLAT A BACKGROUND IN OIL.

BY A. L. HENDERSON.

A FEW lines on the above subject may not be uninteresting to many of your readers, for I have failed to obtain satisfaction in that line by the services of professional painters.

In the first place, after having obtained the frame of the desired size, stretch a piece of canvas or calico over the frame, about an inch larger than the outside, and, after tacking it loosely round the margin, size over the canvas with equal parts of size and water. After the calico is dried, paint the surface with—

White lead	...	...	...	1 lb.
Driers	...	...	...	2 ounces
Black paint,	<i>quant. suff.</i> to give the tint required			
Turpentine	...	...	...	$\frac{1}{2}$ -pint

After thoroughly mixing, allow this to stand a few hours until the lead has settled down. The turpentine must then be carefully poured off, which will get rid of nearly all the oil that the lead and driers contained. If much oil is left, it will seriously interfere with the ultimate success of the flattening. Add fresh turpentine to bring the paint to a proper consistency; then add of scraped brown soap two ounces; strain through calico or a sieve, and the paint is ready for use.

A large brush is best, and the quicker the surface of the canvas is painted over the better. In all probability, it will be found that the canvas or calico will have stretched considerably. It must now be tightened, and the tacks may then be permanently driven home. This completes the operation.

Should the ground, after being dried, be found to require another coat, the operation of painting must be repeated.

Correspondence.

NATURAL COLOUR IN PHOTOGRAPHY.

MY DEAR SIR,—I think Mr. R. W. Thomas, in his excellent article in the NEWS, has shown conclusively the impossibility of obtaining photographs in natural colours, and that those photographs which partake of the *apparent* natural colours are only modifications of one colour. Even if the primitive colours could be produced and fixed, *that* would not be sufficient; we could not get the endless varieties of each colour, as seen in nature. Your correspondent, who mentions the "Rosella Parrot," is no doubt right when he speaks of there being some peculiar property in the white feathers, capable, when exposed to light, of absorbing or reflecting certain colours; and it is just this property which is required to produce a photograph in natural colours. If it were possible to discover what that property was, and then to combine every agent on one surface, and also to discover how to develop each delicate variety of colour in its proper place, as in the natural object, then we might succeed; but, as Mr. Thomas remarks, this would be an absolute impossibility.

I noticed amongst my tulips this year a curious instance of *real*

ature-painting in colours. Two tulips, of different colours and markings, had the last leaf on the stem next the flowers with a perfect reproduction, on a green ground, of the colours and markings of the petal to which the leaf had been attached; this leaf, unlike the others, though the same in shape, must have gained the property of reflecting other colours besides green from contact with the petal.

From the description of the prints from Robertson's negatives of "Scenes in the Crimea," I should imagine they must have lost much of their detail, and that, therefore, the reproduction would hardly be perfect. I have several of the original prints, which are perfect still as regards detail, though two or three are yellow-brown. I have the three prints of "Sebastopol from the Malakhoff," forming the panorama; two of the "Redan;" and one of the "Barrack Battery." They are quite as Mr. Pritchard's service, for comparison with his reproductions.—Believe me yours very truly,

THOMAS BARRETT.

Mead Vale, Red Hill, December 27th, 1870.

COPYRIGHT AND PIRACY.

SIR,—Mr. Cunningham is fond of law, and objects to moralizing, but not, I trust, to morality. I know nothing of the law of copyright beyond what I have learnt from this correspondence, so, for argument's sake, I conceded to him every legal point he has claimed; but, in common with your esteemed correspondent, "An Old Photographer," and, I believe, with almost every body else, I came to the conclusion that the law of copyright was miserably uncertain and perplexing, and that, in consequence, the "alleged copyright" of certain publishers had been infringed by some people whom Mr. Cunningham defends. As it was never denied that these copyrights had been dearly bought and honestly paid for, and that therefore they ought to be inaccessible, I did express a pretty strong opinion against the moral, not the legal, right of those who take advantage of an imperfectly drawn statute, to defeat its object and commit a gross injustice at the same time. Of course, while a law is a law it must be respected, however bad it may be. It would be in the highest degree wrong to punish with fine and imprisonment any one who takes advantage of its imperfections. At the same time, we may all hope to see such an imperfect Act improved, and, in the meantime, may look with little favour upon those who commit an assault upon justice with drawn sword. Mr. Cunningham will allow that law is the means, and justice the end, of jurisprudence. If the means defeat the end, so much the worse for us all.

But, alas, sir! I find this argument of mine is all thrown away. I am beating the air, and Mr. Cunningham has cleverly outflanked me. The law of copyright is not perplexing; it is "simple, plain, and explicit." The only reason that a *bona fide* copyright can be impeached is because the publishers and their legal advisers do not know their business. They have no interest in failing to comply with these "simple and plain" formalities. But, miserable men! through laches and sheer stupidity, they fail to do so, and thus throw away thousands of pounds for want of common business capacity. Then, again, the judge and magistrates; they have almost invariably decided in favour of the publishers; or, as in the case of "My First Sermon," quoted by Mr. Cunningham, they "doubt." But the convictions are all bad, and the doubt perfectly uncalled for, the matter is so simple and plain. Mr. Cunningham constitutes himself into a final court of appeal, in which he is at once appellant, advocate, and judge, and decides the case entirely in his own favour. Judges, magistrates, lawyers, your other correspondents, my humble self—I might say the world generally—are egregiously mistaken, and that about a matter "plain, simple, and explicit." *Cunnington locubus est*. Or is it just possible that, after all, Mr. Cunningham's wishes are fathers to his thoughts; that there are some technical difficulties and dubious points of which he, for himself or his clients, is seeking to take advantage? Let your readers judge if there be not at least a doubt about that.

If, sir, you can find space for another word, will you allow me to add that I have acquired considerable respect for Mr. Cunningham's talents as an advocate. His advice to you respecting Mr. Knight's shop is clever and judicious. If I were he, I should certainly say "don't" visit it. He speaks of having seen in it a portrait of Mabel Gray. May I ask if it was one of the charming copyright photographs of Messrs. Elliot and Fry, or Hills and Saunders, or a bad copy of one of their pictures, ticketed threepence?—I am, sir, your obedient servant,

JUSTITIA.

APPLYING PRELIMINARY COATINGS TO PLATES.

DEAR SIR,—I think, after a great deal of thought and experiment, I have discovered a method of applying albumen to plates, by which means you can ensure bright and clear plates, no matter what number you may prepare. When the plates have been cleared of the old films, wash them well, then stand them up to drain and dry; when dry, take a clean cloth and wipe away the dirt which the water leaves on them. Now, presuming the albumen solution to be ready, pour it into a clean basin, or anything you think fit, so you can dip a three-inch camel-hair brush into it; take the plate by the two end corners with the finger and thumb, or, if it be too large, take it by one of the corners, and rest the centre on the neck of a bottle, the bottle standing upright; incline the plate a little, take the brush full, lay it on the plate near the top edge, and draw it gently down the plate lengthwise, not quite to the side edge; fill the brush again, and repeat the same operation again, but be sure to let the brush touch the albumen where you left off; repeat the operation till the plate is covered. Do not hurry, or you will fail to do it properly, for the air-bubbles which stick to the brush will leave it and stick to the plate. If such a thing should occur, go over it again, and that will put all right; but with care and patience, by drawing the brush very slowly down the plate, the air-bubbles will cling to the edge of the brush, and you will have a clear and bright plate.

If anyone else should claim the prior knowledge or use of this method, it matters but little to me, as I shall have the satisfaction and credit of being the first to make it public for the benefit of others. This should be, in my estimation, the maxim of all photographers; and by carrying it out they would be the gainers in the end. If you think this worthy of a place in the PHOTOGRAPHIC NEWS, I shall be glad.

The brush is flat, the hair in tin with a wooden handle; cut the long handle off if you like.—Having the honour to be your humble servant,

E. MARSHAM.

Thetford, Norfolk.

DISSOLVING VIEWS LANTERN.

SIR,—In answer to a letter signed "J. Powell," in a recent impression, on dissolving views (?) with one lantern, I beg to inform that gentleman that his plan is an old one, and is, at the same time, by no means satisfactory. The principle is simply placing another slide in the holder before the first one (which is being exhibited) is withdrawn out of the lantern. Let anyone who has a lantern try the effect, and the result will be anything but gratifying, or even approaching to dissolving. When pushing in or out the slide which is done with, the effect is disagreeable, especially as the edge or frame of the transparency passes over the picture which is being exhibited from one side of the screen to the other. There are various better plans in the "market" for producing dissolving views with a single lantern, or, to speak more correctly, for the purpose of never letting the screen appear a dazzling white blank: to dissolve effectually one picture into another, or to show "effects," cannot be obtained without two lanterns or lenses.

A few months ago, another party, in a very popular mechanical magazine, stated that he had discovered a plan for dissolving, using two lenses, but only one source of light. The principle of that clever savant was to raise and lower the lamp, by means of rack-work, from one lens to the other. "The effects," says he, "are beautiful. I place in the bottom lantern a slide—a rustic picture of morning; the sun is shining, and all nature seems glorious; in the top lantern I place another slide of the same scene, but by moonlight. Now, by the rack-work, I move the lamp (which is oxy-hydrogen) from the bottom lantern to the top one, slowly, however; the sunny picture dies away, and the moonlight one as gradually appears, with all the beauty of a complete dissolving view apparatus."

I offer no remarks upon this, only that it is a shame that men so unblushingly untruthful should rush into print, thereby deluding some whose knowledge of optics and illumination are so meagre that the deception and the falsehood are never found out until after personal experience, dearly bought.—Yours, &c.,

December 26th, 1870.

SILVESTER.

Proceedings of Societies.

GERMAN PHOTOGRAPHIC SOCIETY, N. Y.

GENERAL monthly meeting, November 3rd, 1870; Vice-President OTTO LEWIN in the chair.

After reading and approving the minutes of the last meeting, Mr. SCHÖNE called the attention of the members to the assertion of M. De Constant (*Photographique Archiv*, July, 1870), that, by covering the inside of the camera-box with white card-board, he shortened the exposure and softened the shadows in the negative. Mr. Schöne thought that, in theory, it was highly improbable. He made some experiments on this plan, and found not the slightest difference either way. This settles, at the same time, the old notion, that the camera must be black inside. In experimenting, Mr. Schöne attained the same results M. De Constant claims to have got; in a different way, however—by covering the floor between the camera and the sitor with white card-board. This new style of reflecting had such a decided effect, that Mr. Kurtz ordered at once a white linen cover for his floor, and is using it now with great success where short exposure is wanted.

Several gentlemen said they had been greatly troubled through the summer with irregular transparent lines in the negatives, not unlike a combination of lightning forks. They appeared with all kinds of collodion, old or new silver bath, strong or weak developer; in short, they were perfectly unaccountable.

The debate on this subject elicited the facts, that those lines always appear in the thinnest part of the collodion, no matter which way the plate was immersed, and that they very rarely are seen in a thick collodion. The apparent conclusion drawn therefrom by some gentlemen was, that the cause of it had to be sought in an uneven, too quick drying of the film. Others contended that the collodion was over-iodized in proportion to the strength of the bath. The whole subject was finally laid over for future observations and reports.

Mr. LÖHR exhibited one of his new "Success Camera Boxes" for examination. After a thorough and close inspection it was pronounced, by the unanimous opinion of the meeting, to be the very best camera box in the market. The model meets every requirement wanted, the material is of the very best mahogany, and the workmanship excellent. Every photographer will find these boxes a success indeed. A full description of them will follow soon.—*Bulletin*.

Talk in the Studio.

ROYAL POLYTECHNIC INSTITUTION.—The Christmas entertainment provided at this popular establishment is, as usual, an interesting and amusing one, the several hours of entertainment being fully occupied by the lectures and exhibitions which follow each other in quick succession. Professor Pepper has chosen the Franco-Prussian War as the subject for a seasonable lecture, in which the different arms used by the contending armies are shown and described; some capital photographs thrown upon the large screen help also to illustrate the subject, which is treated by Mr. Pepper in his usual clear and able manner. Tyrolean minstrelsy, by the clever Praeger family, is also an important and very agreeable feature of the Polytechnic programme just now, and there are, besides, conjuring and ventriloquian entertainments to please the more juvenile portion of the audience. But the most pleasing part of all is, perhaps, the *finale*, when Mr. George Grossmith, Junior, recites an entirely new version of "The Yellow Dwarf." The story is quaintly written, and told with much dry humour, being, moreover, interspersed with some capital songs, which keep the audience pleasantly amused throughout. An allusion to chemical science, in which Mr. Grossmith, among other things, describes the double distilled sub-chloride of tin-foil as a monkey-coloured substance, seemed to tickle his hearers exceedingly; the legend forms, indeed, a good finish to the entertainment, and sends the audience home in great good humour.

CLEAN HANDS.—Mr. Anderson, in our Philadelphia contemporary, instructs his pupil how to have clean hands. His pupil exclaims, "How you manage to keep your hands so clean,

is a pez beyond me. I noticed your hands last evening particularly; they were as black as if you had a pair of black kid gloves on, and now they are as clean as a whistle. What do you use? I try to clean mine by first rubbing them with a rag dipped in a solution of iodine, and next rub them over with a piece of cyanide, and here's the result: they look as black as soot." Mr. Anderson replies: "Reverse the operation, and you will have no difficulty whatever. Rub the stains over with a piece of cyanide of potassium under the tap; then rub the cyanide over the whole hands; next pour in the hands half an ounce of a strong solution of iodine in alcohol; rub the hands well together, when you will perceive a slight lather; plunge them under the tap, and wash until all 'greasy feel' has vanished; finally, with soap and water, and here's the result. The silver stains are removed with ease, but with pyro it is a very difficult matter. Use one of those suction-holders for developing. Pyro can be removed by rubbing the stain first with a solution composed of one ounce bichromate potash, dissolved in muriatic acid, diluted with eight parts of water. When the pyro stains are gone, the bichromate leaves a yellow stain, which must be immediately removed by washing with strong ammonia. But all this is very disagreeable and troublesome. Better than all these, don't strengthen at all; redevelop with iron."

THE MODERN PHOTOGRAPHER'S CREED.—The *Period* gives the following as the creed of the photographer:—

I do believe the Castle of Fame
The period has erected,
To be a house of cards, as lame
As ever was dissected;
And that it is a first-rate plan,
When thoughts of fame the phiz heat,
To build your portion while you can
With loads of *cartes de visite*.
I do believe that crime and sin
Are more than bread and cheese to me;
That forgeries increase my tin,
That murders must bring ease to me;
And that this world of rights and wrongs
Those parties best to court rates,
Who can collect the thickest throngs
To gaze upon their portraits.
I do believe myself to be
Superior to the Muses,
Because the popularity
I give, that each refuses;
That fifty volumes worthless are,
Beside a pretty dimple;
That handsome legs pay better far
Than genius pure and simple.
I do believe a fine *cocotte*
Is worth her weight in gold to me;
That modest beauty's simply rot,
Providing it's not sold to me;
That, when burlesque is past and gone,
The Drama will have perished;
Which Impudence and I alone,
In its decline, have cherished.
I do believe that any sale
Of pirated sun pictures
Upon the vendor should entail
The heaviest fines and strictures;
That, since the public is an ass
Remarkable for puerience,
I were his like, did I not mass
Meet food for such esurience.
In short, I do believe the ago
To be that of Photography,
Which preys on anything the rage,
From genius to geography.
Is there an infamy about?
I think my terms will suit him;
And if I catch a pirate out,
Oh, won't I prosecute him!

CLEANING GLASS.—A correspondent of the *Philadelphia Photographer* says:—"I adopt the most simple method, which is generally the best. I adhere to the rotten-stone, alcohol, and water, but the buff leather I have given up. I found old rags to suit much better, and they can be washed more easily when

dirty. I found nothing equal to an old cotton stocking-leg; the twill gives it what artists call a "tooth," a good quality for cleaning glass, and it possesses another peculiarity, which is. I think, of considerable value; it leaves no lint on the glass to be brushed off when you are in a hurry, as most other cotton goods will do. I take my glass after it has been washed, fix it in the vice, and throw on a few drops of a mixture of rottenstone, alcohol, and water; this I rub over the glass with an old stocking, which, if kept otherwise clean, will answer a long time without washing. I then finish with a clean piece kept for the purpose. I feel confident that whoever tries the old stocking will be pleased."

MERCURY FOR INTENSIFYING.—A correspondent in the same journal says:—"I have found nothing in ten years' practice of photography for intensifying as nice and uniform as a little bichloride of mercury, weak solution wash, then apply a weak solution of chloride of gold. The operation can be repeated, alternating between the gold and bichloride, till almost any degree of intensity can be obtained, if you have any detail at all. Wash well between each operation, beginning with the mercury."

To Correspondents.

*** **THE TITLE-PAGE AND PREFACE** to the last volume of the **PHOTOGRAPHIC NEWS**, consisting of four pages extra, are given with the present number.

THE YEAR-BOOK OF PHOTOGRAPHY FOR 1871 is now ready. It contains a larger amount of matter, and a greater number of original contributions, than any hitherto issued.

OUR NEW VOLUME.—The present number of the **PHOTOGRAPHIC NEWS** commences a new volume, in which we hope, not merely to maintain the features which have hitherto secured for it so much prestige and favour, but to add all available means of increased interest and efficiency. Special arrangements for various series of articles of interest are made, and examples of new processes are in preparation. Besides the articles of the regular staff, communications from the able pens of the following distinguished photographers may be expected:—Mons. Adam-Salomon, Mr. Bedford, Mr. H. P. Robierson, Mr. Mudd, Mr. Hughes, Mr. Blanchard, Mr. England, Col. Stuart Wortley, Mr. R. Manners Gordon, Dr. Anthony, Dr. Vogel, Dr. Monckhoven, Dr. Liesegang, Mr. E. L. Wilson, Mr. Cherrill, Mr. Earl, Mr. Rejlander, Mr. Piercy, Dr. Phipsoa, Mr. Spiller, Mr. Baden Pritchard, Lieut. Abney, Lieut. Noverre, Dr. Diamond, Mr. S. Fry, Mr. Bovey, Mr. Dallmeyer, Mr. Tunny, Mr. J. R. Johnson, Herr Grune, Mr. B. J. Edwards, Mr. Ernest Edwards, Mr. Woodbury, Mr. Henderson, M. de Constant, Professor Morton, Mr. Arthur Taylor, Mr. Butter, Mr. Window, Mr. Burgess, Mr. Slingsby, Mr. R. H. Preston, Mr. J. Martin, Mr. Swan, Mr. A. Hughes, Mr. Gulliver, Mr. G. Croughton, Mr. Wyles, Mr. Gillo, Mr. W. H. Davies, Mr. Beattie, Mr. Cocking, Mr. Crookes, "Respice Finem," "The Old Photographer," Mr. Blair, Mr. Notman, Mr. Carbutt, and other contributors.

R. MORTON DAY.—There is no work in English on photo-enamelling, nor, so far as we know, any especially devoted to the subject of enamel painting. The **YEAR-BOOK** is now ready.

R. A.—For the registration of a design, the office for which is quite distinct from the Copyright Registration Office, you must apply to a patent agent. Our publisher has no connection with such duties. You will find the name of a patent agent in the present number.

A SUBSCRIBER FROM THE FIRST.—You will obtain chrome alum from any photographic chemist in London. It is doubtful whether you will obtain it of a local chemist.

PHOTO.—Such a studio as you describe will answer well for general work, but will be rather short for full-length card pictures. You will have to use a lens of shorter focus than is desirable. Two or three feet longer would have answered well.

GLASSHOUSE C. B.—We cannot remember the details of a query made to us some time ago. When a question is answered we preserve no record of it. You must again describe special necessity you wish to meet, and we can then give you a detailed answer. We do not now remember for what especial purpose the lens was wanted.

TYRO.—We are not familiar with the lens in question, but believe it to be intended as a quick-acting card lens.

FOGEX.—All neutral aqueous solutions of chloride of gold are apt to become decomposed and the gold precipitated if they stand in the light; but if protected from the action of light and from contact with foreign matter they should not precipitate unless they have been made alkaline. 2. The chloride of lime bath keeps best. There is no reason to suppose your gold faulty. You may make any toning bath keep by the addition of a trace of hydrochloric acid; this must be neutralized with chalk a few hours before use. 3. M. Adam-Salomon's system of lighting may easily be adapted to open-air use with great advantage. 4. We are not well assured that sulphate of copper has any specific action in development; but being chemically neutral in the matter, it may retard by mechanically hindering the activity of the developing agent proper. 5. You must have erred in some particular, as we have had other reports of their efficiency. The pipe you mention probably would answer, but it is a matter to be determined by trial.

O. S.—It is quite impossible to say which is the best tent. There are several excellent tents in commerce, but much depends on the special want of the photographer as to which is best. Mr. Thomas's tent is most excellent for large work, and is arranged with a distinct recognition of the fact that it will require two persons to carry it. Rouch's tent is also capital for smaller work, and may be carried by one person. And so with various other tents; each has some good point which may suit special necessities. 2. We recently answered a correspondent that enamels might be burnt in a gas stove, but the expense was heavy of such burning. One of Griffin's gas stoves will answer the purpose.

A. Z.—Carbolic acid is most commonly known as carbolic acid. It may be obtained of most dispensing chemists either in crystals or solution. "Tar's glycer-carbol" is sold in shilling bottles by most chemists. It is a solution of carbolic acid in glycerine, and is very handy for use. A few drops will suffice for preserving albumen and similar solutions. The smell is like that of creosote, which may be sometimes used as a substitute. 2. A gramme is equivalent to about 15½ grains. You will find a table in our **YEAR-BOOKS** for some years past to turn grammes into grains. 3. From half a drachm to a drachm sugar to each ounce. It, to some extent, acts as a restrainer, and makes the solution flow evenly.

EX-OPERATOR.—We cannot at this moment refer to instructions for the preparation of lithographic transfer paper and lithographic ink. We believe that the former is made by coating paper with a layer of starch, which leaves the paper on being damped; and the latter is analogous to ordinary printing ink, but diluted with boiled oil. Perhaps some correspondent can give more precise information.

TEMPUS FUGIT.—You will find brief accounts of the origin and history of photography prefixed to several books of photographic instruction. One of the most copious accounts for your purpose is an article in the *British Quarterly Review* for October 1866.

J. MARTIN.—We will write in a day or two.

W. R. P.—You will find allusions to the subject scattered through various articles in the volumes you have got, and you will find articles on p. 529 of Volume IX., and on p. 125 of Volume XI.

M. F. L.—The dirty yellow stains are the result of imperfect fixation. Use your hypo solution fresh, one ounce of the hypo in five ounces of water; and make it with warm water, so that you may use it at a temperature not under 60° Fah. During extremely cold weather the solvent or fixing power of the hypo solution is much diminished.

L. D.—We shall publish full details of the coffee process shortly. It is as simple as the Fothergill process.

G. T.—The negative from which the print you enclose was taken is over-worked upon evidently. It is not badly done, but far too much is done. All texture of flesh is gone, and the texture of wax-work or marble—for these would produce somewhat similar effects in photography—is obtained. The lines under the eyes and down the cheeks are smoothed away, and give a doll-like effect to the face. When retouching not only removes character, but takes away the effect of life, it is a great evil. Judicious retouching is legitimate; but excessive retouching is worse than the crudest untouched photography.

F. M. R.—You will find an article on the subject in our **YEAR-BOOK** just issued.

C.—Snow scenes are very effective in the stereoscope, where the texture of snow and ice are very effective; but except the general characteristics of the landscape are suitable, and aid effects of light and shade, winter scenes covered with snow are rarely pleasing. 2. You may use a 50-grain solution for the winter portraiture, and about twenty minims of acetic acid will be sufficient.

R. SYMONS.—Thanks for your interesting photograph of the eclipse.

TO SEVERAL CORRESPONDENTS.—We offer reciprocations and thanks to many correspondents who have sent kindly reasonable greetings.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 645.—January 13, 1871.

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THE FIRST ANNUAL INTERNATIONAL EXHIBITION.

SOME uncertainty has prevailed as to the time for making applications for space at the forthcoming International Exhibition, no authoritative statement of the time having ever reached our hands, or been published in our pages. We recently wrote to Col. Scott, the Secretary, for information on this and some other points connected with the Exhibition. In the reply received it is stated that the thirty-first of December last was the limit of the time appointed for receiving applications; but that "any further intending applicants should apply at once."

From this we glean that application made promptly will still receive attention; and those of our readers who are desirous of exhibiting should make application without delay. The time appointed for receiving the objects amongst which photographs are classified is the twenty-first of February next. The committee of selection for photographs has not yet been made public, although the appointment was made some months ago. Photographers may accept our assurance, however, that the three gentlemen constituting the committee are admirably fitted, by long association with photography and distinguished attainments in connection therewith, for performing the responsible functions of their office satisfactorily. We shall publish some further details of interest to photographers in our next.

PHOTOGRAPHY AS A BUSINESS.

PHOTOGRAPHY as science and photography as art are themes familiar to photographic societies and to photographic literature: photography as a business is, as a rule, tabooed from discussion in societies, and is rarely touched upon in journals. And yet it is quite certain that the closest connection, the completest inter-dependence, exists between the different phases of the art; and its satisfactory progress in any of them depends upon its progress in all. In its origin, photography was equally affiliated to science and art. Of the earliest experimentalists, Sir Humphrey Davy was a man of science; Wedgwood had proclivities towards art. In the next more successful essays, Talbot and Reade were men of science; Daguerre was an artist. The legitimate offspring of this auspicious parentage owes its growth, strength, rapid development, and wide-spread application to its foster parent—commercial enterprise. If it had not proved remunerative as a business it could never have assumed its present proportions. If science and art had not watched over it during its development and application, and taken part in its education, it could never have become so successful as an industry.

It is interesting to note the different spirit in which the

business aspects of photography are regarded in two countries. We in England are in the habit of regarding ourselves as a practical people, but no word of the business interests of photography is ever breathed at our photographic societies. At one time a professional photographer was considered ineligible for a seat at the council table of the Parent Society; and it was only the fact that such an arrangement deprived the Society of the active aid of so many of its ablest exponents which put an end to its operation. Professional photographers now join that august conclave, but they leave the business, and all considerations affecting it, at home; and neither in council nor in the general meeting is the subject ever referred to. In America the national association of photographers deals with the interests of photography all round as science, art, and business. To protect the pecuniary interests of the portraitist and improve his status forms as important a part of the functions of the Association as the discussion of processes or the consideration of the modes of securing the best pictures. We have been further struck with an illustration of this practical mode of dealing with matters by the report just issued by the Ferrotypers' Association of Philadelphia. We have before stated that the practice of producing collodion positives chiefly on the enamelled iron or ferrotype plates is still so universal in America that the portraitists devoted to that branch are sufficiently numerous and important to form a society in themselves. The report of a committee of this Association, appointed to consider the best modes of securing success in business, has just been issued. It will be seen, from the portion we reproduce, that the idea is entertained by the committee that the judicious introduction of novelties is the best stimulus to portraiture as a business, and that the cultivation of reticence, secrecy, and isolation of interests is the surest means of securing failure. The report proceeds as follows:—

REPORT OF THE COMMITTEE ON THE BEST MANNER OF CONDUCTING BUSINESS.

It has been customary, in times past, with photographers and ferrotypers, to stay at home professionally, and to keep everything a profound secret with reference to their manner of working; and they would feel highly insulted if their neighbour had courage to ask them for any of their formulæ. Such a principle is very injurious to our business, and ought to be condemned by all who take an interest in the advancement of our art, and the prosperity and encouragement of our best artists. No advancement can be made if every man keeps every new discovery to himself, for when he dies his new discoveries die with him, and we, as artists, receive no benefit from them. Hence our art will actually degenerate.

The true principle for mutual advancement is to organize societies where we can have discussion on all important matters connected with our business, and exhibit our work; and for every artist to do all he can to educate himself and his co-workers. This principle should receive encouragement from all who take an interest in the prosperity of our art and the development of photography.

The real cause of dull times and of the difficulty in keeping up

demand for our work is found in isolation and conservatism. For example: For many years past we have made small vignettes, standing figures with scenery backgrounds, and by fences and posing chairs, and pedestals with curtains, and parlour scenes, &c., with all the accessories that could be thought of. Such pictures have had a great run, and we all did well with them; but gradually our business grew less, and we resorted to every means in our power to increase it. Some lowered prices, thinking it would increase trade, but to no purpose.

Now the real cause of the dullness is this: Everybody has a supply of the above-named styles of pictures, and it is very plain that you want but one picture of your friend of the same style; and when you have supplied all your friends with your picture of those styles, you will have less taken, as you have only new friends to give them to. Consequently, our orders will be smaller and farther between, and our business grows gradually less every year. Now "what must be done?" Some say, "We have too many engaged in the business." That is not the cause. We only want something new. The demand is for something new; and all our best customers ask if we haven't something new. They say, "We have had so many pictures taken this old way; we are tired of them. Give me anything, so it's new."

You all know that has been the cry for at least two years past, and we have only been able to furnish them with what is best known as the large heads, or imitation of the Berlin cards. A few made them at first, and now they are the only style of ferrotype called for in some of the galleries. They are called at different galleries by different names. Some call them "German Head Ferrotypes," others the "Bon Ton," and some the "Large Heads;" but they were christened by the one that first made them the "Chromo-Ferrotype." His reasons for giving them this name was the fine, soft tone when made on the chocolate-tinted plate. Whether this is the best name or not, we feel that it should be named, and that all should call it by the same name. To make a new picture popular and widely known, every artist should call it by the same name.

The way to keep up a demand for our work is to issue new styles of pictures, the same as milliners, and hatters, and dressmakers, and tailors issue their new styles.

After a few further remarks inviting co-operation in securing the ends in view—the contribution of specimens of details of formulæ and practice to the journals—the report concludes by a distinct statement of the business aims of the Association:—

"The object of this Association is to unite all engaged in and associated with our business; to devise means for the advancement of our art; to encourage a better class of work, which will inevitably lead to better prices. And may we see them promoted."

The desire to maintain the status of the art and the artists, and promote the commercial interests of both, is one in which all photographers must join; and the question will probably occur to many whether that might not be better secured by the occasional consideration and discussion of the business interests associated with the practice of the art. A very natural comment on this subject may be, that the commercial interests involved may always be very safely intrusted to individual enterprise. But it is quite certain that enterprise is stimulated by attrition of mind with mind, and the best developments of enterprise are elicited in discussion.

At this season of the year, when the light is bad and business inevitably dull, it is wise to consider and determine upon new effort during the coming season; and whether the American plan of discussing such details be adopted or not, we commend, as we have done before, the spirit which pervades their deliberations, in which the emphatic recognition of excellence as the means of success is always present, and a resolve to secure success by such means rather than by reduction of prices. A month or two ago we received from a provincial photographer in America an admirable example of a business circular he had just issued, and with it some of the most charming specimens of cabinet and card portraiture we have seen for some time. They are all distinguished by art feeling, and are especially well lighted: some in what is termed in the States the "Rembrandt" style, and others, still well lighted, after the more conventional fashion. The artist is Mr. F. Thorp, of Bucyrus, Ohio. Having devoted himself to producing good pictorial effects, he is satisfied that such work is worth its price, and that the discriminating

portion of the public—always the most pleasant portion to work for—will pay the price; and, accordingly, he announces his intention in the circular in question, which we reprint, although it is also issued in our YEAR-BOOK in Mr. Robinson's capital article on a similar subject. Here is the circular:—

ART NOTICE.

I would respectfully inform the patrons and admirers of art, that as soon as present orders can be completed, no more Cheap Pictures will be undertaken. That in the future I shall make only

The Highest Grade of Photographs,

and that I shall bring into requisition retouching the negative, double printing, enamelling, chromatic finishing, and all possible means for enhancing the beauty, value, and durability of my work, without regard to time, trouble, or expense, and will make for each one of my sitters the best possible picture that can be made.

The price for Card Photographs will be—

Five Dollars per Dozen, Three Dollars per Half-Dozen,

and no sitting will be made for less than half-dozen.

In thus calling your attention to the price under the new arrangement, I am aware that *pictures of a kind* are being made for much less, the limit, I believe, having been reached by a man in Chicago, who makes *twenty-four pictures for twenty-five cents*.

To all who want Good Likenesses, and are not afraid of having them shaded, I can assure a pleasing picture; and I particularly request all who never had a *good photograph* of themselves to give me a sitting. But to those who want *cheap* pictures, or who want their pictures taken *white*, I can offer no inducements, as I will no longer cater to a taste so false and meretricious, nor degrade our beautiful art by producing pictures that are in direct violation of the rules and principles of art, and that shock the taste of every cultivated mind.

Residents of town will confer a favour by making previous engagements for their sittings, and avoid the necessity of being kept waiting.—Respectfully submitted,
F. THORP.

We commend this subject generally to the earnest consideration of all engaged in portraiture, and especially to those who have been less successful than they desire, or believe they deserve.

MODIFIED METHOD OF FUMING PAPER.— SIMPLE PLAN OF COPYING PRINTS.

In his letter to our Philadelphia contemporary, Dr. Vogel describes the method of fuming sensitive paper which he has found more convenient than the common mode of fuming the pads of the pressure frame. After describing his mode of washing the paper, and then keeping it ready for use for weeks, he says: "The paper becomes sensitive as soon as it is fumed with ammonia; without ammonia the prints are very weak.

"The fuming with ammonia is certainly a very simple operation, still it requires some preparation and apparatus; a fuming box or closet is necessary, and also time. I have considered the matter over, and tried to find a way to dispense with the fuming altogether (I refer to washed paper), and I have succeeded in a very simple manner.

"I place behind the sensitive paper, in the printing frame, a piece of felt or cloth which has been on the outside covered and rubbed with carbonate of ammonia. In order to prevent the particles of the salt coming in contact with the paper, the latter is first covered with a piece of blotting paper; next comes the felt or cloth, with the ammonia side furthest removed from the negative; on the top of this the printing pad; and finally the frame is closed by the cover. The fuming process takes place in the printing frame, and the printing goes on very rapidly.

"This method is more convenient than that formerly recommended—*i. e.*, fuming of the printing pads. It is easily controlled, as we can at any time examine if enough carbonate of ammonia is left on the felt or cloth, or not; but it is particularly convenient to amateurs who wish to work with as little apparatus as possible."

Dr. Vogel then proceeds to describe a very simple method of copying prints adopted by himself and pupils, which the use of permanent sensitive paper materially facilitates. He says:—

"A piece of permanent silvered paper, a flat board, and piece of glass, a few American clothes pins, and a piece of felt, with a little carbonate of ammonia, is all that is required. I took, recently, the few articles just mentioned, in a portfolio to the University, and copied from a scientific work a plate by just placing it in front of the window.

"The print was clamped together with the sensitive paper, and exposed to the light, while I occupied my time with reading and writing. I got an exact copy of the plate—a negative, of course—in a similar manner to the one by which Mr. Walker, in Washington, obtains his negatives. As soon as the ammonia is evaporated the paper keeps tolerably well; if it is to be preserved for a longer time it should be fixed in hyposulphite of soda, and washed.

"That only albumen paper can be used for this purpose is a matter of course."

SOME RECENT APPLICATIONS OF PHOTOGRAPHY.

Two years ago Captain Jouart, of the French Imperial Guard, published a clever little book on photography applied to military surveying. The greater portion of Captain Jouart's remarks were based upon some practical results obtained by means of the Chevallier Plane-table, and went far to show the vast utility of photographic operations in connection with warfare. Unfortunately, the death of M. Chevallier brought to a close the series of experiments which had been commenced by order of the Emperor at Toulon and Vincennes; and Captain Jouart, we suppose, was not sufficiently in M. Chevallier's confidence as to have been a sharer in that inventor's knowledge, and to be in a position to continue the investigation. Among other feats which M. Chevallier professed himself able to accomplish was one which, if possible, would just now be of some use to the contending armies at Paris, and especially to the German forces. This was to regulate, in the most certain manner, by the aid of two proofs obtained with his instruments, the direction of fire against an enemy's works during the night-time, as likewise to determine the angle of reflection of the electric light, to be used in illuminating the enemy's position during its bombardment. Another task, scarcely less important—viz., to regulate the convergent fire of one or more batteries, as well during the night as during the day—Chevallier also pronounced feasible, by means of his apparatus, which was capable of furnishing, upon a horizontal plate, a ground plan of any position or landscape, together with the direction of the magnetic meridian; and it is therefore by no means impossible that he might have been able, as he said, by employing a couple of plans of this kind, taken at two different points, forming the basis of a triangle, to have directed the sighting of cañon, or angle of the reflecting mirrors, in the desired direction during night-time.

No practical application of such a method has, however, to our knowledge, been adopted, although we know for certain that at Strasburg, at Metz, and, more recently, at Mezières, photographic observations were taken for topographical purposes. The most important use of the camera during the present war has, undoubtedly, been for the transmission of intelligence from and to the French metropolis. There is no saying how far this ingenious and unerring method of conveying news in a small compass has been carried, but we are assured, by special correspondents, that micro-photography is certainly resorted to for the purpose. The method generally adopted appears to be that of reproducing a large sheet of written or printed matter upon a tiny transparent film, either of glass, mica, or some such material; and this, on reaching its destination, either by pigeon, or, not improbably, by some other two-legged messenger, may be at once amplified to its original dimensions, either by means of an enlarging

camera, or a simple microscope, the observer, in the latter case, dictating the contents of the despatch or letter to an assistant. Microscopic productions of this nature, if carried by messengers or spies through an enemy's lines, would scarcely ever be discovered, even on the most searching personal examination being instituted, and could therefore be carried by anybody, almost with impunity. One remembers, no doubt, the little toys exhibited at the last Paris Exhibition, in the shape of these micro-photographs. In some instances, as many as four of these minute pictures, together with the necessary lenses for viewing the same, were to be seen mounted at the top of a penholder, and selling for the sum of one franc, proving, beyond doubt, that facilities exist in the French capital for the plentiful production of these little marvels at a very cheap rate indeed.

Thanks, therefore, to science, in the shape of micro-photography and balloons, communication between Paris and England has been as frequent and as rapid as between this country and the Prussian head-quarters at Versailles.

Passing to more peaceful matters, we find photography has recently been playing a most important part in astronomical observations. During the Eclipse expeditions last month, which, unfortunately, have proved somewhat unsuccessful, we find that, whatever results may have been obtained, the photographic portion of the work has certainly been the most satisfactory. And there is no doubt that the art will hereafter be used for nearly every description of astronomical observation. At first the sun's disc, and the portions thereof eclipsed from time to time, was all that it was sought to register; but now we employ the photographic apparatus for demonstrating the nature of the sun's spots, and to give, indeed, their whole history—how they pass over the sun's disc from one side to the other, to reappear after a given period; how those marks change their shape, multiply, and decrease, and appear more or less brilliant from time to time; and how the distances between the spots vary from day to day. The sun's spectrum is also obtained by photography, the picture thus obtained being in many respects different to that seen by the eye, inasmuch as certain lines and colours but imperfectly rendered upon the retina are produced with much clearness and sharpness upon the sensitive film. Lastly, we have the fact of the protuberances of the sun being actually photographed in open daylight by Professor Young, of America, whose results, although no doubt at the present moment very imperfect, prove, without doubt, the feasibility of the operation; and, with better apparatus and arrangements, there is every hope that some truly serviceable pictures will be capable of being produced under these circumstances.

One more application of photography deserves mention: the aid which the art has commenced to render for purposes of scientific instruction, especially in connection with the medical profession. Preparations and objects of a minute character, usually shown in medical schools by the aid of the microscope, are now being reproduced in the form of diagrams, whose value will be very great indeed for demonstrations. As may readily be supposed, the employment of a microscope, or even half-a-dozen of such instruments, in a class room, is an exceedingly awkward, and, at the same time, unsatisfactory, means of instruction, apart from the fact that many medical preparations which it may be desired to demonstrate to the students are not always to be had just at the moment when they are required. By using, however, large photographic diagrams, obtained from objects of the most perfect character, the peculiarities which it may be desired to point out are seen at once clearly and distinctly. We believe Messrs. Robinson and Thompson, of Liverpool, whose beautiful micro-photographs attracted such general attention at the last meeting of the British Association, are at present engaged in depicting objects of this kind, interesting to the surgeon and physician, to serve as illustrations at the lectures in

the Loudon hospitals. Certain it is, that pictures taken in this way of carefully prepared specimens will be a very great boon, both to students and professors.

Such are some of the more recent applications of photography to matters of infinite importance, in which the art adds very greatly to the end attained. And thus we see that while the photographer is still making strenuous exertions, on the one hand, to earn some title to be admitted as a votary of art, he does not, in the meantime, forget his duty, in rendering assistance in matters of a scientific and technical nature.

Foreign Miscellanea.

THE *Photographische Correspondenz*, the principal Viennese paper, has passed from M. Schrank into the hands of Dr. E. Hornig, who will in future be the editor. A resolution was passed at the last meeting of the Vienna Photographic Society, to the effect that the *Correspondenz* should still be considered the official organ of that body, and have the support of the members. Dr. Hornig's contributions to photographic literature are well known, and his scientific attainments are a good guarantee of the manner in which the duties he has assumed will be fulfilled.

A critique of the London photographic exhibition has been communicated by a correspondent to one of the German journals. It is a very favourable notice, and speaks highly of the different works shown, although no comparison is made between English photographs and those produced abroad.

The Victoria card, or mount, between the sizes of a carte and a cabinet picture, which, by the way, is receiving much more attention abroad than at home, has been highly approved by the Vienna Photographic Society. In adopting it, a proposition was made to give it the designation of "Elizabeth card" by M. Fritz Luckhardt, the well-known Austrian portraitist, who has already adopted the dimensions for the bust pictures for which he is so famous.

The cameo medallion picture, of which we recently gave a description in the PHOTOGRAPHIC NEWS, is becoming a favourite *format* in Germany, and bomb-presses, for the stamping of such productions, now form one of the ordinary requisites of photography.

Exertions are being made in Austria to ensure a good show of pictures at the forthcoming International Exhibition to be opened in London next year. Applications are required to be made at once by intending exhibitors, who must specify the amount of space they intend to occupy.

M. Fritz Luckhardt has been permitted by the Empress to take the title of Imperial Photographer, in acknowledgment of the high class character of his photographic work.

It is rumoured that M. Reutlinger, whose beautiful cabinet pictures enjoy world-wide reputation, and who was obliged to leave Paris some short time before the siege, will shortly open a studio in Vienna.

A *Photographische Jahrbuch*, or year-book of photography, is announced to appear in Vienna, modelled, no doubt, upon our own little volume. The price of it is advertised at two shillings, and it will contain all information necessary for carrying on practical photography. Dr. Hornig will, it is believed, be the compiler and editor.

M. Leth has worked out a process of enamel photography, which he communicated on a recent occasion to the Vienna Society; he likewise illustrated the method by executing before the eyes of the members a perfect specimen of the process.

In the *Correspondenz* for December appears a long article by Dr. E. Hornig on the production of oxygen from various sources, bearing especially on the question of printing or enlarging by means of artificial light.

M. Baden writes to the *Photographisches Archiv* to defend his claim to having first suggested the employment of washed and fumed albuminized paper. It will be remem-

bered that M. Haugk disputed the statement of M. Baden, and hence the discussion.

A beautifully plastic and brilliant effect in photographic prints has been secured by Dr. Szekeley, who has, however, patented the method for obtaining the same. His motive for obtaining protection is for the purpose only of recovering such amount of money as his experimental researches have cost him, and he offers, therefore, to allow any one to practise the process on payment of ten florins.

From France nothing of photographic interest has been received for some time past.

PRACTICAL WORKING OF THE COFFEE PROCESS.

BY R. TUDOR WILLIAMS.

I HAVE much pleasure in forwarding the following details of the coffee process as employed by me, but I must also say that I have no new information to give—in fact, nothing but what has been many times stated by abler men than myself. I briefly state the method and formulæ I have found successful.

I clean the plates as directed by Mr. Jones, Marlborough, and coat with his tunicare, which, as I have before said, is an excellent substratum for dry collodion.

The collodion I use is either Thomas's or Rouch's; either answers admirably.

The bath is made of—

Nitrate of silver, pure	40 grains
Water, distilled	1 ounce,

iodized in the usual way, filtered, and made slightly acid with nitric acid.

Infusion of coffee (Baratti's)—

Coffee	1 ounce
Best white sugar	$\frac{1}{4}$ "
Boiling water	10 ounces

When cold, filter for use. I do not like to use this infusion when it is more than a day old. The most convenient way of using this preservative is in a dipping-bath.

The exposure, I have found, in a good light, to vary from four to six times more than that required for wet collodion.

I use an *alkaline developer* (the one recommended by M. Carey Lea, in his most excellent book) made as follows:—In bottle No. 1 make a *saturated* solution of carbonate of ammonia in *tepid* water; if the water is too hot it will decompose the carbonate of ammonia.

In bottle No. 2—

Pyrogallie acid	300 grains
Alcohol	5 ounces

In bottle No. 3—

Bromide of potassium	$\frac{1}{2}$ ounce
Water, distilled	20 ounces

All these solutions should be filtered and labelled; they all keep well.

I make this developer of different strengths, according to light, subject, &c.; but, perhaps, as a general rule, the following formula will answer best:—

Water, distilled	6 ounces
Saturated solution of carbonate ammonia (bottle No. 1)	$\frac{1}{2}$ drachm
Alcoholic solution of pyro (bottle No. 2)	$\frac{1}{2}$ "
Solution of bromide of potassium (bottle No. 3)	$\frac{1}{2}$ "

I recommend sufficient of this developer to be made (just before use) to admit of its being employed in a flat white dish. Should the image appear very slowly, half a drachm from each of the bottles Nos. 1 and 2, but not from No. 3; if necessary twice this quantity may be used; or should the image, on the other hand, develop too rapidly, immediately take the plate out of the solution, and add one

drachm from bottle No. 3 (solution of bromide of potassium); this, to a certain extent, will stop over-action of light on the plate got in the camera.

As soon as all details are well out by reflected light, thoroughly wash away this developer.

This phantom image—for it is but a phantom—is now to be intensified in the usual way with acid, pyro, and silver; by this means printing strength is rapidly obtained.

The three most important points in the coffee process, as in most other dry processes are—1st. Carefully washing of the plate after it leaves the nitrate bath: the means I think most effective is to use a dipping-bath for this purpose, and to wash until the surface of the plate is quite smooth (this water may be used for six plates), then transfer it to a dish of common soft water, which water must be changed three or four times (by this means the plate can be rapidly washed), finally flush with distilled water, and apply the preservative, which is most conveniently done by a dipping-bath. The reason I advocate thorough washing is, that I believe free nitrate of silver in the film is not necessary to the formation of the latent image; therefore the more perfectly it is removed the longer the plate will keep, and the more perfect will be the result in the end.

2nd. The absolute necessity of perfect drying, for I believe that many dozens of otherwise perfect plates are completely spoiled by imperfect drying. The best plan I know is that recommended by Mr. Carey Lea, viz., round the inside of the drying-box arrange tumbler-glasses, one for each plate to be dried, and when the last is set on its tumbler, place a dish in the middle containing about one pound of sulphuric acid, but the dish should be large enough to hold twice the quantity. The same acid may be used three or even four times. I generally prepare my plates in the evening, and they are always quite dry the next morning.

3rd. That an alkaline developer should be used; it has so many advantages over the old methods: the exposure is much shortened, more even development is ensured, the plates give better results after long keeping, and there is greater freedom from stains.

I sincerely trust that my hints found in the above may prove of use to some of your readers.

DISSOLVING VIEWS WITH ONE LANTERN.

BY J. MARTIN.

I SEE that the proposed method of Mr. Powell for producing dissolving effects with one lantern has begot him some smart raps from the pens of Mr. B. Jones and "Silvester." Although Mr. Powell displayed a want of caution, still I think neither of his critics is justified in taxing him with untruthfulness. His supposed invention satisfied himself, and he hastened to offer freely to your readers what he considered a valuable idea. Does he deserve insult for this? I think not. Let him exercise his ingenuity in other directions, and I for one shall be happy to congratulate him upon the production of any useful addition or improvement, and render him any assistance through your pages.

When an idea is put before the public from an obscure source it should be taken for what it is worth, and weighed by reason and experience; and those who elect to try the experiment ought not to vilify the author should it turn out a failure, but blame their own rashness for rushing into expense without due consideration; and if actuated by a mean desire for cheapness at the expense of convenience and efficacy, their losses are well deserved.

I fear that parsimony has been the cause of many of the childish subterfuges proposed to the photographic public. I have read that it is possible to bottle up light. Suppose some one tries to extract sunbeams from cucumbers! Should he succeed, he would be the greatest benefactor to photography ever known, as its professors would then be independent of all expensive artificial sources of light—a

benefit which, in this dull weather, would be beyond appreciation. But, as a caution, the remedy must not prove more costly than the evil, as it did with the inventor who, to save human labour, built a steam engine to cut cabbages—*verbum sap!*

I feel sure that it would be more satisfactory to the public, and more creditable to the common sense of inventors, if the titles of their productions, instead of being, as they generally are, composed of a conglomeration of syllables from words in an obsolete language, were as suggestive of their purposes as that of the dissolving view lanterns. The child must be young indeed who does not comprehend that the verb to dissolve means to melt away. In the English language there are many synonyms. In this instance it is not disintegration that is to be understood, but a fading or being gradually lost to sight. This effect may be produced with a single lantern by slowly passing a dagger-shaped piece of dark-coloured glass over its nozzle; and, when it entirely covers it, allow it to rest there by a properly shaped handle until the slides have been shifted, then slowly withdraw it. This device does away with the bold white disc of light which is seen when no picture is in the holder, but leaves the audience in some darkness in the interim.

This effect is more properly obscuration than dissolving, which not only requires that one picture should be fading away, but also that another shall be growing visible in its place, and that they shall be so magically intermixed that the eyes of the spectators do not perceive where the one ends or the other begins. Two pictures passing across each other in juxtaposition will not effect this; they must, on the contrary, be placed separately, each having its own light and lenses, and be subject to the influence of a properly constructed dissolver, which latter must be placed without the focus of the lenses, so that the effect may be soft and weird-like. There are various forms of dissolvers—in fact, most manufacturers have some special form peculiar to themselves—but the purpose in all is the same, but their completeness and efficiency vary greatly. The simplest form is that of the fan; but a dissolver, to be really of service, must be so constructed as to allow the two pictures—or, rather, the picture and its effect—to be seen at the same time when required, as, for instance, in showing the slide of the "Soldier's Dream," &c. Of all that I have tried, I prefer one invented by a clever friend: it is of simple construction, and can be applied to any pair of lanterns. I fear to enter into description, as without drawings it might prove unintelligible, and, I fear, would require too much space at present.

106, High Street, Ilfracombe.

INTENSIFYING NEGATIVES.

BY ELBERT ANDERSON.

MR. ANDERSON'S last conversation with his pupil, in our Philadelphia contemporary, is on the subject of "strengthening" negatives, a practice which, as a rule, he does not approve. Addressing his pupil, he asks—

Why do you "strengthen," or, rather, what is the effect of "strengthening," as you call it?

Marshall, the Pupil. Why, it makes the negative stronger or more intense when it's too thin; don't it?

A. No, and yes. It makes certain negatives only stronger.

M. I thought it made all negatives stronger.

A. No, Marshall, you are wrong, though it is very natural for you to think so. It does not strengthen all negatives, as its name implies. Certain negatives undoubtedly require it, but in portrait photography most of these thin and beautiful negatives are totally ruined by any attempt to strengthen them. There is a certain class of photographers who strengthen every negative they make; and if you ask them why, they look down, and confused, and say because—well, because they always do it. A capital reason (!), though somewhat unsatisfactory.

M. Will you please enlighten me on this subject?

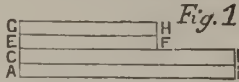
A. In copying engravings, wood-cuts, cards, printed matter, &c.—in fact, any matter that is simply black and white—in order to make the contrast brilliant it is essential that the white of the paper be kept clear, and the negative must, in consequence, be very intense—*i. e.*, opaque; a first strengthening with pyro before fixing, and a second application of mercury afterwards, may, therefore, become imperative. Now tell me exactly, what takes place when we strengthen a negative?

M. Yes; it makes an additional deposit of silver all over the negative, thus rendering it more intense.

A. Now you see that if you think so, it is perfectly natural for you to strengthen a weak negative; but the fact of it is, that it does nothing of the sort.

M. Well, then, I might just as well hang up the fiddle and the bow. Please tell me what it does do.

A. I will, by the aid of some diagrams which almost explain themselves. Let A B, fig. 1, represent your glass; C D, the



coating of iodized and sensitized collodion; and you are about to copy an engraving, printed matter, or anything that is simply black and white. You have now poured on your developer, which has deposited only on the lights—*i. e.*, what will represent the white of the paper in the proof, and is seen at E F—whilst that part representing the blacks of the printed matter will receive no deposit, and is represented by the clear space between F and D.

M. Just so.

A. Now, as most probably will be the case, the deposit of silver, E F, will not be sufficiently opaque to entirely obstruct the light during printing; and in order to remedy this, we strengthen it by an additional deposit, G H.

M. Well, that's exactly what I said; but you said it did nothing of the sort.

A. Gently, gently: you said it made an additional deposit of silver all over the negative, whereas this deposit has taken place only on the lights, proportional to the first deposit; and thereby hangs a tale.

M. Please put a head on it.

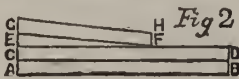
A. Now listen to me. In the first instance, as the negative represents only black and white, the deposit is equal in thickness on all the lights.

M. Surely.

A. Consequently, the additional deposit is also equal in thickness. So far, so good. But with a portrait negative the case is wholly different.

M. How so?

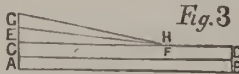
A. Let A B, fig. 2, represent the glass, C D the collodion



film, but, in this case, the deposit of silver is represented at E F, not as a flat surface of uniform thickness, but with an infinite gradation of light and shade, the highest lights being represented at E, gradually tapering down to F, and the perfect shadows by F D, or the clear film. Now what is the effect of the strengthening?

M. Why, an additional deposit, represented at G H.

A. And that's just where you are wrong. The additional deposit, as I said before, is only in proportion to the first deposit, and can be at once understood by a glance at fig. 3, showing



the additional deposit follows the principle of the first, and tapers away to the clear film, where, as you say, no deposit takes place. Now, then, when you have a good negative, with the proper contrast of light and shade, let it be as thin as gauze. Any attempt to strengthen it tends at once to destroy the proper balance between the lights and shades, and the nature of the negative is changed, or, in plain terms, ruined. But if you have a negative that is flat and thin, and in which the contrasts are insufficient, strengthen that negative, and you will increase the brilliancy; but, better still, don't make that

kind of negative. And now for one of my standard rules: "All the chemicals and skill in the world will fail to produce a really good negative if the subject is not properly lighted in the first place."

BICHLORIDE OF PLATINUM FOR INTENSIFYING.

BY T. W. WILKINSON.

THERE has always been a want felt for an intensifier for negatives that have been exposed and developed to a nicety, all details in the shadows quite distinct, the high lights and half tones full of gradation, but just lacking density sufficient to give a vigorous print. Pyrogallic acid and silver, or iron and silver, if used before fixing, are apt to clog up the half tones and spoil the negative; if used after fixing, very great care is requisite, or red fog speedily ruins the negative. Pyro also must be used in the dark room, so adding another chance of failure. Iron certainly may be used in white light, but if the negative be not perfectly washed, red fog quickly supervenes. To obviate all these difficulties an intensifier has been wanted that, without increasing the thickness of the deposit, would give to both high lights and shadows a non-actinic colour that would render the negative dense enough for printing without clogging up the delicate half tones. Mr. Simpson's bichloride of platinum intensifier—

Bichloride of platinum	...	...	4 grains
Water	...	...	1 ounce

neutralized with carbonate of soda and rendered acid with nitric acid—completely fulfils these conditions, working well and quickly. The colour of the deposit being the same as when iron or pyro is used, makes it easy to use; and the operation of intensifying being conducted in white light, the proper amount of intensity is obtained with more certainty than when operating behind the yellow window of a dark room.

IMPROVEMENTS IN THE MONCKHOVEN ENLARGING APPARATUS.

At the November meeting of the Vienna Photographic Society, Dr. Van Monckhoven announced the progress he has recently made towards perfecting the lighting arrangements of his oxy-hydrogen apparatus. His communication was as follows:—

"A year has now passed since I had the honour of reading a paper before you on a new artificial method of lighting, especially suited for enlarging purposes. I then recommended the use of titanate acid mixed with magnesia, pressed into pillars by means of the hydraulic press; of this material I have here several samples, but its costly nature has prevented its regular employment.

You will remember, perhaps, that I employed, in the first place, instead of lime, which is used in the Drummond light, parallel pipes of pressed carbonate of magnesia, and afterwards some of dense dolomite taken from the Kaiserstuhl mountain in the Grand Duchy of Baden. Of these I produce a series of specimens, and, when taken in the hand, there will be found to be a material difference between the artificial and natural compounds. It will, moreover, be remarked that the new specimens are light and porous, while the others are hard and dense.

"The lighter material presents a serious difficulty from the fact that it is very easily burnt, or, in other words, is rendered much denser on the influence of a high temperature. This experiment I will conduct in your presence by allowing the oxy-hydrogen flame to act at the same time upon a porous and dense magnesia column. Although it will be perceived that the former yields, in the first instance, a more brilliant light than the heavier one, this advantage is only momentary, and it becomes necessary very soon to alter the

focus of the enlarging apparatus, a difficulty required to be overcome every quarter of an hour; moreover, this modification of the flame, if not very nicely regulated, will have an injurious influence upon the sharpness of the enlargement.

"For this reason it would appear to be best to prepare artificially the material of a dense nature, and in the following manner:—

"Two kilogrammes of English caustic magnesia are mixed with one kilogramme of carbonate of magnesia (magnesia alba) in lumps, together with half a litre of water, and kneaded with the hand into a dense and uniform dough; in this condition it is put into a shallow box and pressed in a suitable screw press—as, for instance, a letter copying press—and then cut up into suitable pieces and dried by placing in an oven for a few days, and afterwards subjecting them for about half an hour to a red-hot heat.

"The pieces of magnesia which I have now with me have been prepared in this manner, and are, as you will see, perfectly uniform, and consumed but slowly; they are, however, burnt away by degrees, and it would be much better were they preserved intact in the flame of the oxy-hydrogen lamp. This last condition I have recently been able to fulfil.

"I thought that the admixture of a body capable of withstanding fire to the carbonate of magnesia would secure greater protection to the same, and in this hope I applied silicic acid, chromic acid, alumina, and lime. The last named substance gave me the most favourable results, especially when there is a well-pronounced trace of oxide of iron therein.

"In nature we find in many places whole mountains made up of carbonate of lime and carbonate of magnesia, containing also, as a rule, traces of oxide of iron, silicic acid, and other materials; even in the environs of Vienna geologic formations of this description are to be met with. These dolomites I now employ in a burnt condition; only the porous quality of this material should be selected which does not appear too heavy when calcined. The fire of the oxy-hydrogen flame penetrates this compound without consuming it too rapidly.

"We have, it is true, a somewhat less amount of chemical rays in our light than previously, but then, on the other hand, we can depend more implicitly upon its permanence, so that after the apparatus has once been set in working order it is no longer necessary to keep a continual watch over its action. The progress thus made will, moreover, so simplify the working of the instrument that it will be preferred to one requiring the aid of a heliostatic arrangement; the light is permanent, brilliant, and quiet, as I demonstrated last year, and the apparatus is so constructed that no fear of danger need be entertained.

"While occupying your attention, gentlemen, I have placed a sheet of paper, prepared with arrowroot and chloride of sodium in the well-known manner, in the fields of one of my enlarging lamps. The sheet measures 55 by 90 centimetres (22 by 36 inches), and the negative employed is a small bust portrait of carte-de-visite size. I purposely chose an enlargement of notable dimensions in order to render at once apparent the progress that has recently been made; the process has now proceeded for less than half an hour, and the image, which is now well defined, will be developed and fixed in your presence, so that you may perceive that the operations are as easily conducted as with collodion, and the tone of the prints as pleasing almost as that of albuminized paper.

"I may therefore flatter myself with having solved a problem with which photographers have been busy for some time, viz., the production of enlargements in the winter time independently of sunlight. The light is easy and simple of production, very permanent, unbeset with difficulties, and capable of furnishing positive prints in a safe and efficient manner.

PHOTOGRAPHIC PROCESSES OF THE PRESENT DAY.*

The last two or three years will certainly mark an era in photography, for not only have several novel and important printing methods been discovered during that period, but other processes of less recent origin have of late been so elaborated and improved as to have become at the present moment practical and easy of manipulation. All of these are, without exception, based upon the action of light upon the bichromates of potash and ammonia; in no single case is the use of a silver salt involved—the agent employed for securing the photographic image in ordinary paper printing—and this is, in truth, a point whose value cannot be too greatly insisted on; for the silver print, be it washed and freed as thoroughly as possible from any deleterious bodies, will always suffer, more or less, from attacks of an impure atmosphere, the delicate metallic film of which the image consists being peculiarly liable to change, from the sulphur compounds and other impurities not unfrequently contained in the air we breathe. And even those silver pictures which do not at first show actual traces of fading or discolouration, will very soon be found, on careful examination, to have parted with some of their original brilliancy, and to lack the pristine freshness which always characterises newly-produced albuminized prints.

It is a great step onwards, then, to have at our disposal practical processes in which the employment of silver may be altogether dispensed with, by the substitution of another material of a more permanent character, either in the form of a chromium compound, or, what is better still, in the shape of gelatinous or greasy ink; and so clear and promising does the photographic horizon appear just now in this direction, as to leave little ground for doubting that before long the practice of printing in silver will be generally abandoned.

All recent printing processes rest, as we have before said, on the action of light upon the bichromates. And here we would parenthetically refer to a simple and familiar experiment which will help very materially to simplify our subsequent remarks. The well-known plan pursued by school boys for printing fern leaves and other objects by the aid of the sun, will readily be called to mind by many of us, and this simple manipulation it is that forms the groundwork of the whole series of inventions before us. A sheet of ordinary paper, which has, of course, been sized, or, in other words, received a thin coating of gelatine, is rubbed over with a solution of bichromate of potash; the latter, as we know, when mixed with any organic body, renders the same sensitive to light, and the sizing or gelatine upon the paper becomes in this way endowed with excitable properties. Having been dried in the dark, our sheet of paper is next placed in the sun with the fern leaf, or other object to be copied, pressed down upon it, and the light acting upon all such portions of the sheet as are not covered up, browns the gelatine there, and renders it insoluble; the sizing underneath the leaf, and screened, therefore, from the light, escapes this reaction, and remains soluble, and this, on the printing being completed, and the paper washed in water, is at once dissolved away, there remaining a white image of the leaf upon a brown ground composed of bichromated gelatine rendered insoluble by the sun's rays. This experiment may be regarded as the key to the whole question of photographic printing, and, by bearing it in mind, the reader will have no difficulty in at once comprehending the various inventions of the kind just now being made public.

The first method claiming our attention is the so-called carbon process. Photographic printing of this nature in one form or another has been carried on probably for upwards of fifteen years; but in its experimental stage the mediocre character of the results furnished by it were such as to deprive the system of any material support from

* *Nature.*

photographers, and until, in fact, Mr. J. W. Swan, of Newcastle, made known his method, no easy or reliable *modus operandi* can be said to have existed. The plan followed by Mr. Swan was to prepare a warm solution of gelatine and bichromate of potash mixed with some finely divided pigments—such, for instance, as Indian ink—and apply this mixture in the form of a coating to a sheet of paper, so that when dry, the tissue, as it is called, assumed the form of a thin black cake with a paper backing. This sensitive tissue was placed under a negative to print in the ordinary manner, the light penetrating in parts to a greater or less degree, and thereby rendering the surface partially insoluble. On removing the tissue from the printing frame, it might, if it were desired, be forthwith washed to remove the soluble portions (as in the case of the fern leaf experiment), but by so doing the picture would be hard and deficient in detail, and, therefore, a slight modification is here instituted. Instead of washing away from the face of the tissue, the operation is pursued from the back, the film being, in the first place, cemented face downwards upon a sheet of india rubber, and in this condition put into a tank of warm water. The original paper backing of the tissue is in this way at once washed off, as is also every part of the gelatine mixture not rendered insoluble, which latter, constituting the image itself, remains attached to the india-rubber sheet before mentioned. The picture is now sufficiently developed, and, indeed, quite perfect, except that it is reversed to our view, for we are looking at it, it must be remembered, from the back; this defect is, however, easily remedied by attaching to the image another sheet of paper by means of gum or gelatine, and then dissolving off the india-rubber facing by means of benzole or turpentine, when the finished image is obtained resting upon a support of white paper. The object of washing the carbon tissue from the reverse side, and not from the front or surface exposed to the sun, is to secure the finer details in the picture by fixing at once to a basis such portions of the tissue as may have been but very slightly acted upon, and thus prevent them from being ruthlessly washed away when placed in warm water.

The actual composition of pictures produced in this manner consists of gelatine, pigment, and a stable chromium compound, the gelatine being in a fixed or tanned condition, by a subsequent immersion of the prints in a solution of alum, and thus there is every reason to believe in the permanent character of such prints. A more simple and ready method of carbon printing has been lately invented by Mr. Johnson, and termed the Autotype process, but the principles involved therein are nearly the same.

Passing from printing in permanent pigments—in which, as in silver printing, the aid of light is necessary for the production of each separate picture—we come next to photo-mechanical methods. Of these there may be said to be two kinds, partaking of the nature of lithographic and engraving methods. Of the first description we may mention three modes of working, all of which are capable of yielding very creditable specimens of printing: these are Albertype, the Lichtdruck process, and Edwards's collographic method. The three inventions, which differ from each other and from minor plans of a similar nature only in a few details, are all based on the same principles. A sheet of patent plate glass is, in the first place, coated with a thick solution of bichromate of potash and gelatine; this film, on drying, is placed face downwards upon a sheet of black paper in the sun, and in this way the light rays penetrate the glass and act upon the sensitive compounds adherent to its under side. The bi-chromated gelatine becomes insoluble and firmly cemented to the glass, except on the exterior surface, for the black paper upon which this has rested absorbs the rays, and leaves the outer film of gelatine still in a soluble condition. A second coating of the sensitive gelatine mixture is now applied to the former one, to which it adheres perfectly, from the fact of the first surface being unchanged, and upon the second coating an image is printed by means of a

negative in the ordinary manner. After printing, the progress of which, by-the-by, may be watched through the glass, instead of washing the surface and dissolving out all the soluble parts, a sponge dipped in cold water is simply rubbed over it, the moisture being absorbed by the gelatine where it has not been acted upon by light, and is capable, therefore, of swelling out; those portions of the film, on the other hand, which have been rendered quite insoluble and hard, are unable to take up any water whatever, and remain untouched, therefore, by the action of the sponge; while other parts again, slightly exposed to light, absorb water just to that degree to which they have remained soluble. In this condition an inked roller is passed over the surface, in the same manner precisely as in lithography, the greasy ink adhering to all the insoluble surfaces (where no water is), and to the other parts in a greater or less degree, according to the amount of water present in those places. Thus the gelatinized glass is treated in every sense like a lithographic stone, being moistened, inked, and pressed in the same manner; the resulting print, however, is generally finer than that obtained in ordinary lithography, as the graining of a stone surface is always somewhat coarse, while in the present instance the breaking up of the ink by the minute pores of the gelatine impregnated with moisture is of an exceedingly fine character. Many thousand prints may be pulled off a printing block of this kind before it is destroyed, as the double layer of gelatine imparts a yielding nature to the plate which is not easily damaged; in Germany, in England, and also, we believe, in America, this process of photographic printing is extensively practised.

But by far the most important of all methods yet discovered is the Woodbury engraving process. So simple, and, at the same, so perfect in its work, a casual observer cannot fail at once to appreciate its value. A thin sheet of gelatine is sensitized by impregnation with bichromate solution, and exposed to light under a negative; subsequent immersion in warm water removes the soluble portions from the surface, and we have then a thin gelatine plate upon which the image is represented, more or less, in relief. This matrix, as it is called, is hardened by treatment with alum, and placed when dry in a hydraulic press, in contact with a plate of type metal. Subjected to considerable pressure, the metal plate takes the impression of the relief, and thus becomes in every sense an engraved plate, in which the darkest shadows are represented by the deepest hollows, the half-tones by slight undulations, while in the high lights there is no depression at all. The printing off of copies from this engraved plate is very ingeniously contrived. A little pool of transparent gelatinous ink is poured upon a sheet of white paper, and the metal plate is brought down upon the same with some pressure; all superfluous ink is at once pressed out, and after a pause of a few seconds to allow the warm ink to cool and to become set, the plate is again raised, and a beautifully shaded print is the result, in which the shadows and half-tones are formed by layers of ink of different thicknesses; for inasmuch as the ink is of a transparent character, and there is more or less of it deposited upon the paper according to the depths of the hollows in the engraved plate, so the half-tones are rendered with perfect gradation and fidelity, while in the high lights, almost all the ink having been pressed away and removed, there remains nothing but the white paper which forms the basis of the print.

By printing at once from many plates (for a gelatine matrix will yield several dozen of them), photographs may be printed at the rate of some thousands daily, without, of course, the assistance of light in any way. Moreover, the productions are of so perfect and delicate a nature as to be confounded actually with silver prints, being, at the same time, absolutely permanent. We are glad to say that this method is also being worked practically and extensively in this country, as also in France and America, and will, without doubt, be the process of the future; for it is indeed

the only mechanical process by means of which photographs may be rapidly produced, possessing the same degree of excellence as the beautiful, but, alas! too fleeting, albuminized pictures.

ON VARIOUS PHOTOGRAPHIC SUBJECTS.

BY M. CAREY LEA.*

I.—COLLODIO-BROMIDE DRY PLATES.

DURING two or three years past I have expended a very large amount of time and trouble in testing the effects of a very wide range of substances as preservatives for dry plates, especially of collodio-bromide dry plates. I found many substances giving excellent results.

Litmus I have already spoken of. It gives very fine, soft negatives, yielding pleasant and harmonious prints. The prints of mine which were exhibited at the Cleveland exhibition were all from plates prepared with this preservative. I found, however, by use and familiarity with the process, that the invisible image lost strength more rapidly on litmus plates than on those prepared with other preservatives. This cause, and the discovery of other modes of preparation free from this objection and more sensitive, have led me to give up litmus.

Cloves.—I mentioned some time back that a decoction of clove-heads, made with hot water, and filtered after standing a day with the cloves, gave excellent results: clean, bright negatives—less sensitive, however, than—

Flavin.—This substance gives very sensitive plates, more sensitive than either tannin or litmus. (Flavin is a dye-stuff prepared from oak-bark. It is, by some writers, considered to consist chiefly of quercitrin, by others of quercetin. This last is a decomposition-product of the former. Quercitrin, when heated, splits up into quercetin and a saccharoid body. From my observations I should say that flavin consists chiefly of quercitrin, not of quercetin). But the use of flavin is liable to a very curious objection. If the sky be much over-exposed it becomes honeycombed with curious lines, resembling a sort of mosaic. This took place, at least, with the pyroxyline which I use. Perhaps with a collodion exactly suitable this might have been otherwise. This preservative should be used in conjunction with gum and sugar—ten or twelve grains each of gum and of sugar to the ounce. The same with—

Carmin-Sulphate of Lime.—I now come to the most sensitive and best of all the preservatives that I have been able to find. It is prepared by treating cochineal insects with fuming sulphuric acid, diluting and neutralizing with lime. The details are as follows:—

Grind up one and a-half ounces of good, clean cochineal in a mortar with one fluid ounce of fuming sulphuric acid. As the paste becomes thick, add gradually more acid until in all two fluid ounces have been added. When well mixed up, transfer into a clean, dry, wide-mouthed vial; wipe the inside of the neck, cork, and set in a vessel of hot water; set aside for a week, then stir well up with water, add slaked lime till the mixture turns red litmus paper blue; throw on a filter, and add water until the filtrate fills a half-gallon bottle (eighty ounces is the usual contents of what are sold as half-gallon bottles); add a quarter of an ounce of carbolic acid.

The amount thus obtained will last even an active and energetic worker for a very long time. To use it and prepare a preservative bath for whole-size plates, take—

Above solution	...	...	...	$\frac{3}{4}$ ounce
Water	...	...	...	7 ounces
Gum, sugar, each	...	...	...	80 grains

Plates prepared with this preservative are about twice as sensitive as those made with tannin, gum, and sugar. They differ from all other collodio-bromide plates in this: that in all others the image is of a brown colour. In plates prepared after the above formula there is not a trace of

brown; the plates are pure grey-black. I have never before seen this shade in dry plates: they print softly and well, with no tendency to harshness.

Although carmine is not supposed to be one of the substances capable of forming a copulated compound with sulphuric acid, yet it appears most probable that it does. The above process yields abundance of an organic lime salt, very distinguishable from sulphate of lime by its ready solubility in water. And this ready solubility of the lime salt is generally a characteristic of copulated sulphuric acids, and furnishes an easy mode of distinguishing them from the almost insoluble ordinary sulphate of lime.

Sensitive Mixture.—I find with these very sensitive preparations that the collodio-bromide mixture may be made much thinner, and in this condition it is easier to make a smooth plate. I recommend:—

Ether, concentrated	...	...	8 ounces
Alcohol, 95 p. c., pure	...	...	4 "
Ordinary crystallized bromide of cadmium (Cd. Br. + 4HO)	...	...	1 drachm
Bromide of ammonium	...	...	12 grains
Intense pyroxyline...	...	...	84 "

This should be kept at least a month in a warm light room. When wanted for use, take out such portion as may be wanted, and sensitize in hot weather with nine grains nitrate of silver, in cool or cold weather with ten grains. This still leaves a large excess of nitrate of silver, as the exact equivalent of the bromides in an ounce of the collodion is between six and seven grains of nitrate of silver. Dissolve this nitrate, which should be in fine powder, in 95 p. c. alcohol, allowing a quarter-ounce to each nine or ten grains as the case may be. Add, at first, about half the alcohol, boil gently and carefully over a gas flame. As soon as it boils, remove and agitate carefully. When the alcohol seems pretty well saturated, pour off into the collodion. Next add more alcohol, and repeat till all is got in. This is the only mode of operating which actually gets the nitrate of silver into solution; other methods leave a considerable amount undissolved, and, therefore, comparatively useless. One good shaking after the addition is sufficient. The mixture should stand eight to twelve hours before being used. It is safest not to keep it longer than twelve hours.

Before, however, adding the nitrate, it is necessary to acidify the collodion with aqua regia. The use of nitrate of silver in excess (that is, beyond what is necessary for the complete decomposition of the bromides), and the acidification, form the distinctive features of my method of working the collodio-bromide process. They cannot be separated, but supplement each other. The use of nitrate of silver in excess gives great sensitiveness, but if the acid were not present, the plates would fog. It is important to bear this fact clearly in mind: if the aqua regia is forgotten, every plate must be expected to fog. The proper proportion of aqua regia is two drops to the ounce of collodion.

With a good light, these plates are as sensitive as wet collodion plates. The development is, of course, by the alkaline method.

Keeping Qualities.—The keeping qualities of these plates are very satisfactory. On November 25th I developed a plate which had been made on the 10th August, and was, therefore, three and a-half months old. It did not appear to have lost in sensitiveness, and was clean and clear of fog.

II.—DUST.

I believe that dust floating in the atmosphere occasions more annoyance to the photographer than is often realized; that is, that troubles really arising from dust are often attributed to other causes—for example, to imperfect filtering. A glass plate is thoroughly cleaned, well brushed with a flat camel's-hair brush, and then coated. Although the collodion was supposed to be all right, yet as the coat sets, it shows somewhere a little knot or warty place,

* Philadelphia Photographer.

perhaps more than one. Now, that this may have arisen from imperfect filtration is certain, but it much more often results from motes or filaments of dust settling on the plate in the moments that intervene between brushing off and coating. In a weak light of the dark room it is difficult to see dust in the atmosphere; even in a room ordinarily lighted it is not easy, but if a glass plate be held in bright sunshine, and be then brushed and coated, the agency of the dust becomes at once apparent.

So pinholes are sometimes caused by dust in the camera setting on the plate. This effect is more generally understood than the former.

In varnishing negatives it constantly happens that, although the negative may have been brushed off immediately before applying the varnish, and though the varnish may be perfectly bright, nevertheless, the coat, as it dries, shows irregularities. These, when examined with a lens, will generally be found due to a little filament of wool coiled up in them, and arising from the wear and friction of clothes or carpets.

ANOTHER SIMPLE STILL.

MR. A. ST. CLAIR describes, in our Philadelphia contemporary, another very simple still, as follows:—

"The distilling apparatus consists of a common tea-kettle, with the spout removed, and two tin tubes, three inches long and an inch in diameter, inserted, one in the top, near the edge, the other in the lid, which is soldered tight. The condenser is a sheet of tin, bent to a little over half a circle, with end-pieces soldered in, making a trough twenty inches long and five and a half deep; a pipe, half an inch long and half an inch in diameter, is inserted through the bottom at one end, to permit the water to be drawn off when over-heated; half an inch from the bottom a tin pipe, an inch in diameter, passes entirely through it, projecting six inches at each end; at the same end with the escape-pipe in the bottom, an elbow tapering to a point is attached, while another elbow connects it with the tube in the top of the kettle; a wire is inserted in the edge of the trough, diagonally across it, to suspend it by. To use it, I get my kettle boiling, then attach the condenser, and suspend it to the cross-piece of a head-rest, so that the pipe has a slight incline, to cause the condensed steam to flow towards the discharge-point; put a pail of cold water into the trough, and the distilling commences immediately; a bottle set to catch the water, as it distils, completes the operation.

"The cost of the kettle and condenser is two dollars.

"If more than a kettleful of water is required, I replenish by adding hot water through the tube in the lid, which is kept corked during distilling; if the water in the trough becomes too hot, withdraw the stopper from the tube in the bottom, and when empty, fill up with cold water.

"I seldom need to do this, as the water in the trough is always cool enough to condense the steam; and if the distilled water is not hot enough to break the bottle, it is all right."

Correspondence.

COMBINATION PRINTING FRAMES.

DEAR SIR,—Allow me to state that the registering frames for combination printing, described by Col. Stuart Wortley in your last number, are an infringement of my patent, and are fully described in my specification, dated 10th May, 1870, by which it will be seen that any method of combination printing in which the negatives and the sensitive paper or tissue are fixed to interchangeable frames or boards which are made to fit or register to each other is included in my patent.—I am, dear sir, yours truly,

B. J. EDWARDS.

Hackney, January 6th, 1871.

COMBINATION PRINTING-FRAMES.

Headquarters of General Faidherbe's Army of the North.

Boisieux, January 9th, 1871.

SIR,—Being here to arrange for the distribution of the funds collected by the exhibition and sale of my photographs, I can only give a short answer to Mr. Edwards's statement, an extract from which has been sent to me. (I believe it is in the News, but, anyhow, I shall be glad if you will print this.)

My plan for registering printing-frames was ready before I had overheard of Mr. Edwards's. It is based on Mr. H. P. Robinson's printing-frame for opal glass, of which Mr. Edwards's is a direct copy, and which prevents Mr. Edwards's patent being tenable. The only change is the ordinary drawing board on which the paper is stretched, and which was used in *Boothlytype* for stretching, collodionizing, and printing paper on, and is no novelty.

When Mr. Edwards's frame was announced, I was about having some large frames made on my model; but, thinking his would be less cumbersome, and cheaper than my model, I asked him to visit me. He did so, and then quoted prices which were far higher than my own models could be made for (indeed, unreasonably dear); so, as there was no compensating advantage, I had my own made.

No negotiation whatever for a licence took place, nor was a word on the subject mentioned.

Finally, I do not fear his threats of law, knowing how thoroughly Mr. Robinson's frame anticipated his.—Yours,

H. STUART WORTLEY, Lt.-Col.

PS.—Anyone seeing my frames and Mr. Edwards's will see how different they are in design, though, of course, their common origin is traceable. The fact remains that, as I propose, a few shillings will convert a frame of any size into a perfect registering one.

EXPRESSION IN SITTERS.

SIR,—In photography great difficulty is experienced, both by the photographer and the sitters, through their becoming too serious and stiff. I think that this might be overcome by placing a mirror at the point at which the persons are directed to look whilst being taken, by which they could see themselves, and thereby remedy many defects, both in countenance and figure.

If you think this suggestion worthy of notice you would oblige by giving it a place in your columns.—Yours obediently,
Gateshead, January 7th, 1871. COLUMBA.

[The suggestion of our correspondent has been tried, and found unsuccessful. Sitters seeing themselves in the glass are apt to grimace or to change their expressions during the time of sitting, or even to alter the position of the hand, which suddenly strikes as unsatisfactory. The great object to be obtained is an easy, unaffected, disengaged aspect, whilst nothing would so much tend to produce an effect of self-consciousness in the sitter as looking at himself in the glass.—ED.]

M. ADAM-SALOMON'S MODE OF LIGHTING.

SIR,—Will any of your numerous readers oblige by giving me their practical experience on their success with Adam-Salomon's new background, as I have to make extensive alterations in a studio I have just purchased, which either necessitate my using an alcove background, or entirely rebuilding, as the light is only obtainable from east and west, consequently the room is flooded with diffused light.

What I wish to be informed is this: Will the amount of light coming into the room between the sitter and lens cause want of brilliancy as it does with present method of lighting, or am I to understand that any shaped studio will answer?

I do not wish to raise obstacles against this admirable background, but feel reluctant to make extensive alterations without hearing the *pros* and *cons* of my professional brethren.—I am, sir, yours, &c., S. V. W.

January 9th, 1871.

[Loss of brilliancy is caused by diffused—or, rather, reflected—light entering the camera, not by light existing between the sitter and the lens. If the latter be properly protected from reflected light by a projecting hood, the light in the room will not affect the picture. If the atmosphere were filled with vapour or similar body, and this were illuminated by light in the room, the brilliancy of the picture would be affected; this is an abnormal condition, not important to consider.—ED.]

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

The usual monthly meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, January 10th, Mr. J. GLAISHER, F.S.A., in the chair.

The minutes of a previous meeting having been read and confirmed,

The CHAIRMAN, referring to the death of the late Rev. J. B. Reade, paid a high tribute to his memory, and to his deep interest in and services to photography. He was glad to add that the malady from which he had suffered, and which seemed at first to threaten serious suffering, did not finally either cause his death or produce the pain which had been feared. Mr. Reade died without pain, as quietly as if he had fallen asleep.

The following gentlemen were then elected members of the Society:—Messrs. R. Gillo, B. J. Edwards, E. Havell, A. Harrison, and Barnes.

Mr. G. Bishop and Mr. W. W. Hewitt were appointed auditors, and Mr. F. M. Goode was nominated for election on the council at the annual meeting. A paper on the collodio-bromide process, by Mr. H. Cooper, Junr., who, through ill-health, was unable to be present, was then read by the secretary.

Mr. HART suggested, in reference to getting rid of water of crystallization from the bromide of cadmium, that drying under a bell-jar with sulphuric acid or dry chloride of calcium was a better plan than the use of heat, as all substances giving off a sensible smell, such as iodides or bromides, were apt to suffer change when heat was applied. In reference to the use of the term organic matter in the paper, he would suggest, as a subject of investigation, whether the organic matter referred to as in collodion was an impurity, or a legitimate part of the substance in proper combination.

Mr. SPILLER said it appeared to be a difficult matter to drive off water from bromide of cadmium by heat without subliming the salt.

LIEUT. ABNEY referred to the keeping properties of collodion albumen plates as their most valuable quality. He had kept them for two years, and saw no reason why they should not keep four or five years, although, when long kept, he certainly preferred to give a somewhat longer exposure.

The CHAIRMAN, in proposing a vote of thanks, paid a high tribute to the value and practical character of the paper, and expressed his deep regret that imperfect health prevented Mr. Cooper from being present.

A paper by Mr. Woodbury, on photo-water-marking, was announced for the next meeting, and at the following meeting Mr. Rejlander proposed to open the question as to the cause of the cracking of negative films.

Talk in the Studio.

THE ECLIPSE EXPEDITIONS.—We understand from Mr. Brothers, who was stationed at Syracuse, that six photographs of the eclipse were obtained during totality. One of these, number 4, shows the corona "as it was never seen on glass before." The eclipse was well seen at this station. The clouds which concealed the earlier stages of the eclipse passed away from the sun about five minutes before totality, "disclosing," writes Mr. Brothers, "a scene I shall never forget."

THE ECLIPSE.—We have received from several correspondents card photographs of the eclipse, which are all more or less interesting pictorially, and all suggest capital moonlight effects, the appearance of a crescent moon being presented, generally in the midst of good clouds. The effect of light and shade obtained by sun, cloud, and a little foreground in a card by Mr. A. J. Bidens, of Northampton, is very good; Mr. R. Symons, of Tonby, sends one with fine cloud effects; Mr. H. C. Lee, of Blaenavon, sends us what he styles "a moonlight scene," but which is evidently a photograph of the eclipse, precisely similar to that of Mr. Symons.

THE SILL QUESTION.—A correspondent says:—"A few weeks back, an elderly lady, near Menhenniot, Cornwall, had a visit

from the excise-man, quite *promiscuous-like*. He had her up for having a still on the premises *without a licence*, and brewing *farmer's gin*. Fined £35 or three months. A somewhat similar case at Moretonhampstead, Devon: fine, £50. Photographers had therefore better be cautious and quiet on the still business. The most simple and reliable way to work the dissolving-dodge with one lantern is by fastening a piece of gauze to a spring soldered on to the tube; this can be moved up and down in various ways, and will prove a cheap and reliable make-shift. Attempting to use pieces of glass is a very *transparent error*."

OPERATORS' SPECIMENS.—A correspondent again calls our attention to the detention of the specimens and certificates sent by operators, seeking engagement, to employers. He says:—"On the third of December I replied to an advertisement in your columns from a gentleman requiring an operator, applicants to forward specimens and testimonials. I sent specimens and my original testimonial from my last employer. I have written to see if I could get them returned, but have received no reply. Having only a few specimens, it has been a serious drawback to me in applying for other situations." Such detention often is the result of neglect, but it is a cruel neglect, which should not occur. An operator, however, who sends away the original testimonial he possesses, acts foolishly, as a copy would serve just as well; and, as we have before advised, operators should take care to produce for themselves a few negatives, from which they could always print specimens.

IRON AND PYRO MIXED.—A correspondent of our Philadelphia contemporary says:—"I can recommend the following: I take a new iron developer, twenty grains to the ounce, and when I go out to make landscapes, I carry my pyrogallic acid in a bottle, and mix the dry acid on the spot, making about what I think I shall want in one or two hours. I put the dry acid into the iron developer, and shake until it is dissolved. I am guided by the work I am doing as to quantity, and the colour of the developer is a good guide as to the quantity of pyro you have put in. The more pyro, the darker the developer. It is well to keep it as much as possible in the shade, for it sometimes turns black and inky if exposed to the light. It is excellent where short exposures are necessary. I have done some good work with it, and although I prefer the iron alone for some work, I always have it at hand in case of need."

IRREGULAR FILMS.—The same correspondent says:—"I have been troubled with my collodion drying in holes on the plate, and have tried alcohol to reduce it, but almost always with bad results, and it has become a serious matter with me. A collodion reduced with alcohol loses its sensitiveness, and if it is not nearly absolute, it will dry in holes almost as bad as before reducing, on account of the water it contains. It became of so much importance to me, that I began at the root of the matter, and thought it up to the branches. In the first place, a good and well-balanced collodion is all right to use, but in keeping it must lose its ether much faster than its alcohol; then what does it want? Ether, of course; and experience has proved it to me, to my delight, for with collodion that was useless to me before without alcohol, I now have, by adding ether, a beautiful film, with which I can get the most delicate skies, and without any perceptible loss of sensitiveness."

New Inventions.

Provisional protection for six months has been granted for the following:—

No. 2649.—W. T. Henley and D. Spill, junior, both of North Woolwich, Essex. "Improvements in apparatus for the manufacture of compounds of collodion."—Dated 6th October, 1870.

"2948.—W. V. Wallace, of Clapham, Surrey. "Improvements in the preparation of surfaces adapted for painting photographic and other printing."—Dated 9th November, 1870.

"3036.—J. B. Sawyer, of Norwich, Norfolk. "Improvements in the preparation of printing surfaces in photo-mechanical printing."—Dated 19th November, 1870.

Letters patent have been issued for the following:—

No. 1333.—B. J. Edwards, of 6, The Grove, Hackney. "Improvements in apparatus for photographic printing."—Dated 10th May, 1870.

"1473.—W. Avery, Redditch, Worcester, manufacturer. "Improvements in cases or receptacles for needles, pins, matches,

pens, cards, stamps, photographs, cotton, and other similar articles."—Dated 21st May, 1870.
2202.—J. M. A. Lacomme, Doctor of Medicine, of Euston Street, Euston Square. "Improved means of exhibiting in the open air, advertisements, photographic views, portraits of pictures, and also for decorating the fronts of theatres and other buildings."—Dated 8th August, 1870.

Specifications published during the last three months:—
Postage 1d. each extra.
1870.

No. 802.—C. Janicot. Producing photographic pictures on fabrics	4d.
" 855.—M. Chapman. Album	4d.
" 941.—W. McCraw. Photography	4d.
" 1017.—W. T. Henley and D. Spill, junior. Manufacture of collodion, &c.	10d.
" 2101.—W. R. Lake. Collodion	4d.

Furnished by

L. DE FONTAINEMOREAU, Patent Agent,
4, South Street, Finsbury, London,
10, Rue de la Fidélité, Paris.
33, Rue des Minimes, Brussels.

To Correspondents.

ADVICE TO CORRESPONDENTS.—We are at all times glad to advise our readers on any subject connected with the art upon which information can be given in this column; but to enable us to do so with efficiency, and without unnecessary waste of time and space, it is desirable that a few conditions should be observed by correspondents. All questions should be stated clearly, and written legibly on sheets of note paper, small scraps of paper and sheets of foolscap being equally unsuitable and inconvenient. Where several questions are asked, they should be kept distinct and numbered. Where processes and formulæ have been stated in our pages, it is better for correspondents to refer thereto than to request us to do so, as we cannot, with fairness, occupy space by repeating formulæ which have once appeared, merely to save a little trouble to individuals. Correspondents should use distinctive names or initials: such signatures as "A Subscriber," "An Amateur," and others of a general character being often adopted by a few correspondents in the same week leads to confusion.

SOUTH DEVON.—Rolling very much improves the appearance of all photographs; for small photographs it is almost imperative. They certainly never do anything like justice to the negatives until they have been rolled. As rolling presses can be had at a moderate cost, we certainly strongly recommend them.

A. D. O.—You will find various recipes for intensifiers in the YEAR-BOOK you have just received. You may use a pyrogallie acid solution consisting of—

Water	1 ounce
Pyrogallie acid	3 grains
Citric acid	3 "

To this add a few drops of a 20-grain solution of nitrate of silver at the time of using it. If you require still greater intensity, this may be followed by mercury and ammonia as you propose; but, except for reproductions, this is rarely necessary. We have pleasure in giving information and advice in this column to our readers. We make no charge for such advice.

RUSTICUS.—The largest manufacturers of silicate of soda or liquid glass are Gossage and Son, Widnes, near Liverpool.

S. M.—We regret that we do not know any firm who would undertake and understand the building of photographic glass-house, printing-room, &c. In all cases which we have known, the builder has required specific instructions for the individual structure he was about to undertake.

A SUBSCRIBER.—You will find in our YEAR-BOOK just issued simple instructions for the preparation and management of a nitrate bath, and also various particulars on rectifying baths in back numbers of the YEAR-BOOKS as well as in the NEWS.

C. C. COX.—The silver may be precipitated from your hyposulphite fixing bath in a metallic form without the use of sulphides by immersing strips of copper or zinc. The only disadvantage is, that the precipitated metal is apt to be slightly contaminated by the precipitant, copper or zinc. See Mr. Spiller's article in our YEAR-BOOK just issued.

AN AMATEUR.—The question of intensification would entirely depend on circumstances. If prints on ordinary paper were required, and the negatives were thin, then intensification would be employed. For many purposes negatives thin and without intensity are required; but wherever a negative with perfect detail has been obtained, there is no difficulty in adding intensity. Instantaneous photography depends on three things: chemicals in good condition, good light, and rapid lens. The two latter are very imperative, and, with these chemicals in ordinary good condition, will serve. A strong developer is always an aid. We have published many articles on instantaneous photography, but shall probably give the matter further attention.

F. D. W.—There is no work on enlarging with magnesium light. We have published various articles giving detailed instructions and formulæ. You will find particulars on p. 37 of our Twelfth Volume, and p. 75 of our Thirteenth Volume.

J. H.—The slight loss of gloss which follows the mounting of enamelled prints is due to the damping, which removes the extremely brilliant surface the collodion had acquired from contact with the surface of the plate glass. The remedy is, to use a substance for mounting which shall damp the print as little as possible. Hot glue will answer best; and, if skilfully used, will not, in any sensible degree, decrease the brilliancy of the surface.

GEORGE FIELD.—There are artists who undertake the retouching of negatives, some of whom have, we think, advertised in our pages. Amongst others you may apply to Mr. Croughton, 14, Church Road, Albert Road, Hammersmith. 2. We do not think photography is going down. Thoroughly good plain portraiture will always be in demand, in card and cabinet sizes. Salomon pictures will be in demand in some circles, and so with coloured work; but much depends on the district and class of customers. Enamels are not yet much in demand, but will become so, we have no doubt. In fact, much depends upon what the photographer chooses to bring into demand by doing it well and pushing it. 3. We are not sure.

A NEW SUBSCRIBER.—Of the lenses you mention we should prefer the triple.

J. C.—You may obtain pure coffee of a respectable grocer in the ground state, and may, we think, rely on it.

A SUBSCRIBER.—We do not recommend you to alter your studio to obtain a sloping front light. Rather make arrangements to exclude direct sunlight by means of thin semi-transparent blinds of tracing linen. It is probable that the arrangement of M. Adam-Salomon, which we recently described, may answer your purpose.

J. G.—The globe lens is not so rapid as the triple. We do not know what you mean by the "new globe lens." The question of the objects in question being in focus depends chiefly on the length of focus of the lens, the size of aperture, and the distance of the camera from the scene.

PASTEL.—In our own hands the formula on p. 101 of the YEAR-BOOK for 1870 answers exceedingly well. In the YEAR-BOOK just issued you will find additional information. The occasional samples of that prepared by Mawson and Swan have generally been good. The process produces capital prints on paper, opal glass, and transparencies, and also is an excellent agent in reproducing negatives; but it is not sufficiently sensitive for dry-plate purposes.

J. A. KAY.—Two parts of copal and one of shellac melted together. When fluid, two parts of boiled linseed are added, and afterwards ten parts of turpentine.

E. COX.—The name of the firm to which you allude is Breese and Co., Kelvin Grove, Sydenham. The letter was duly addressed and posted.

S. W. BORN.—Photographic transparencies of scenes in connection with the war may be obtained of Mr. F. York, of 87, Lancaster Road, Notting Hill.

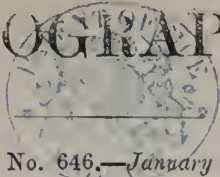
E. F. F.—The cards are pretty, but there is a slight tendency to hardness.

CAPT. TURTON.—Chalk is not well suited for retouching negatives. For broad cloud effects, and similar things, lithographic chalk is sometimes useful. We prefer a lead pencil. You will find hints in Mr. Croughton's article in our last YEAR-BOOK (1870). There is also a good chapter in Newman's Harmonious Colouring, new edition. 2. We think the carbon process as practised by the Autotype Company unquestionably best. 3. We have not met with a case of such deposit as you describe, but could judge better on seeing it. Opal prints may be worked with water colours the same as paper prints, and, if well done, much resemble ivory. They should first be varnished, a matt varnish answering best.

J. CUNNINGTON.—Received.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



Vol. XV. No. 646.—January 20, 1871.

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CAUSES OF FADING IN SILVER PRINTS.

WHATEVER improvement may be made in carbon printing, or in modes of photo-mechanical printing, there is little doubt that silver printing will be commonly practised for many years to come, and possibly never entirely abrogated. At present it is the recognized method of producing prints, wherever a limited number only is required; and a system of working so wide spread, deep-rooted, familiar, and, in many respects, so beautiful, will not be easily superseded. In establishments of the highest class, and amongst the most conscientious photographers, it will probably be abandoned for the more trustworthy carbon process; but, as Mr. Bovey remarks, in his article on another page, the end is not yet. Hence it becomes important to re-examine at intervals the well-worn theme—the causes of fading in silver prints.

Accompanying Mr. Bovey's article we received a batch of prints, examples of the experiments he describes. The prints are brilliant, well-toned, on capital paper, and, where not tainted by decay, are sufficiently excellent to have warranted the greatest confidence in their stability. The cause of the decay is but too evident: the photographer's *betennoir*, sulphur, is the offender. The mode of its operation is only too common; but here it was intentionally induced, as a verification of opinions based on general observation. The impression is commonly entertained that mounting and mounting materials contribute seriously to the production of fading, and experience justifies the conclusion. But these are unmounted prints, in which the sole cause of decay is the contact with hyposulphite of soda, under circumstances calculated to produce decomposition rather than fixation. All the prints described by Mr. Bovey were well washed; but no amount of washing will remove sulphide of silver once present, nor prevent its spread throughout the print when once present in any part of it. The only contact which can take place between silver and hyposulphite of soda without danger to the print is that prescribed in a properly constituted fixing bath, where the latter salt is present in sufficient excess to form the sweet soluble double hyposulphite of soda and silver, which can be removed by washing, and leave the print without any internal cause of decay. Any contact of the silver print with hyposulphite of soda in smaller proportion than that in the fixing bath issues in a series of decompositions which end in the formation of sulphide of silver. The smaller the trace of hyposulphite the more dangerous to the print, because its action is not in such case always apparent at once.

Hence, besides the ordinary causes of imperfect fixation—namely, the continued use of the same solution, weakness, or acidity of the solution, prints sticking together, and extremely cold weather—other less suspected causes, such as the use of dishes or fingers which have touched hyposulphite, the dust of hyposulphite arising from dried up spilled solutions, and minute traces from other causes, are

amongst the fatal causes of the evil. In a private letter accompanying the prints, Mr. Bovey mentions some of the points suggested by his experiments. They are these:—

"First. The results of my experiments afford ample proof that sulphide of silver is the immediate cause of print fading.

"Second. Acting by catalysis, a minute quantity of sulphide of silver attacks each atom of silver of which the print is composed, until the whole is converted into a sulphurous compound. Atmospheric influences, especially humidity, hasten such decomposition.

"Third. Sulphur might be introduced by means independent of those alluded to in my paper. Stale albumen is probably a prolific source of sulphurous introduction.

"Fourth. There is every reason to show that decomposition is set up before the free nitrate is removed from the print, and, once begun, no subsequent treatment can prevent the destruction of the print. Discolouration occasioned by imperfect washing is not followed by the obliteration of the picture."

Fading is not a necessary condition of a silver print, and photographers should take care that it is not a probable condition. Produced with due care, and kept with ordinary precaution, the silver print has a reasonably long tenure of existence. The evil is not that a silver print must fade, but that it may. We fear the time will not arrive when it may be said of a silver print that it shall not fade; but there is no reason why the photographer should not be able to send out silver prints of which he can say that all preventible causes of fading have been eliminated, and that the chances of decay have been reduced to a minimum.

LOTTERIES AND ART-UNIONS IN CONNECTION WITH PHOTOGRAPHY.

A RECENT prosecution at Lambeth Police Court may be instructive to photographers, some of whom occasionally establish "art-unions"—or, in reality, lotteries—to give a stimulus to business. The case in question, as stated in the daily press, is briefly as follows:—

William Cannon, jeweller, 14, Kennington Road, and James Stevenson, landlord of the Oxford Arms, Westminster Bridge Road, were charged, the first as the principal in getting up a lottery, and the other for aiding and abetting in it. Mr. Poland, instructed by the solicitor to the Treasury, prosecuted; and Mr. Straight, instructed by Mr. Woodham, defended. The counsel for the prosecution said the proceedings had been taken under the 10th and 11th William III., and the 42nd George III., under which all lotteries were illegal, except when authorized by Parliament, and the parties getting up the same were to be considered as rogues and vagabonds, and be dealt with accordingly. He referred to two decisions in the superior courts, in which it was held that gifts presented to an audience were illegal, and contrary to the Lottery Act. In this case, the defendant Cannon was a jeweller, No. 14, Kennington Road, and the defendant Stevenson

a licensed victualler, keeping the Oxford Arms, Westminster Bridge Road. The attention of the authorities had been called to the lottery, and it was ascertained that books and tickets had been sold, and agents allowed ten per cent. The learned counsel read a bill-head, "The South London Art Union, under the management of Mr. William Cannon, 14, Kennington Road. Tickets 6l. each." The bill further stated that "the Union was established for the purpose of creating and extending a taste for the fine arts. The prizes will consist of photographs, plain and coloured in oil and water-colour; also engravings. Some good watches and jewellery will be issued. Great care has been taken in selecting the works of art, that they may be of the highest order." His Worship would see also, by the bill, that it was stated to be "according to Act of Parliament 21st and 22nd Vic. cap. 102," but by the evidence he should call it would be clearly seen there was no pretence for such a lottery to be brought within the provisions of that statute. After hearing several witnesses for the prosecution, Mr. Straight proposed an adjournment. Mr. Ellison said it was a proper request, and the case, which had created much interest, was then adjourned.

No decision has as yet been given; but it appears that no doubt exists of the illegality of the transaction, and as it appears closely analogous to some similar projects which have been carried out by photographers under the impression that "art-unions" had been legalized, it is important that the subject should be better understood. Hitherto, no photographic project of the kind has, we believe, been brought under the attention of the administrators of the law, but this appears to have been a piece of good fortune which might not be repeated. For reasons sufficient to the legislature, all lotteries were suppressed in this country by Acts of Parliament passed in the reign of William III and George III. About a quarter of a century ago, with a view to popularize art in this country, the idea of an art-union was projected; a scheme the subscribers to which received a certain specific equivalent in the shape of a work of art for the money contributed, and the chance of a valuable prize, also a work of art. This scheme was, of course, in the nature of a lottery, and contravened the law; but, as its aim was unquestionably good, certain acts of indemnification were passed, and eventually, in the year 1846, an Act entitled "An Act for Legalizing Art-unions" was passed. But this legalization only becomes operative under certain conditions. Art-unions were to be deemed lawful associations, provided they became incorporated by Royal Charter, or provided that the deed of partnership or instruments of association have received the approval of Her Majesty's Privy Council. It appears, then, that the matter is very simple. All schemes for the distribution of prizes by lot or chance, whether under the name of art-unions or not, are illegal still, unless the preliminary permission prescribed by the Art-unions Act is obtained; and all individuals and associations holding such lotteries or distributions are liable to the pains and penalties awarded to rogues and vagabonds.

CARBON PRINTING VERSUS SILVER PRINTING.

As our readers know, we have pleasure in permitting in these pages the utmost freedom of courteous discussion of all questions concerning photography and photographers, and the candid expression of reasonably intelligent views in connection with the art, whether they accord with our own convictions or not. Where we conceive the opinions expressed are based on inaccurate or insufficient premises, or where it seems that the conclusions do not follow logically upon the facts, it becomes our duty at times, in publishing the views of correspondents or contributors, to point out the source of the error. On another page we print the impressions of a photographer, of large experience, as to some of the causes of fading in silver prints, and the relative value of silver and carbon printing, upon which we think a few remarks desirable. On the subject of silver printing, where Mr. Bovey's experience is large, we agree generally with his conclusions. Upon the subject of carbon printing, his remarks, based rather upon observation than experience, or upon the experience of others

rather than his own, we think his conclusions erroneous; and the error is twofold, being based upon insufficient evidence, and upon a fallacious estimate of the tendency of the evidence adduced.

Mr. Bovey states that, notwithstanding the assiduous effort with which carbon printing has been pushed for half a dozen years, it has met with a slender amount of success. Photographers generally, with unrelenting obstinacy, produce their prints in the old-fashioned way, in spite of the speedy decay of much of their work; and he thinks that this persistency is not due to the influence of vested interests, or to the tenacity with which men stick to something with which they are familiar, and which answers their purpose moderately well, rather than abandon it for something unfamiliar, but is due solely to the deficiency of the unfamiliar substitute proposed. Carbon printing, it is affirmed, produces inferior results to silver printing, and at a greater cost. The fact of the alleged non-success of carbon printing is also incidentally adduced as an argument against its value, as "there are few so blind as to lose sight of the fact that a ready adoption of improvements is the surest road to success." Now as we, with at least as ample means of being familiar with all the evidence as the majority of persons interested in the question, believe these conclusions to be altogether fallacious, it is our duty briefly to express our convictions, and the grounds upon which they are based.

It is implied that carbon printing has been tried, and proved a failure. But the simple fact is, that it has not been tried. We doubt if there are a dozen, or even half a dozen, portraitists in the kingdom that have tried it on any commercial scale. We do not know one in London who has done so. We do not know one anywhere who has done so, and given it up. We know of some who are making special arrangements for its general adoption. In every establishment where it has been introduced in earnest it has continued in use, and in all with which we are personally familiar it has given satisfaction.

On the score of beauty, Mr. Bovey unconsciously admits the superiority of carbon - or, rather, permits one of his witnesses to do so: "With a good negative the Autotype can show superior results, but with the usual run of negatives the process is a mistake." This witness proves considerably too much; he proves that his usual run of experience is with bad negatives, and is, therefore, rather condemnatory of the negatives than the printing process; and next, that with good negatives carbon is superior to silver. As all negatives *should* be good ones, and as the majority *might* be, a process which presses upon the photographer the necessity of producing them should be encouraged rather than condemned. Nothing more encourages carelessness in working than immunity from its consequences. When, some years ago, the practice prevailed of masking negatives to print in what was termed a French background, slovenly operating was not unusual, and stained, imperfect backgrounds common. When the card mania set in, clean working became a necessity, and soon became the rule. Further, if with good negatives superior results to silver may be obtained with carbon, but with faulty negatives less perfect results, the conclusion follows that printers are more familiar with the capacities of silver printing, and can better adapt them to "dodge" the defects of the negative; and that an equal familiarity with the possibilities of carbon printing will probably produce equal skill in humouring faulty negatives.

That carbon prints from the same negatives are, in all instances, equal in beauty to silver prints we are not prepared to affirm. In many cases the comparison is in favour of silver printing in richness, depth, and transparency. This is not surprising. The perfection of silver printing is the result of thirty years' experience with many thousands of workers; carbon printing is the result of six years' experience of a few individuals, pro-

bably not as many in units as the silver printers have been in thousands. The fact that carbon prints have been produced quite equal in beauty to silver prints—and we have seen many as perfect as could be desired—proves the possibility; the rest is a matter of experience and practice.

The question of cost requires but few words. Until carbon printing has become much more general, no fair comparison can be made; but it is important to bear in mind that M. Braun, who has worked carbon more extensively than any other photographer, finds the cost less than that of silver printing, and his evidence is the most weighty which can, for the present, be adduced.

The suggestion that carbon printing must be wrong in some particular, because it has not become more common, scarcely requires serious refutation; no estimate of the worth of anything is so fallacious as that based upon its progress in a limited time, especially if the said thing have to supersede something which has become universal, familiar, easy, and affords a temporary success. Apparent gain, obtained immediately by easy and familiar means, is generally preferred by the majority of mankind to advantage possibly higher and more certain, but certainly more remote, because change, effort, and training must intervene before it is acquired. The history of every advance in civilization demonstrates this. No reform—social, moral, or political; no improvement in science, art, or industry—has ever been secured without a struggle, often a protracted one, not simply with vested interests, but with established habits and ideas, generally defended with an obstinacy generally in direct proportion to their absurdity, the arguments advanced in their defence being rarely more cogent than that common at one time amongst old-fashioned farmers in defence of the now abandoned lumbering wooden plough, to the effect that “an iron ploughshare caused weeds to grow.” Carbon printing has been in existence as a possibility for about six years. It has been the subject of constant experiment and improvement during the whole of that time. Some of the most specific improvements in point of facile practice have been made within the last year or two. The whole facts gravely weighed, it would have been a marvel if it had made much greater progress in superseding silver printing than it has done. Photographers are already familiar with silver printing; all their plant is made with a view to its practice; all their experience is based thereon. Professional photographers must produce immediate results to live, and they cling most naturally to the process which gives these results. If successful, they are too busy to experiment with radical change; if they are unsuccessful, they cannot, or think they cannot, afford it. Amateur photographers are generally chiefly interested in getting some results from their negatives, printing at all rarely present as many charms for them. And all are disposed to believe that the one cardinal defect of silver prints, instability, is not an inherent one; that it is due to accidental carelessness in production, which ought not to occur again; that it is due to some incidental neglect in preservation, which is the fault of the custodian; that it is due to some accidental defect in paper, cardboard, or mounting material, which is not the fault in the process; or that at least something will shortly turn up to give the prints the absolute permanency so much desiderated. With the actual beauty of result which thirty years' experience has rendered easily attainable in silver printing, and the universality of its practice, it is not surprising that the unfamiliar six-year-old bantling, carbon printing, should have done little as yet to supersede the old, familiar, and effective, but unstable silver process.

The notion that carbon printing has been assiduously pushed appears to us to be curiously erroneous. Pushed by whom? Mr. Swan, to whom its existence as a possible process is due, never pushed it. He is by nature and habit a student; by occupation an exceedingly busy man,

having the personal management of a large and important business. By an over-exhausting effort, he worked out carbon printing to a very perfect practical issue, on a commercial scale. But he was neither by nature nor opportunity a propagandist. It passed into the hands of a company, who find their account in working it very extensively and successfully, rather than in spending much effort to induce others to do so. Who, then, has had a specific interest in pushing the matter? The complaint has often reached us that the facilities for getting the materials are insufficient. The fact that what used to be called a restrictive policy, in imposing license charges, at one time prevailed, has been the subject of much comment. The company seem to have been impressed with the conviction that if they continued the successful and profitable practice of the process, the time must come when it would be in demand, and have rather occupied themselves in preparing for the perfect and profitable manufacture of the materials for present and probable demand, than in extensive or systematic propagandism. The chief pushing the process has received has been given by ourselves and other photographic journalists, who, in the discharge of a manifest duty, have persistently kept before photographers a knowledge of the fact that permanent printing was a possibility, and that the “bye-word and shame” of instability was no longer a necessity in the productions of their art.

We might multiply arguments on this subject; but we have already exceeded the space we can devote to it. The subject is important, however, and worthy of consideration. The written opinions by Mr. Bovey probably represent the thought or spoken ideas of others, and it becomes our duty, therefore, in giving them a concrete form, to point out wherein they are erroneous. Instability is the stigma of the art: a process exists whereby it can be removed. The natural opponents in the shape of vested interests, conservatism, sluggishness, and honest attachment to the old method, interpose strong barriers against radical change, and it becomes our duty to aid in removing unnecessary, fallacious objections to improvement. Mechanical printing processes, however perfect, will not, it is probable, ever take a place in ordinary portraiture where a few impressions are required. Carbon printing, we believe, will do this in the best establishments, and at no distant day.

THE FORTHCOMING INTERNATIONAL EXHIBITION.

The following extracts from the conditions for the guidance of exhibitors in the department of Fine Arts, in which photography is classified, will be useful to many of our readers. After enumerating the objects included in the class, which consists of all kinds of paintings, sculpture, carving, modelling, engraving, lithography, architectural designs, tapestry, embroidery, carpets, designs for decorative art, and copies of ancient works of art, as well as photography, the rules proceed:—

* II. No artist can be allowed to exhibit more than two works of each kind, one of which at least must not, except under special conditions, have been previously exhibited in London, but he may send works of as many different kinds as he pleases: thus the same artist may send for admission two oil paintings, two water-colour paintings, two paintings on enamel, porcelain, &c., also two sculptures in marble, two in wood, &c.

III. Paintings and sculptures may be either separate works, or form part of the decoration of objects of utility, e.g., vases in pottery, fans, panels for furniture, wood carving for furniture, &c.: provided that such objects are entitled to be classed as works of Fine Art.

IV. All works of Art, except reproductions of ancient and

* In accordance with the recommendations of the Fine Arts Committees, this rule will be suspended in the first Exhibition; artists will consequently be at liberty to submit any number of works, whether previously exhibited or not.

mediæval works, must have been executed by living artists, or by artists deceased within five years.

V. A producer will be permitted to exhibit reproductions of any number of ancient or mediæval works of art.

VI. Foreign works may be sent with the Certificate of admission given by the respective Governments of the countries in which they are produced. Foreign works sent without such Certificate, and all works of British subjects, will be submitted to the approval or rejection of judges appointed for the respective classes, whose decisions will be final, and may be ascertained on application at the Exhibition Building.

VIII. The Commissioners cannot undertake to receive any package which may be presented by carriers. Foreign artists whose works are not sent through a Foreign Government should consign their works to an agent in London.

IX. Each picture, drawing, or series of drawings relating to one subject, must be in a separate frame, except very small miniatures, or sculptured gems, any number of which may be placed in a frame not exceeding a foot square.

X. All pictures and drawings must, excepting in special cases, be in gilt frames. Drawings with wide margins are inadmissible. Excessive breadth in frames, as well as largely projecting mouldings, may prevent pictures obtaining the situation they otherwise merit; and oval frames should be avoided, as they are difficult of arrangement.

XI. The prices of works to be disposed of, carefully described as in the next paragraph, may be communicated to the Secretary.

XII. A list of the works submitted for approval must be sent with them. The title of the work and the artist's name should be written upon or securely attached to each object, as well as the number (if there be more than one) to which it refers in his list; particular accuracy is requested in this respect.

XIII. All objects of Fine Art must be delivered at the Exhibition Building, South Kensington, into the charge of the proper officers, unpacked and ready for immediate exhibition, and free of all charges for carriage, etc., on the following dates:—
On Wednesday, 15 February, Sculpture not applied to works of utility.

On Thursday,	16	..	..
On Friday,	17	..	Painting applied to works of utility.
On Saturday,	18	..	Sculpture applied to works of utility.
On Monday,	20	..	..
On Tuesday,	21	..	Eugraving, Lithography, Photography, etc.
On Wednesday,	22	..	Architectural Designs, Drawings, and Models.
On Thursday,	23	..	Tapestries, Carpets, Embroideries, etc.
On Friday,	24	..	Designs for all kinds of Decorative Manufactures.
On Saturday,	25	..	Copies of Pictures, Mosaics, Enamels, etc.
On Monday,	27	..	Painting not applied to works of utility.
On Tuesday,	28	..	..

XIV. To every work, when exhibited, will be attached a label, prepared by Her Majesty's Commissioners, which will contain the following particulars:—

1. The subject.
2. The artist's name.
3. His address.
4. The price, if for sale, unless the Exhibitor objects.
5. The date of execution.
6. Any explanations.

XV. Forms of application for admission will be forwarded on demand.

AMERICAN CORRESPONDENCE.

EMIGRATION OF PHOTOGRAPHERS TO AMERICA.—THE SCARCITY OF COMPETENT PHOTOGRAPHERS.—CHLORIDE OF PALLADIUM FOR TONING GLASS POSITIVES.

Emigration of Photographers to America.—In your issue of December 16th, you published Mr. Schone's letter on this subject, and I only allude to it to bring up one or two other remarks on the same subject. From time to time I

meet a great many photographers from Germany and England, and I always take pleasure in assisting them to situations when in my power. Intercourse with them has convinced me that they are not accustomed to driving as we are here, from morning until night, and I have seen them sometimes look appalled at the work that is done in one of our American studios in a single day. When the sun shines the people go to the photographers in swarms, and they, of course, endeavour to make as many negatives as possible, lest they lose some of their custom. This, of course, compels all hands to be active, and the hours that Mr. Schone has given as the working hours here, are hours of real constant toil, one sitting following another as fast as possible, and not much time allowed over each subject either. A photographer from abroad, if he be accustomed to take things more leisurely, will have to become accustomed to American hurry and drive before he can gain the best of wages. Still there is much to encourage foreign photographers to come here, and I am sure we are glad to have all the talent you can spare us.

Some of our most eminent artist photographers—Carbutt, Kurtz, Fennemore, Scholtin, Roche, Cremer, Openecke, Merz, and many others—are foreigners, and just as much esteemed as our own native talent. We have a large country here. With a little capital one can readily begin, and soon rise if he be content to live frugally in the beginning, and have a stout heart. There is much jostling and grinding down of the weak, but if a man is persistent and pushes, he will succeed gloriously.

The Scarcity of Competent Photographers is becoming quite a serious matter with us, and there is a fine chance for the young talent that may enter the field. Is it the same with you? There are plenty of incompetents, but for real good photographic operators and printers there is an active demand now.

Photography has grown and advanced, but the number of good tasteful operators has not increased in due proportion. There are general reasons for this. One is, that the young men do not see sufficient promise of remuneration in the business to attract them to it, perhaps. Some argue that photography promises as much as any mechanical vocation; but, then, will you class photography with mechanics? If you will, drop that idea at once. Photography is an art, and the time is very rapidly approaching when it will be such an art that only the educated and skilled can reach up to its requirements, and if we are not careful it will get ahead of us. "What are we to do, then?" you ask. I suggest the following:—

Take apprentices and educate them in all the mysteries of our black art. The day when any mechanic can take a few lessons in manipulations, buy an outfit, and then establish himself as a professional photographer, is over, and the sooner that fact is realized the better for blessed photography.

If your son desires to become a painter, he must go through a course of study and practice to fit him for his chosen vocation; and so with all other trades and professions. So it should, and so it must be hereafter, with photography, if we desire to maintain it as an art. Select young lads, fresh from school, whom you think have the taste and talent, and bear them up until they are taught thoroughly every branch of the art, from cleaning glass to posing and lighting the model. This will take, to do it right, from three to five years. When your fledgling is competent, then fly from under him, and either let him go it alone, or employ him on wages on which he can live and lay by something, or take him in as a partner. Our conviction is, that if this were done, photography would in a few years be entirely cleared of incompetents, and would be more respected, more sought after, more patronized, and be able to boast of having enough men of talent in it to cope with its continued and ever to be continued rapid growth.

Harrison's Head Rest.—Excuse me if I bring up a personal matter. I see Mr. James Harrison, in your own pages and in those of a contemporary, expresses himself rather sore, because Dr. Vogel has described in your pages a novelty pertaining to a head-rest which happens to bear my name. Because Mr. Harrison chooses to enact the Rip Van Winkle, I should not be accused of doing him a wrong, for I beg to assure him, with the best of feeling, that I have had no intention of doing him an injury, and I will prove it to him. About the middle of 1867 I observed, in an English journal, a description of his head and body rest, and was at once struck with its utility and advantages. Supposing that no one would be so foolish as to import such an apparatus when it could be made at home so much cheaper, I re-published the article alluded to in the *Philadelphia Photographer* for January 1867, page 250, hoping that some of our manufacturers would take the hint, and manufacture the machine for the American public. No one did it, and, thinking over the matter, I devised what I considered an improvement, and what would enable the photographer to do with two or three less screws to work than I understood Mr. Harrison's to have. In the March (1868) issue of *Philadelphia Photographer*, page 74, I described my improvement, and, without saying it was mine, did give Mr. Harrison full credit for his part of the invention. In 1869 I made still further alterations. The machine seemed too heavy for some of our people to lift, so I put it on wheels, so it could be moved about, with a contrivance to throw it off the wheels when it was in actual use. This I described in the February issue of the *Philadelphia Photographer* of 1869, and again alluded to Mr. Harrison. Dr. Vogel, in his description in your pages, forgot that last alteration. Now if Mr. Harrison will take the trouble to see the pages of the magazine to which I have alluded, I am sure he must feel that I have endeavoured to do him full justice. I have seen his machine in New York, but, as I said in the beginning, he cannot hope to reap benefit from its sale here, for duties, freight, &c., would make it too costly. If he has never seen mine, I will gladly present him with one if he will bear the expenses from here to his studio; then let him call in his neighbours, and before them let him decide whose is the prettiest and the best. I should not have said so much, for I despise anything like controversy, but I did not want Mr. Harrison to feel that I had deliberately injured him, or that Dr. Vogel would either.

Chloride of Palladium for Toning Glass Positives.—One little practical dodge, and I am done. I will give it to you as taken down from my friend J. C. Browne Esq., to whom I am indebted for the idea:—"Now that slides for the magic lantern are so much sought after, the best method of printing and toning such pictures is a matter of considerable interest. In the treatment of glass positives that require additional contrast after fixing, many chemicals have been suggested, and, after a careful trial of their merits, I am disposed to consider chloride of palladium as the most reliable chemical that has come under my notice. Its action is perfectly manageable, it is easy to prepare, it will not stain, and it gives uniformly good results. The toning solution is made as follows:—Add six drops from the stock bottle of chloride of palladium to each ounce of water. This solution should be of a delicate straw colour. No other manipulation is required. After the plate has been developed and fixed, wash as usual; then apply the toning solution in the same way as you flow the developer. Its action will be quick, giving a rich black tone to the positive. Wash well, dry, and varnishing is desirable. Allowance must be made in toning for the kind of light to be used in the lantern. The oxyhydrogen, magnesium, and electric light will require the positives to be more dense than when coal oil is used for illumination.—Truly yours,

Philadelphia, January 2, 1871. EDWARD L. WILSON.

WASHED AND FUMED PAPER—A NOTE.

BY COLONEL STUART WORTLEY.

I THINK the following fact worthy of consideration. During the late hard frost my printing was entirely stopped. It so happened that many prints remained half printed in the various frames when operations were first suspended. After the lapse of sixteen days printing was resumed, and the frames with the unfinished prints were put out and finished. They toned perfectly, and are now not to be distinguished from prints printed and finished within twenty-four hours. You know my opinion of the great value of the washed and fumed paper; but I was hardly prepared for the fact that the effect of the ammonia would have enabled a print partly commenced to finish perfectly after the lapse of sixteen days.

There was, of course, no means of supplying fresh ammonia, and the only ammonia used was that which started the prints at the commencement.

RETOUCHING NEGATIVES.

BY B. J. EDWARDS.

THE practice of retouching negatives has now become almost universal, notwithstanding many objections which have been urged against it. In skilful hands, there is no doubt of the advantages to be derived from the moderate use of the pencil on the negatives; if the retouching be carried to excess, the result is often both unpleasing and untrue to nature. The more perfect the negative, the less retouching will be needed; it is quite possible to produce a negative so perfect in all its gradations of light and shade that no human skill could improve it; but such work is rarely obtained, and depends quite as much upon the suitability of the model as upon successful lighting and manipulation.

A badly-lighted and under-exposed negative cannot be made perfect by retouching, but for the removal of slight defects, such as freckles, softening the texture of the flesh, and rendering delicate details in the shadows, the pencil, in the hands of an artist, is an invaluable aid.

In order to work successfully on the negative, it is necessary to alter the surface of the varnished film, giving just sufficient tooth for the lead-pencil to work upon. If the negative requires much retouching, a sharper or rougher surface is needed than for a slight retouching, which can often be effected upon the smooth surface of the film; if more be necessary, the following will be found a simple and effective way of preparing the surface to work upon. Having varnished the negative in the usual way (allowing the varnish to soak well into the film), let it cool, and pour rapidly over it a little methylated spirit, repeating the operation two or three times, according to the surface required. Do not allow the plate to soak in the spirit, the object being merely to remove the varnish from the surface of the film; when dry the film will be hard and not easily scratched, and will have a fine dead surface for working upon with the lead-pencil. I prefer a hard pencil; H or F I find the most suitable; if a very soft lead be used the effect will be coarse, and it will be difficult to revarnish without removing the pencil marks. For working upon the flesh tints very fine stippling gives the best effect, the highest lights being put in with a more solid touch. For lightening broad shadows it is a good plan to use a little of the powdered lead, applied with a leather stump or the tip of the finger. The small spot of bright light in the eye may be put in with the point of the pencil, taking care to keep it in the right place, according to the lighting of the face. This simple matter is often neglected, and the spot of brightest light placed on the *shadowed* side of the face. The pupil of the eye will be much improved by carefully removing the film with a sharp needle; this gives great brilliancy.

For the hair it is better to use a little of the powder lead; or it may be finished with a few broad touches of water colour, laid on the second coat of varnish.

After retouching, the plate may be revarnished without

injury by using the varnish cold and not too dilute; when just set, hold the plate before the fire until it becomes transparent in the shadows. I may just mention that I use the "Sohnee" varnish, but any good hard negative varnish will serve.

THE PRESENT POSITION OF AUTOTYPE PRINTING.

TO WHICH IS ADDED, A FEW HINTS CONCERNING THE CAUSES WHICH AFFECT THE PERMANENCY OF SILVER PRINTS.

BY W. T. BOVEY.

WITH an earnest perseverance, due to a great cause, the "best friends of photography," during the past five or six years, have been adjured to eschew the error of their ways, by yielding up those prejudices which blind their eyes to the advantages of carbon printing. In vain has it again and again been reiterated that silver printing is on its last legs. In vain has it been shown that a silver print, although a thing of beauty, is not a "joy for ever," but, like unto Jonah's gourd, is doomed to a speedy decay. Yet, despite the protestation of those disinterested admirers who, of course, have no vested interests to maintain, the best friends of photography turn a deaf ear to the voice of the charmer, and continue to produce their pictures in the old-fashioned way.

The cause of this unrelenting obstinacy is, of course, attributed to the opposition of those who openly or covertly offer objections against the Autotype process; and it is almost angrily insinuated that "vested interests" are the prime movers in the work of counteraction. This assumption is simply nonsensical, for although "vested interests" might bar the way of progress for a time, yet true progression will readily assert itself in a way that speedily scatters vested interests to the winds, for there are few so blind as to lose sight of the fact that a ready adoption of improvements is the surest road to success. I have no hesitation in expressing my opinion that the only reason why silver printing remains the chief favourite among photographers is, because the Autotype system cannot take its place on account of the deficiencies of the latter process. I freely concede that men are naturally conservative, and innovations do not, as a rule, meet with a favourable reception; yet it must be conceded that an improvement which has been assiduously pushed for half a dozen years, with only a slender amount of success, must be wrong in some particular.

In reference to the matter before us I have been at some pains to sift it to its very bottom, and I have accumulated a mass of evidence which makes my opinions no longer a thing of doubting. The Autotype system of printing does not realise its early promises. One gentleman, well known as an extensive worker of the system, candidly confessed to me, that the process was quite as expensive as silver printing, and infinitely less satisfactory in the beauty of its productions. "I make it a practice," said he, "to strike off a silver print from each negative before proceeding with the carbon proofs: as a rule, these last admit of no comparison with the first. The only thing that can be said in favour of the Autotypes is, that they are permanent." Another gentleman, better known still as a carbon printer on an extended scale, remarked, that "in his experience, he found the cost of carbon printing to be greater than printing in silver, and the results by no means so good. With a good negative," he continued, "the Autotype can show superior results, but with the usual run of negatives the process is a mistake."

In pushing these inquiries, I was influenced simply by an ordinary business precaution, for at the time I could as easily have made arrangements for carbon printing as for printing in silver. The ocular as well as oral proofs I received decided me on a present adherence to the latter course. I say a "present adherence," because I am per-

sueded that silver printing must, sooner or later, give place to the mechanical methods which are progressing towards perfection; but the end of silver printing is not yet. Such being my impression, I lose no opportunity of studying the conditions that have made silver prints a by-word and a shame.

The course I take in tracing out the cause of a defect is to search out a way of producing such defects at will. The remedy then becomes obvious. Acting on the principle described, I have just unkenneled as goodly a show of yellow streaks and jaundiced prints as ever disgraced a London photographer's show-case or a lady's gorgeously-bound album. It will be readily understood that experiments of the kind to which I invite attention require months of time to complete, and it is months since that the prints now before me were packed away as brilliant and blooming in appearance as the most exacting could wish. The causes of their decline remain to be related.

The introduction of an agent of decay was a matter simple and easy—I fear, much too easy.

Batch number one. Toned and fixed in the usual way, afterwards placed in a shallow tray of water, where they remained some time before a second water was introduced. Results: a slight yellowness, but as yet no change of marked importance.

Batch two. A minute trace of hypo added to the water in which the prints were washed prior to toning. I noted at the time that the indications of the sulphurous presence were almost imperceptible. Results: some prints are yellowed and partially obliterated, others gone in streaks, some only at ends or corners; but all are doomed.

Batch three. A little hypo solution dropped into the water in which the prints rested after toning and previous to fixing. Results: similar, but not in degree as bad as batch two.

The whole of the prints underwent a thorough final washing in a large bulk of water, and appeared, when dried, as perfect in colour as could be desired. Yet mark the results after the seasoning of a few months.

In reference to this matter, it might be urged that photographers are not usually in the habit of adding hypo to their washing waters. Not intentionally, I grant; but it must be remembered that the printing department is sometimes conducted by ignorance and carelessness. More the pity! Yet the cause is soon explained. The photo printer is too often regarded in the light of an unskilled labourer, and is paid and respected accordingly. A printer's position was never a very desirable one, but that demon competition has now pulled him down into a state of degraded slavery. I had occasion recently to advertise for an assistant printer. The applications were, alas! too numerous. The appearances of the applicants varied from a cross between a dog-fancier and pugilist to a swell out at elbows as well as out of luck. On questioning those poor fellows, I found a realization of the old story: they were hanging to a business which nature did not qualify them to adorn. Much intelligence would hardly exist on a printer's wage.

I have heard printers boast of their time-saving skill in toning with one hand and fixing the prints with the other, both operations being conducted at one and the same time—a feat which, to my mind, is suggestive of occasional grave mistakes. With my own eyes I have seen an assistant fixing prints, and splashing an occasional drop or two of hypo into a can of water intended for washing a batch of untoned prints. In short, there are many ways by which a trace of hypo might be introduced into the first washing water without its dread presence being suspected; and the prints washed therein, fair and unblemished, are sent out into the world to fade and perish, causing a verdict to be passed on silver prints generally: "*They are doomed to decay!*" And photographers themselves are wont to entertain the same delusion. I am of opinion that care, united with proper treatment (*care* is

sometimes the cause of the mischief), would prove sufficient to add considerably to the tenure of a silver print's existence. Quantity and quality are qualities difficult to unite. Cheapness makes the former a necessity. Again, more the pity! Yet, quality apart, the dishes in which the preliminary washings are conducted might be kept entirely free from hypo by giving to each a thorough washing prior to use; and the utmost care should be exercised to prevent the obnoxious agent from mixing with the first washing water; and the consequences that follow a deviation from this rule should be pointed out to each printer and assistants. They should also be taught the necessity of giving an abundance of water to the prints for the first dip they get subsequent to fixing, for it is *not* the time of washing they receive that adds to their stability, for an hour's washing in an abundance of water imparts greater advantage to the pictures than a week's soaking in a small pan or dish could accomplish.

Silver printing has doubtless attained a high state of perfection, so far as beauty of results is concerned. Make such results permanent, and the process cannot sink into oblivion until the day when the heliotype or Woodbury-type work shall be in a position to challenge comparison with the best silver printing.

ASTRONOMICAL PHOTOGRAPHY IN AMERICA.

BY DR. H. VOGEL.*

OUR readers will probably remember the details of the eclipse observations in America on the 7th August, 1869. The extensive nature of the means employed on that occasion, and the enthusiasm with which many hundred photographers and men of science devoted their time and labours to bring about a successful issue, were alone sufficient to testify to the efforts on the part of the American nation to do something in the cause of science, and to contradict the oft-repeated statement made in Europe, that America never cultivates science for itself alone, but always with a view to some material benefit. But to what material benefit would an investigation of the protuberances of the sun lead? Nobody, surely, would believe, for instance, that an examination of them would be instrumental even in affording us a larger supply of hydrogen! Again, it is not unfrequently asserted that, taking into consideration the wealth of resources existent in America, and means available for the prosecution of scientific investigation, there are, in proportion, but few researches or inquiries instituted in that country. This complaint may, in part, be a true one, but then, it should be remembered that America is a land in which, at present, there are but proportionately few scientific men. As regards the subject of photographic astronomy, however, there is no ground for any such reproach, for in respect to that branch of science the Americans are exceedingly well posted. The results obtained last year during the eclipse of the sun surpassed the most sanguine expectations, and the previously well known photographs of the moon and sun's spectrum obtained by Rutherford are altogether without rivals, and constitute, in every way, real triumphs in American science and American photography.

Rutherford is an amateur, who has dedicated his time and means to the worship of science. On the very first day of my arrival in America, I had an opportunity of making the acquaintance of this amiable, as likewise modest and intelligent, American; his instruments, his laboratory, and observatory, were all inspected by me, as, indeed, I have stated in my first letter from America. Some time later, I enjoyed a further opportunity of improving my acquaintance, and was then fortunate enough to become known to Mr. Chapman, the assistant to Mr. Rutherford, to whom I owe special thanks. The gigantic proportions of the sun's spectrum, measuring

2.1 metres in length, was obtained by Rutherford in fifteen different sections, and in a very simple manner. He fitted to the spectroscope a camera without lens, and, by pulling out the eye-piece of the apparatus to some distance, employed the same as the lens, to throw a picture upon the focussing screen, where, after being sharply focussed, the image was photographed. Owing to the limited field of the apparatus, the coloured spectrum can only be secured bit by bit, and but to that extent, obviously, to which the rays act upon the sensitive film. Rutherford's representation of the spectrum from 1885 of Kirchhoff's division (before F in green) to beyond 5,000 of the Angstrom's sketch of the spectrum lines (that is to say, beyond H' in violet). The Rutherford spectrum, therefore, contains more than the Angstrom spectrum table, and above $\frac{2}{3}$ of Kirchhoff's.

If the Rutherford and Kirchhoff's spectra are compared, there will be found several differences to which attention should be called. In the first place, the lines of Rutherford are much richer; where, for instance, Angstrom shows us but a glimmering outline, a shadow, or separate markings, Rutherford gives clearly defined lines close together, as in 3,525 and 3,572. A simple line in Angstrom's sketch 3,539, becomes a double line in Rutherford's, and between 3,557 and 3,547, where nothing at all is shown by Angstrom, we find in Rutherford's photograph one strong, and four weaker, but well marked lines.

Some few instances are only quoted here, but they might easily be multiplied. Moreover, many lines which appear characteristically marked by Rutherford are represented in Angstrom's and Kirchhoff's tables as quite subordinate, as witness 3,040, 2,936, and 2,720.

These discrepancies are explained by the difference between the sensitiveness of the retina and that of the photographic film; where with us there is light (as, for instance, in the yellow), there is to the plate profound obscurity, and *vice versa* as regards the ultra-violet portion of the spectrum. For this reason photography renders important assistance to the eye in the depiction of the spectrum.

In the same way as certain fresh fields of the spectrum (to wit, the ultra-violet) have been discovered by means of more sensitive chemicals, so, in like manner, have new lines been found in portions of the spectrum already investigated; and it will now be the work of the spectroscopic observer to determine the reason of these lines. And to conduct such an investigation it will be necessary to examine and photograph different artificial spectra with bright lines, and especially the numerous ones in the iron spectrum, in order to ascertain whether these new lines of Rutherford belong to them or not.

One point is of importance, viz., that in order to obtain a means of instituting closer comparisons between the Rutherford and Kirchhoff's spectra, they should be reduced to the same measurements. The Rutherford spectrum should be produced of the same dimensions as that of Kirchhoff, and this could surely be done by enlarging or reducing the same by means of photography. At any rate, the results of Mr. Rutherford would then be more appreciable by scientific men, who, as a rule, will have little to do with photography, from the fact that they do not at all understand its capabilities.

Rutherford's photograph of the moon has already been mentioned in this journal. I should mention that in Germany only one example of moon photography is known, whereas at Rutherford's studio I saw no less than three. Of these, that of 1865, which is known to us, is certainly the most beautiful and clearest, the others being less sharply defined. This latter defect is due to the agitated state of the atmosphere, to which I referred some time ago, when describing the large telescope of Schroder, in Hamburg; this phenomenon acts in a prejudicial manner, even with very short exposures (as, for instance, when only of one second duration), and for this reason a perfect picture is more the result of good luck than anything else.

* Photographische Mittheilungen.

The photographs of the stars obtained by Rutherford I have also mentioned in a previous letter, but refer to them again, in order to describe a few interesting details in connection therewith. As may be imagined, pictures of such microscopical size as these lesser luminaries may easily be mistaken for collodion spots, and in order that no doubt shall exist on this point, Rutherford has recourse to an exceedingly ingenious device. He places a sensitive plate in his apparatus, and secures a photograph of the stars while the clockwork of his telescope and camera follow these luminaries; then he checks the motion of the telescope for a period of thirty seconds, sets it again in motion, and exposes a second time. In this way a second picture of the stars is obtained close to the first one; or, in other words, a double picture is secured, similar to that produced when the camera during exposure has been moved, and with this it becomes an easy matter to distinguish the double pictures of the stars from specks in the collodion, which do not frequently appear doubled. After the second picture, Rutherford again checks the motion of the telescope for a short time, leaving the plate still exposed, and by this arrangement the brighter stars trace a fine line upon the plate, showing the exact direction in which they are moving.

All astronomical photographs are taken by Rutherford upon wet plates, coated, in the first instance, with albumen, as he finds the collodion film is, in this way, more securely fixed, and less liable to contraction, a circumstance of considerable importance when the minute pictures come to be measured.

(To be continued.)

PRELIMINARY COATING & POLISHING.

BY J. W. WILKINSON.

THERE is scarcely any operation in a photographer's routine of work so troublesome, laborious, and important as plate-cleaning. Detergents, polishing liquids, &c., may be used, but still the trouble and labour are very great, and the results are not always satisfactory. It is difficult to prevent the composition used from getting into the interstices of the edges of the glass plates, thereby endangering the purity of the bath, and producing a plentiful crop of pinholes.

In warm weather, if, instead of a stock being previously cleaned, a plate is polished just before it is wanted, the surface is rendered electrical, and it attracts all floating particles of dust, which is sure to spoil any negative taken upon it.

To remedy this, various substances have been proposed, but they have not found much favour, and photographers, as a rule, have been content to go on cleaning, polishing, and swearing, until tunicare made its appearance. Some photographers have succeeded with it, others failed; why I cannot tell, unless it is because it is not manufactured of uniform quality. I have tried it, but have not succeeded very well; seventy-five per cent. of the plates prepared with it were not useable, being full of dirty round spots and markings. I have tried different ways of cleaning before applying the tunicare, but the results were always the same.

On November 4th the NEWS had a formula in from a correspondent, that I determined to try, and the first batch of plates I prepared with it were all perfectly clean, and every batch since prepared has turned out good. So I have relinquished tunicare in preference for the following:—

Take the white of one egg, and beat it up well, and in a six-ounce bottle put one ounce of spirit of wine, two ounces of water, three drops of glacial acetic acid; to this add the albumen, and violently agitate the bottle, and then add three ounces of water, and allow to stand all night; in the morning filter the liquid from the curdled mass, and the filtered liquid is the preliminary coating. To use it, first soak the plates in cold soda solution, not too strong; rub

off the white deposit with a rag, and put into a weak solution of hydrochloric acid and water; then wash in five or six changes of clean water, and while still wet flood with the preliminary coating twice; stand up to dry upon clean white blotting paper, and when dry mark the wrong side, and put away for use.

Robinson's treacle process will be found very useful for preserving plates moist between developing and fixing, as three or four days may elapse between the two operations. I have used it ever since it was first published, and never met with a single failure. The plates, after three days, intensify as clean and bright as if only just developed. I use it precisely as first developed.

NOTES ON THE COLLODIO-BROMIDE PROCESS.

BY HENRY COOPER, JUN.*

IN proceeding to lay before the meeting the "Notes" I have prepared on the collodio-bromide process, I feel that some little preliminary explanation is due, both to the Society and to myself, with regard to the circumstances under which they are presented. I regret exceedingly my inability to appear personally on this occasion, for it would have given me great pleasure to have taken part in the discussion that will, I trust, follow the reading of this paper.

About eighteen months ago I determined to devote all the time I could get for photographic work to a careful series of experiments on the collodio bromide process, as I then thought, and still think, that in some form or other nearly all future dry-plate work would probably take this direction. Accordingly I set to work, and, by the end of our last session, my experiments had already furnished such satisfactory results, that I made a promise to the secretary that I would bring the subject before the Society; and I had great hopes that by the autumn I should have been enabled to do so, for, during the spring and early summer, I had been at work with encouraging success; but, unfortunately, in August last my health gave way, and I was compelled to give up entirely, and to leave London as soon as possible to spend the winter months here in Torquay.

When partially restored to health a great sense of disappointment came upon me: many of my experiments were not concluded, and I was quite unable to prepare any specimens for our exhibition in November. However, I had brought my "Note-book" with me, and, with the view of fulfilling my promise, I decided upon collecting such memoranda as seemed likely to afford help to others, and putting them together in the form of a short paper, suitable for reading at one of the Society's meetings. In so doing I must trust to the kind feeling and generosity of my fellow members to excuse many shortcomings. This kind consideration has been so often extended to me in bygone years that I have the greater confidence in asking my friends to overlook, on the present occasion, the want of absolute novelty in the following jottings. I have never hesitated to adopt the ideas of others whenever they have appeared to be of value, and I deem the thanks of photographers in general to be due to those gentlemen who, during the last two years, have so freely recorded the results of their experience for the benefit of all.

Of course, in a process like the collodio-bromide, which involves so many details at variance with our ordinary photographic practice, there is yet a very great deal to be learned, and I am truly sorry that my own investigations have been thus abruptly terminated for the present. From the experience that I have already had of the process, I am greatly pleased with it, and the points that particularly strike me are: the ease and celerity with

* Read before the Photographic Society of London.

which a large number of plates may be prepared; the great uniformity of every plate in a batch; the freedom from all worry about "baths and their diseases;" and, following from this, the greater ease of arriving a second time at certain determined conditions of success. Another important recommendation is, the good keeping quality of the plates; for those prepared in the manner I am about to describe have been kept for upwards of three months before exposure without any perceptible deterioration in the quality of the resulting negative, although I should think it necessary to slightly lengthen the period of exposure if more time than a fortnight were allowed to elapse between the exposure and development; but, on the other hand, I see no reason why my plates should not keep for much longer than three months before exposure, provided that care were taken in packing them. I may here mention that I regard plate-boxes as the worst things possible wherein to store dry plates for any length of time. Dr. Norris's method, or a modification of it, appears to be the most efficacious and convenient. With respect to rapidity, I may safely say that I have succeeded in preparing more reliably sensitive plates by the collodio-bromide process than by any other method.

I need hardly remind you of the great difference of opinion existing between Messrs Dawson and Carey Lea,—two most energetic workers with the process,—the one insisting that to secure success we must have an excess of soluble bromide in the film, the other that excess of nitrate of silver is advantageous. I do not feel qualified to judge as to which is the better method of working, as my experiments in that direction were not sufficiently conclusive; and I have, moreover, heard of others succeeding with either plan. I can only say that in my hands an excess of bromide has given decidedly the better result; and, judging not only from my own limited practice with this particular process, but from analogy, and our general experience of other photographic processes, in which an excess of nitrate of silver is employed, I can hardly help coming to the conclusion that films containing absolutely no trace of free nitrate would be far more likely to remain in good condition for a lengthened period. It must, therefore, be borne in mind that, in the method of working which I prefer, a certain proportion of soluble bromide is most essential.

It may often happen that, although there is an apparent excess of silver, such is not really the case, and this I have proved by actual experiment. When a quantity of nitrate of silver greater than is required to decompose the bromides has been actually dissolved in the collodion, no trace of the free nitrate could be discovered. Undoubtedly a portion of the nitrate of silver is taken up by the organic matter of the collodion itself, so that, although we may have adjusted the proportions of silver and bromide in their exact combining equivalents, the chances are that we shall really have some of the bromide still left unconverted. Mr. Bolton was the first to call attention to this important fact. I feel confident that, within certain limits, the more of this mysterious organic substance there is in the collodion, the more sensitive will be the film.

We may now proceed to the manipulatory part of the process.

First, as to the pyroxyline. Although it is undoubtedly better to employ a sample that has been specially prepared for this process, or, rather, one that is specially adapted for it, many collodions in the market may be rendered suitable by proper treatment. Those who have devoted much attention to pyroxyline know full well that the manufacture of this substance for any particular purpose is attended with much trouble and vexation if undertaken by one not accustomed to the work; and I feel compelled to depart from my usual plan, and to mention the fact, that the pyroxyline prepared by Messrs. Rouch is admirably adapted for the collodio-bromide process. I have

purchased it at different times during the past eighteen months, and have never known it to fail.* I will not detain you by dwelling upon my numerous experiments on the manufacture of pyroxyline, both from cotton and paper, and, as so many writers have fully explained the qualities necessary, need only say that I have come to the conclusion that the most suitable kind is produced by employing a maximum temperature, and a minimum of water in the acids.

So much depends upon the original character of the cotton, that it is almost impossible to give any formula that shall not require altering under some circumstances. I append, however, one or two from my note-book, with the remarks therein made upon them, as they may prove useful to those who intend devoting their attention to the manufacture of a suitable sample.

I must premise that I have prepared cotton many times by each of these formulæ, and have never failed in obtaining a product suitable for the collodio-bromide.

In each of them half of the quantity of nitric acid may be replaced by an equal proportion of commercial nitrous acid.

No. 1, A.

Sulphuric acid, sp. gr. 1845	...	8 fl. ozs.
Nitric acid, sp. gr. 1450...	...	4 "
Water	...	2 "
Cleaned and dried cotton	...	200 grs.
Temperature	...	150° Fahr.
Time of immersion	...	10 min.

No. 2, A. 150 grs. cotton immersed in same used acids, at a temperature of 120° Fahr., for 15 minutes.

Both gave pyroxyline perfectly soluble to the extent of 8 grains in each ounce of mixed solvents (equal parts alcohol and ether).

Fine adhesive films, very transparent and structureless. Gain in weight 30 per cent. in each case. Very good for wet collodion. Brilliant, intense, sensitive, and clean. No. 1, A slightly the better, being more fluid and powdery.

No. 12, C. Same proportion of acids and water as No. 1, A; but the temperature ten degrees higher. The cotton very nearly soluble. Very fluid collodion, with 6 grains to the ounce of solvents. Very adhesive and clean. Pours well, and sets well. Good for wet process.

No. 1, H.

Sulphuric acid, sp. gr. 1845	...	6 fl. ozs.
Nitric acid, sp. gr. 1450...	...	2 "
Water	...	1 fl. oz.
Cotton	...	100 grs.
Temperature	...	160° Fahr.
Time	...	10 min.

No. 2, H. Same proportions. Temperature 165° Fahr. Cotton powdery and short. Soluble. Not very adherent, but intense, sensitive, and clean.

(To be continued.)

ON LONG EXPOSURES IN CONNECTION WITH EXPRESSION.

BY EDWIN COCKING.†

ALL professional portrait photographers who have been called upon to produce negatives during the long-continued dull and foggy atmosphere in London and elsewhere must have occasionally been agreeably surprised by the capacity of some sitters to undergo the exceeding long exposure necessary to obtain a photograph at all.

Upon a recent occasion, being thus engaged, and whilst mentally counting time, after bestowing a sympathizing thought upon the patient individual behind us, who was

* There are so many photographers who might be induced to try the process if they can easily obtain a suitable pyroxyline, that I trust I may be excused from appearing to advertise a commercial article in this place.
† Read at a meeting of the South London Photographic Society.

made all taut by the useful body as well as head-rest, one's thoughts travelled back to the olden time, when Daguerreotype was the *modus operandi*, and we attempted to realize the fact that comparatively long sittings were then the rule, and not, as now, the exception. The results were, as regards expression, nearly all that could be desired. My experience arises, not from my own practice, but from having had occasion to procure Daguerreotypes of many persons, clergymen amongst others, for the purpose of producing from them a lithographic drawing for subsequent publication.

Whilst thus reviewing the past, I also recalled another fact, viz., that the operator (a well-known member of our profession) did not turn away from the sitter, but boldly stood his ground, and directed the thoughts, and, by well-chosen words and in gentle tones of speech, called up into the face of the sitter expressions which were afterwards found to be perfectly satisfactory by the friends who had to pronounce the verdict. Now, admitting this state of affairs, a long sitting is, after all, not a thing to be met with by a long face and a shrug of the shoulders, implying beforehand that we anticipate failure.

I have often, under conditions of light the most favourable, tried this experiment of looking at the sitter, and endeavouring to call up a cheerful or bright expression, but the rapidity of the taking was sometimes fatal to the result, as any alteration of the facial muscles was immediately conveyed to the sensitized plate, and a slight indistinctness was the natural consequence.

But that a *prolonged* sitting should be more likely to succeed seemed hardly feasible, when it was considered that possibly the continuous alteration of the muscles of the face during the sitting might produce a discordant effect. However, as it is the weakness of the chemical power which is the favourable cause of the ultimate success, lines or shadows on the face, being occasionally put out of the original position, become subdued and softened, and so all tend towards the desired object.

Another thing: the sitter, forgetting for the moment the real work going on in the camera, begins to lose the nervousness always in attendance upon the first few seconds of exposure, and gradually settles down into unconscious case.

Well, putting our recollections of bygone days into actual practice, we found that the sitters went through the ordeal with far better results than we had anticipated; but from the fact of having hitherto always been taken very quickly, and left to manage their own expression without being looked at, a certain amount of wonderment at the novelty for a second or two took possession of them, to be succeeded afterwards by a much more natural look, arising from not having their thoughts left to be centred upon themselves, or upon the utter blank in *sound* which the operation has always brought about.

I venture to draw attention to this subject, thinking that it may possibly induce others to try experiments in the same direction. The strong effects of light and shade, which will for the future demand the earnest attention of the art-photographer, involves the use of light in a more concentrated form, and, consequently, a slightly prolonged exposure must follow; under these requirements a field will arise wherein the experiment of influencing the expression will have ample scope for trial. Nothing is more trying and difficult than to produce *expression* through the agency of photography. Much depends upon the skill and manner of the artist, who, after trying all in his power to call up the desired expression on the face of the sitter, has then to leave him to himself, and trust to the power and rapidity of his lenses and chemicals to complete the work. But under the conditions of moderately long exposures, any alteration of the lights and shadows being also long in operating upon the plate, there will arise ample time and opportunity to suggest ideas and modifying the expression, should it tend to extremes either one way or

another. If the sitter is prepared beforehand, by stating that he is to be talked to during the exposure, he will not think much of the fact when it occurs.

I cannot help thinking that, in this direction, there opens up a field for investigation and trial well worthy of all those who have aspirations towards making our art science fulfil the requirements of portraiture to the very greatest possible extent.

Correspondence.

DISHES FOR DEVELOPMENT.

MY DEAR SIR,—In your excellent YEAR-BOOK Mr. England suggests the use of a dish for development of plates in out-door work. I think this will prove a most valuable suggestion for plates at all beyond the ordinary sizes. I should be greatly obliged to you or to Mr. England for information as to the *depth* of the tray inside, and whether he uses a spout in order to draw off the water. Of course, thorough washing is necessary between each plate—I am, &c.,
OXONIENSIS.

COMBINATION PRINTING-FRAMES.

SIR,—Few photographers will be surprised to find the validity of the patent of Edwards's combination frames questioned. I wrote to you in July (page 309, Vol. XIV.), pointing out not only the "outrageous" price Mr. B. J. Edwards asked for his frames, but my determination and ability to do without them. Mr. B. J. Edwards stigmatised my conduct (page 334) as "dishonourable," and apprehending that "but for the existence of such individuals, there would be no necessity for the Patent Laws, or the protection they fortunately afford to inventors."

Now the question is, Can Mr. B. J. Edwards be considered much of an inventor in this case? In the PHOTOGRAPHIC NEWS, page 17, Vol. X., is a description of a frame for opal printing, by Mr. F. W. Hart, very suggestive of everything.

Again, page 70, same volume, Mr. Geo. Willis gives another detailed description, securing the negative precisely as in the Edwards frame, and adding: "To secure the frame going back to its place when opened to examine progress of the printing, there are two hard wood pegs, and two holes for them to fit in."

Here is Mr. Edwards's *invention* again: Mr. Scales, page 35, Vol. XII., suggests the exact method of securing the paper, as adopted in Edwards's frame, in these words: "Leave depth enough of rabbit for thin piece of wood, round which I would double the sensitive paper to keep it in its place."

Again. The specification of a patent printing-frame abandoned by Mr. Field is given at page 127, Vol. XI., which ends thus: "A series of frames, similarly furnished with metal bearings and bow spring, is provided to fit in one another, to be used with negatives of different sizes." This disposes of Mr. Edwards's claim to originality with regard to interchangeability of frames.

Surely any man ordering a gross of frames to be made for him of a *certain* size can interchange them as much as he pleases without troubling about what Mr. Edwards considers his legal rights! Of course, Mr. Edwards has not found his specification all profit, although he has discontinued asking £2 2s. for a licence to use his frames. The mistake he made was not including all combination printing in his patent when he was about it.

Trusting that Col. Stuart Wortley will not only survive these terrible threats of law, but also the dangers to which he is exposed with Faidherbe's army, and still continue to favour photographers with his experience in your columns, I am, sir, your obedient servant,
INGENIO.

COMBINATION PRINTING FRAMES.

DEAR SIR,—In the last weeks NEWS I notice a letter from Col. Stuart Wortley in reply to one of mine previously published in another journal.

If, as Col. Wortley states, his frames were made before I called upon him in June last, perhaps he will kindly explain why he did not at once understand my method, supposing him to have completed a precisely similar invention, and why no reference was made to his frames at the time of my visit?

Col. Wortley's random assertion that my patent frame is a copy of Mr. Robinson's printing for opal glass carries its own refutation, the two frames being constructed for a totally different purpose, and being, as will be evident to all who have seen them, as unlike as possible in every respect, except that they are both made of polished oak.

The question as to the infringement of my patent by Col. Wortley will, in all probability, come before the Vice-Chancellor for decision. For the rest, the facts are as stated in my letter above referred to.

I am sorry to give you so much trouble in this matter, but in the interest of truth and justice I must ask you to publish this letter.—I am, dear sir, yours very truly,

Hackney, January 18th, 1871. B. J. EDWARDS.

DISSOLVING VIEWS WITH ONE LANTERN.

SIR,—In your last weeks NEWS, Mr. J. Martin appears as a champion for Mr. J. Powell, against the strictures of Mr. Baynham Jones and "Silvester," in reference to certain remarks made by those gentlemen regarding a plan of dissolving (?) invented by Mr. Powell. Mr. Martin says, "Does he (Mr. Powell) deserve insult for this?" I beg respectfully to state that no insult whatever has been given, and I am perfectly sure no insult was intended by either correspondent. The supposed insult and "untruthfulness" is the morbid offspring of Mr. Martin's imagination. The facts are these:—About three weeks ago Mr. Powell, through the medium of the NEWS, sought for an opinion as to the desirability of introducing a certain plan he had invented of producing dissolving (?) views with one lantern. One correspondent said, "Don't. Mr. Powell cannot have tried the plan before publishing it, or he would not, I am sure, have done so." The other writer informed him that "the scheme was an old one; that it was unsatisfactory; that the effect was unpleasant; and that the result was anything but approaching to dissolving." Mr. Powell publicly solicited an opinion regarding the merits of his plan, and also the desirability of introducing it to the public; and he obtained, through the same medium as he put the question, his answer. For what cause, therefore, has Mr. P.'s champion to complain?

How condescending of Mr. Martin to take Mr. Powell under his guardian care! But what quiet satire there is in his suggestion to Mr. Powell to "exercise his ingenuity in other directions, and I will render him any assistance through your pages!" How grateful ought Mr. Powell to be!

I ought to rebut the strange and subtle sophistries implied in the long tortuous sentence about "an idea," but your space would be taken up too much; but what a cruel thrust it also contains against putting faith in "obscure" pioneers of invention or science!

Mr. Martin says (though what reference it has to the matter in dispute I do not know), "Suppose some one tries to extract sunbeams from cucumbers; if he succeeded, he would be the greatest benefactor to photography ever known." (?) A happy thought suggests itself: could not Mr. M. attempt that? He would be sure to succeed.

I would refer Mr. M. to an amusing coincidence in last week's NEWS: it is with regard to his plan of using a "coloured glass over the nozzle of the lantern to produce the effect of being gradually lost to sight." If he will

kindly turn to p. 23, under the head "Talk in the Studio," end of third paragraph, it says: "Attempting to use pieces of glass is a very transparent error."—Yours truly,

January 14th, 1871.

SILVESTER.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY

THE monthly meeting of this Society was held at the Memorial Hall on Thursday, the 12th inst., the Rev. CANON BEECHY, M.A., President, in the chair.

After the routine business,

Mr. ROGERSON exhibited a large copying camera of very ingenious construction. One feature in this camera was much commended. The slide, instead of falling in a groove as in the ordinary construction, was made to rest upon bovils, which had the effect of keeping it always in its true situation, and yet allowed it to be removed with the greatest ease.

Mr. HEBERT said the plate-holder described in the *British Journal* of December 16th, page 589, was not very new; he had purchased just such an article about ten years since, and had brought it with him for the members to examine. It was much used at that time for suspending articles from the glass of shop windows.

A conversation took place on the preparation of collodio-bromide plates, the object being to ascertain how to prevent the formation of opaque spots in the film. The object was not attained.

It was decided that a lantern exhibition should form part of the proceedings at the next meeting, and that each member should have the privilege of introducing two friends.

C. ADIN, Hon. Sec.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held in the City of London College on Thursday, the 12th inst., Mr. J. T. TAYLOR occupying the chair.

The minutes of the previous meeting having been read and confirmed, the following gentlemen were elected members of the Society, viz, Messrs. William Mayland, J. Barnes, and James Tully.

Mr. EDWIN COCKING then read a paper "On Long Exposures in Connection with Expression" (see page 33).

The CHAIRMAN proposed a vote of thanks to Mr. Cocking for his paper, and regretted that, owing, no doubt, to the inclemency of the weather, the attendance was so small, for under usual circumstances a spirited discussion on the various topics suggested by the paper might have been anticipated. In portraiture, expression was very nearly everything; if that were good, numerous other defects would be regarded as of minor importance.

Mr. BARNES had found that permitting the sitter to talk during exposure did not interfere with the expression, but rather improved it, especially if the mouth were of an unpleasant shape.

Mr. FOXLEE asked what became of the beard, if the sitter spoke during exposure?

Mr. BARNES said that his remarks had special reference to ladies; the expression of gentlemen's mouths was of less importance.

Mr. FOXLEE found that a long exposure did not necessarily cause a bad expression on the face, for the lines of the face which, at the commencement of the exposure, were stiff, gradually became softened down, and a less rigid effect produced.

At this point the conversation became somewhat desultory, the topics of discussion being, among other things, the comparative rapidity of the Daguerreotype and collodion processes; tuning washed sensitized paper with ammonia; the advantages of "tunicare" as a substratum in the collodion processes, wet and dry. In reply to an observation by Mr. Hunter,

Mr. FOXLEE stated that the acetate toning bath, if made with hot water, would be ready for use in a very short time after its preparation; but when made with cold water it would have to stand over night before it was fit for use.

The proceedings then terminated.

Talk in the Studio.

PHOTOGRAPHIC POCKET ALMANAC.—Mr. D. H. Cussens has just issued his little pocket almanac for photographers. It contains much interesting and useful matter, and is a handy pocket volume of reference.

OPERATORS' SPECIMENS.—Another correspondent, signing himself "Swindled," complains of the non-return of the specimens he has sent in answer to advertisements, and which have not been returned, although stamps have been sent to pay the return postage. Our correspondent suggests that they are retained for exhibition as specimens. We do not think for a moment that such a motive has anything to do with the retention of specimens. It occurs at times, no doubt, from thoughtless carelessness and pre-occupation. It is often cruel to the operator, and altogether inexcusable, and, we believe, would rarely occur if thought were given to the subject. If operators would send a stamped and addressed wrapper for the return of their pictures, and always take care to place their names prominently on the specimens, we apprehend they would rarely lose them. The suggestions we have before made as to providing themselves with a few negatives from which to produce specimens would meet every difficulty, and if the name of the operator were scratched upon the film, it would appear in every print. The loss of specimens would rarely occur, and would be of little importance then, when it did.

PRELIMINARY COATINGS AND DRY PLATES.—Mr. W. T. Wilkinson, a correspondent who, a short time ago, spoke of the great advantage he found in a preparation of albumen, alcohol, acetic acid, and water as a preliminary coating, a mixture which he called "albumen tunicle," in a recent letter says:—"During the past dull weather I have not only perfected the preparation as a preliminary coating, but have also used it very successfully as a preservative for dry plates, and in such a manner as to entirely dispense with that stumbling-block to dry-plate photography, viz., washing the sensitive film. The mode of procedure is as follows:—A plate that has received a coat of albumen tunicle is collodionized and sensitized with the usual wet-plate chemicals, and upon withdrawal from the bath is flooded with albumen tunicle, recked to and fro to allow the tunicle to well permeate the film. Drain and dry as quick as possible. Fresh tunicle is to be used with each plate. The exposure, as far as I can judge at present, is about three or four times longer than wet plates, but probably it would be much quicker in bright weather. The development is effected by any of the dry-plate methods, viz., gelatine-iron and silver, acid pyro and silver, or alkaline pyro, and the resulting negative is very much like a gun-gallic plate."

PHOTOGRAPHIC SOUP.—The method of making a bowl of oyster soup that can be retailed for five cents, four of which will be profit, is as follows:—Take five Baltimore oysters, photograph them, to each photograph add five gallons of water, season to suit the taste.—*American Paper.*

PHOTOGRAPHY AND THE WAR.—A telegram in a daily contemporary says:—"A photograph of Fort Vanves, taken at a distance of several thousand paces, prevos the walls to have been much damaged by the cannonado."

To Correspondents.

B. F. D.—The imperfection of the tone of the prints enclosed in your letter is due rather to the negative than to any fault in printing or materials. The negative is wanting in vigour and contrast, being most probably fogged in the shadows. When this is the case the lights are printed through before the shadows are deep enough, and without deep printing you cannot obtain rich tones in the gold bath. With such negatives it is better to be content with brown tones, as in attempting to push the toning further, the tints become slaty and grey instead of purple or black.

ED. HOBBS.—The presence of iodide of silver necessary in the negative bath is most detrimental in the printing bath, always retarding or preventing the toning operation. If negative baths be employed for printing, the process of precipitating the iodide of silver by means of citric acid, which we have often described, should be employed. You will find one or two articles on the subject in our last volume.

J. A. D.—The account of the Woodbury photo-relief printing process given in the newspaper cutting you enclose is a fair and correct one. The only place at which you can get practical instruction is at the Company's Works, Hereford House, Brompton, where the process is in operation. The process is patented; whether licenses are issued, or at what cost, we cannot inform you.

A. Z.—The term "agreeable tones" is rather too vague to enable us to form an opinion as to what tones our correspondent desires. The colour of collodion prints is not nearly so completely under control as that of paper prints, the warm purple brown which is generally a favourite tint in the latter being rarely attained in collodion images, no matter how toned. As much depends, however, upon the original image as upon the toning. We have described various methods of producing and toning these prints; which does our correspondent employ? A new bath, full exposure, pyrogallic development, and gold toning produce good results, the tone being a fine black. The nitrate of uranium and ferrid-cyanide toning solution, mixed with a little gold, gives a purple brown. Mercury is a treacherous aid, but, followed by dilute sulphide of ammonium, it gives a good brown tone. The modified uranium intensifier on p. 114 of our Year-Book just issued will answer well for toning. 2. We do not know the address of any wig-maker.

N. CASINELLO.—We cannot speak with authority on your liability for taxation for a duly lettered vehicle used for business purposes, constituting dark rooms and conveying apparatus; but we should decidedly think that you are not liable, any more than a butcher or baker for his cart. Possibly some of our readers may be more familiar with the subject of taxation and liability, and may be able to give our correspondent information.

F. S.—The hyposulphite of soda solution is much less active in very cold weather than in warm weather. There is also always a considerable fall in temperature when hyposulphite is dissolved in water. It is wise, therefore, in winter to use warm water, or, at any rate, take care that the fixing bath is not used at a lower temperature than 50° Fah. It is well also to allow a longer time for fixing them in warm weather. 2. The use of a dipping bath for development has been tried, and has some advantages; but it has the disadvantage of diluting the free nitrate on the plate too much, and so rendering the negatives less dense. If you have tried it with success, there is no reason why you should abandon it.

A YOUNG BEGINNER.—Mr. Carey Lea enters into details of his mode of employing alkaline development in an article which you will find on p. 390 of our last volume (August 19th, 1870). It consists of pyrogallic acid and carbonate of ammonia used in different proportions according to circumstances, bromide of potassium being used as a restrainer. 2. Aqua-regia is a mixture of nitric acid and hydrochloric acid, two parts of the latter to one of the former. 3. We doubt not that you can get skiver of any dealer in bookbinder's leather; possibly you may get it of a book-binder.

L. F.—To produce collodion positives is not more difficult than to produce negatives; but some slight modifications are necessary. The nitrate bath should be acid with nitric acid; the collodion should contain not less than a grain of bromide to each ounce; the exposure may be a little shorter than that necessary for negatives; the developer should contain one or two drops of nitric acid per ounce, and is better when a few days old than when newly mixed. A point of the greatest importance is not to carry the development too far, but throw it off as soon as the principal lights have appeared. 2. Black varnish should not be applied to the collodion film, but to the back of the glass. Maroon velvet is more effective than black varnish.

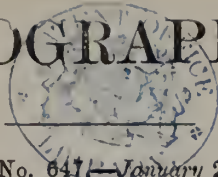
T. D. R.—There is no fault in your reproduction of the engraving, except want of density. In reproducing such things in which the whites are pure white paper, and the blacks tolerably deep, much greater intensity is required than in most subjects from nature. If you have difficulty in getting sufficient intensity, try bichloride of mercury followed by dilute solution of iodide of potassium, and, if necessary, follow this by pyro and silver. Any degree of intensity may be so secured. The copy of an oil painting is less successful, probably because it involves greater difficulties. Being an old dark picture, you will find that it shows much more detail to the eye when its surface is wet; sponge the surface, and photograph it whilst the surface is moist. Use a freely bromized collodion, and give a full exposure in good light. Let us know of your success.

W. T. WILKINSON.—We have only time for experimental photography when the weather promises trustworthy results. We do not attempt it with such weather as we have had lately, the less so that we have always other pressing duties.

J. CUNNINGTON'S letter, and some other articles, stand over for lack of space.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



Vol. XV. No. 647—January 27, 1871.

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A NOVELTY IN PORTRAITURE.

A PHOTOGRAPHIC novelty from the continent has recently been brought under our attention by Mr. Baden Pritchard, who has executed some portraits of his friends in the style to which we refer. This portrait is intended for use as a visiting card, for which the carte-de-visite was clearly neither intended nor fitted. Here a card, the size of a lady's visiting card, containing the name and address of the owner in the usual manner, has the top left-hand corner turned down—or, rather, ostensibly turned down—to receive a small medallion portrait on the triangular piece formed by the fold of the corner. The medallion is oval, about the size of a shilling, or less, and contains, of course, just the head and bust. The turned down corner, as we explained, does not actually exist; but the effect is gained by cutting off the top left-hand corner, and printing on the card the lines, forming a right-angled triangle, which the piece would form if turned down. At first glance, the effect is given of an actually turned down corner. The size of the triangular space formed is just sufficient for such a medallion as we have described, the base and upright of the triangle each being an inch and three-quarters long. In the examples before us the name, address, and lines are lithographed. The novelty is not, perhaps, a very important one, nor one likely to come extensively into vogue; but as the result is quaint and uncommon, it may please many, and, at any rate, is a thing easily tried; and any novelty which in any degree stimulates portraiture will probably be found a boon by any of our readers.

PHOTOGRAPHING CRIMINALS.

THE system of securing photographs of criminals with a view to identification, which has been in partial operation in Her Majesty's goals for several years, having been found productive of the best results in actually reducing the number of prisoners, and in aiding the just administration of the law by facilitating the distinction between habitual criminals and those who have only just placed their feet across the threshold of crime, was, in the course of last year, generally adopted in all prisons by order of the Home Secretary, acting under a clause in the Habitual Criminals Act. This measure, so simple, so reasonable, and so effective, both in its partial operation in this country, and in its more complete application abroad, was sure to meet with opposition from the maudlin school of humanitarians, and it has more than once been attacked as useless, tyrannical, and an interference with the liberty of the subject. Recently the *Daily Telegraph*, in an article devoted to a condemnation of the Habitual Criminals Act, declares that the "prison authorities have no more right

to compel a man who is simply awaiting his trial to sit for his photograph than they have to hang him"! It is not our province, in these pages, to discuss social or political problems, but simply to keep our readers informed on all points which affect photography and photographers; but we cannot help remarking, in passing, that it would be as reasonable to assert that the authorities have no right to arrest a man who is only accused of crime, and not proved guilty. The simple fact is, that laws are made for the protection of the community at large, and individuals merely charged with crime are always, of necessity, placed under disability and inconvenience. If a *prima facie* case is made out against them, then a means of identification for determining whether they have before come under the operation of the criminal law, or for reference should they be again found in a similar position, is surely one of the least offensive and most efficient aids to the effectual administration of justice, and hence to the preservation of the well-being of the whole community, which can be devised, and photography establishes another claim on the gratitude of society for its efficient aid in the matter. Here are the remarks of the *Telegraph* on the subject:—

Swayed by this idea [that the criminal classes are irreclaimable] two years ago or thereabouts, we armed our police with fresh powers of supervision, which have not added in any material degree to the security of society, whilst they have driven the criminal class to sheer despair. It may be said that the Act only applies to certain categories of offenders. We answer, that, in practice, it applies to all. Parliamentary sanction once given to spydom, it has leavened the whole mass. How is it that such an idea never occurred to a reasonable man as that all prisoners, committed to the House of Detention to take their trial, should be photographed, and the photographs used by the force? The prison authorities have no more right to compel a man who is simply awaiting his trial to sit for his photograph than they have to hang him. Any attendant or warder who meddled forcibly in such a matter might undoubtedly be convicted of assault, and would, no doubt, be punished in a very exemplary way. We simply give this as an illustration of our meaning. Let a man once fall so far under suspicion of crime that he is committed to take his trial, and straightway he is to be photographed, and his photograph is to remain as a "possession for ever" in the archives of the police. This second system—the clumsy idea of "once a convict, always a convict"—does not work well. It is as foolish as it is unjust. In a large measure the discretion of the judges and the magistrates has allowed the "Habitual Criminals Act" to remain a dead letter; had it been carried out to its full extent, it must have been already repealed. The Ordinary of Newgate does not sit down of set purpose to disparage the statute; what he does is to show us how "habitual criminals" are made. He asks us to assist, as it were, at the process of manufacture.

How far a knowledge that his photograph is in the hands of the police, to be used as a means of identification and increase of punishment should he again come within their clutches, should be an inducement to the criminal to become liable to arrest, we must leave to others to determine. It is clear that an honest man can

have no qualms of uneasiness from a knowledge that his photograph is accessible in case he is charged with crime. The evidence of the governors of gaols in which the system has been in operation for years is conclusive as to its efficiency in repressing crime, and thoughtless invectives against it, as interference with the liberty of the subject, are only worthy of a passing word in refutation.

PHOTOGRAPHIC SECRETS FOR SALE.

THE new American journal, the *Photographic World*, which, from advance sheets with which we have been favoured, seems to promise as much excellence as its elder brother, the *Photographer*, in the first number exposes the nature of certain photographic secrets which a photographer from Berlin offers to supply for the modest sum of a dollar and a-half. Herr Ritzler offers, in his advertisements, recipes for the following half-dozen desirable purposes, all, as he states, giving beauty to albuminized prints:—

“*First*.—To prepare the negative equal to any retouching that can be done, and especially adapted to tan, freckles, and red faces.

“*Second*.—To intensify any one part of a negative without interfering with the other parts—as one hand, one side of the face, &c.

“*Third*.—To make your paper, “after silvering, fuming, and drying,” give softness to the print.

“*Fourth*.—To prepare the hypo bath to give clear whites and light and rich draperies—splendid for Rembrandts.

“*Fifth*.—To improve the finish on your press, no matter what style of roll you use.

“*Sixth*.—How to make the “period,” or wreath vignette—the prettiest picture ever invented; can be made on plates; they will readily sell for double your card prices, and no extra expense in your work.”

A correspondent of the *World*, having forwarded a dollar and a-half and stamped envelope, received promptly a circular giving the promised recipes. As our readers will see, some of the hints are good, but not new; others are neither good nor new:—

“*First*.—After clearing, wash well, then pour a clean solution of gum-arabic over the negative, and let dry; with a soft pencil—using Indian red—rub carefully the face and hands: breathing on the plate will make the colour take; the heavier your colour the lighter your print.

“*Second*.—Develop, and let dry without clearing: cover all the parts but that to intensify, and using a sun-glass or back lens of your instrument, drawing the sun on the part until it blackens to your notion (do not heat the glass); then clear and varnish.

“*Third*.—Have your press clean, and roll your paper before printing.

“*Fourth*.—Add to a twelve-ounce bath one ounce alum and one drop to each ounce of equal parts alcohol and ammonia.

“*Fifth*.—Have the bed-plate moderately warm, and roll face down.

“*Sixth*.—Have a wreath size of quarter opening, cover an eight by ten cardboard with black velvet, and fasten wreath in centre; mark your ground glass the size you want, and have the copy of the inside of the wreath outside the work on ground glass, and expose; have another eight by ten covered with black velvet, and in the centre a quarter opening, and take the sitting through the opening, having the outside of the figure come to inside of work on ground glass.”

IMPURITIES IN NITRATE OF SILVER.

The editor of the *Photographic World*, referring to an article in a continental journal on the detection of impurities in nitrate of silver, recalls the fact that an examination made by a committee of gentlemen in New England satisfied themselves that the quantity of any foreign substance present in samples of nitrate of silver was so minute as to be scarcely

worthy of consideration. So far as our experience goes, the same fact is true of the nitrate of silver in this country. We have never met with a sample in which impurities could be traced to, or fairly ascribed to, wilful adulteration. Organic matter is occasionally found present as the result of insufficient care in the manufacture, and this the photographer knows may be eliminated by sunning in solution, or by means of a permanganate. Excess of nitric acid is the most common impurity, and may be removed by recrystallizing or fusing, or, sufficiently for practical purposes, by neutralizing. Nitrate of potash, the most easily added adulteration, we have never found present in any sample; its presence would be injurious chiefly because it would cheat the purchaser in the cost, and deceive him as to the true strength of his solution. The method of detecting it suggested by Herr Kruger, and quoted below, is very simple. Although, from infrequency of adulteration, means of detection do not possess vital importance, and are known to many photographers, it may not be uninteresting to quote the remarks of the continental contemporary referred to:—

“Silver which has been obtained from photographic residues contains generally only two impurities—iron and copper; the former mechanically, the latter as an alloy. When, however, we wish to enumerate all the bodies with which nitrate of silver is adulterated in order to increase the profits of the chemist, we must mention the nitrate of bismuth, lead, and potassium, particularly the latter, for it is extensively used for this purpose.

“It is not difficult for the practical photographer to detect these impurities. The colour, the manner in which it breaks, and the manner in which it dissolves, will indicate the presence of iron, bismuth, or saltpetre.

“Iron imparts to nitrate of silver a yellow colour. Saltpetre gives a concentric fracture in the form of rays; and the fused sticks will dissolve unequally, and become honey-combed. Bismuth is indicated by making distilled water appear milky when the nitrate of silver is dissolved in it, caused by the formation of an oxide of the nitrate of bismuth. Copper is detected by adding ammonia to the nitrate of silver solution, and if the latter turns blue, copper is present.

“Saltpetre (nitrate of potash) is also easily detected by the following method:—A piece of nitrate of silver weighing about eight grains, or a stick of about one-eighth of an inch in length, is placed upon a clean plate of glass or a saucer; it is touched with the still glowing part of a burnt match, when it will burn immediately, and when chemically pure, a residue of metallic silver will remain. The residue is placed upon a piece of red litmus paper, and moistened with a few drops of distilled water. When the silver was chemically pure, the paper will retain its colour unchanged; but when the nitrate of silver had been adulterated with saltpetre, the paper around the residue will assume a blueish colour, more or less intense, caused by the caustic potash in the residue. This experiment is very easy, requiring no apparatus or preparation, and its results are perfectly reliable.”

THE NATURE OF DIFFERENT GUMS.

DR. SACC, of Neuenburg, Switzerland, has made an extensive inquiry into the nature of different resins. The *Photographic World* condenses from it the following results. The resins spoken of are: copal, amber, dammar, common rosin, shellac, elemi, sandarach, mastic, and Caramba wax. All these resins can be reduced to powder.

The following will become pasty before melting: amber, shellac, elemi, sandarach, and mastic; the others will become liquid at once.

In boiling water, Caramba wax will melt; common rosin will form a semifluid mass; dammar, shellac, elemi, and mastic will become sticky; while copal, amber, and sandarach will remain unchanged.

Dammar and amber do not dissolve in alcohol; copal becomes pasty; elemi and Caramba wax dissolve with difficulty; while rosin, shellac, sandarach, and mastic dissolve easily.

Acetic acid makes common rosin swell; on all the others it has no effect.

Caustic soda readily dissolves shellac; rosin partly; but has no influence on the others.

Amber and shellac do not dissolve in sulphide of carbon; copal becomes soft, and expands; elemi, sandarach, mastic, and Caramba wax dissolve slowly; while rosin and dammar dissolve easy.

Oil of turpentine dissolves neither amber nor shellac; swells copal; dissolves dammar, rosin, elemi, sandarach, and Caramba wax easily, and mastic very easy.

Boiling linseed oil has no effect on copal, amber, and Caramba wax; shellac, elemi, and sandarach dissolve in it slowly; while dammar, rosin, and mastic are dissolved easily.

Benzine does not dissolve copal, amber, and shellac; elemi and sandarach to a limited extent; Caramba wax more easily; while dammar, rosin, and mastic offer no difficulty.

Petroleum ether has no effect on copal, amber, and shellac; it is a poor solvent for rosin, elemi, sandarach, and Caramba wax, and a good one for dammar and mastic.

Concentrated sulphuric acid is indifferent to Caramba wax; it dissolves all resins, imparting to them a dark-brown colour, excepting dammar, which takes a brilliant-red tint.

Nitric acid imparts to Caramba wax a straw colour; to elemi, a dirty yellow; to mastic and sandarach, a light brown; it does not affect the others.

Ammonia is indifferent to amber, dammar, shellac, elemi, and Caramba wax; copal, sandarach, and mastic become soft, and finally dissolve; while rosin will dissolve at once.

It is not difficult by means of these reactions to test the different resins for their purity.

DEVELOPING DISHES.

BY WM. ENGLAND.

In answer to the request of your correspondent, "Oxonensis," in the last week's NEWS, the following hints may be of service. The dishes for development may easily be made in the following way:—Make a thin frame of wood, say one and a-half inches in depth, mitred at the corners, and with a groove running round half an inch from the bottom. Before putting the corners together, cut a piece of sheet glass to the size of the frame, and place it in the groove; after which the mitred corners may be fixed together, using for this purpose a tolerably thick solution of shellac; the same also should be poured round the groove where the glass has been fitted, to prevent leakage; and, finally, varnish the wood-work with a more dilute solution, applying two coats if necessary. Dishes made in this way last for years with proper care. They must be thoroughly washed after having been used. It will be found necessary to have several trays approximating to the different size plates used by the operator.

A dish for development is not, as your correspondent mentions, a suggestion merely, but a mode of development practised by me during the past twelve years, and which I have found of great service working in a tent and during hot weather, and in all cases where a difficulty may be found in making the developer flow evenly. To amateurs I would strongly recommend it; it saves the hands from being stained, and, what is of more importance, a cleaner and more perfect result is obtained.

To those not having any experience in its use permit me to offer the following hints on removing the plate from the dark slide:—

Place it in a dish (film upwards, of course), and take rather more than the quantity of developer usually used, and pour, with one sweep, over the plate; immediately rock the dish with a steady motion, to cause the solution to act evenly over the whole surface. In this way no fear need be entertained of markings from unequal development. When the image appears fully developed, pour the solution, by the corner of the dish, back into the measure, and, on holding the former up to the light, the glass bottom permits the operator readily to see if the development has been carried on sufficiently. Should this not be the case, the solution may be re-applied. Those in the habit of intensifying with iron may do so without removing the negative from the dish. If, instead, the operator prefer pyro, it is necessary, after well washing the plate (which may be done in the dish) on its removal, to affix it to a holder, or hold it in the hand, and proceed in the usual way.

ASTRONOMICAL PHOTOGRAPHY IN AMERICA.

BY DR. VOGEL.*

BESIDES photographs of the Pleiades, I also saw pictures of the Bootes with Arcturus, obtained with an exposure of six minutes. The development of these star pictures is conducted with a strong iron solution, made up of twelve parts of water to one of iron.

One special task which Rutherford has set himself is the daily reproduction of the sun. A small photographic apparatus fitted to his telescope, in which the eye-piece is employed as enlarging lens, yields an amplified picture of the solar disc, measuring some 77 millimetres, or nearly three inches, in diameter. The opening and closing of the lens is brought about by the passing over of a small slit by means of a spring, similar to the method improvised for taking instantaneous views. The duration of exposure in these sun-pictures is one five-hundredth of a second.

The pictures thus secured daily by Rutherford are particularly sharp and well defined, and show plainly the spots and markings upon the sun's disc; and in examining a series of them, taken one day after another, one can see plainly how the spots advance in their position as the sun rotates, and how they also become enlarged or modified in shape, &c. In one row of pictures in my possession, which were taken daily between the 11th March and 14th April, there may be seen the several large spots appear on the east edge of the sun, traverse the whole surface of the disc, and disappear at the western edge, to reappear again, after the lapse of about twelve days, at the eastern edge in perhaps a somewhat modified form. As regards the value of these pictures, and what they teach in respect to the rotation of the sun and the size of the spots, we need make no special comment; Rutherford's results represent the history of the great luminary as written down by nature itself.

One marked peculiarity in all of these sun-pictures deserves mention—the circumstance, viz., that the margin of the image invariably appears darker than the middle. This is an important consideration, as a similar effect is also observed in reproductions of partial eclipses of the sun, when the inner arc always appears much more brilliant than the outer margin. This may be explained from the circumstance of the developer being poured on always from the one side; but such a reason will scarcely hold good, as in the American photographs the solution was not invariably applied in the same manner. The effect is due rather to the chemical action of the sun's rays being less on the margin of the sun's disc than in the centre.

An entirely different method of photographic astronomy for solar observation was to be seen at Cambridge (Boston). At the observatory there, there had been erected a horizontal metal tube, B, measuring some forty-two feet in length. At the front end of this was fixed a six-inch

* Continued from p. 32.

achromatic lens, L, having a focus of forty feet. At the back of the tube, at H, a photographic camera was fitted inside a room, the lens having a diaphragm of an inch and a half; the tube was protected from the weather by a roof, and rested upon a structure of solid brickwork.

For the purpose of obtaining a photograph of the sun, a heliostat, S, was fixed upon the pedestal, P, and the mirror of this instrument reflected the sun's image into the lens at L. The lens yielded a direct picture, without enlargement, measuring four and a half inches in diameter, upon the photographic screen at H. The exposure was regulated



in a very simple manner: a plank, Q, having a slit one inch in breadth, was drawn quickly across the lens from top to bottom, and, as the slit passed over the stopped-down lens, the exposure took place. Instantaneous exposure was quite sufficient in this case also.

An arrangement of this kind has many advantages over that of the moving telescope; it yields a much larger direct picture, and necessitates but very simple optical appliances; moreover, no complicated mechanism is necessary for the accurate movement of the apparatus, which not unfrequently becomes thrown out of gear. This latter defect is of especial importance in scientific expeditions.

As one of the most recent results of American photography, we must refer to the taking of pictures of the protuberances in full sunlight, to which we alluded on a former occasion. It is true the result obtained is not a perfect one; but, nevertheless, it is of the highest importance, as proving the possibility of performing such an operation. This astronomical feat was performed by Professor A. Young, of Dartmouth College, with the assistance of Mr. Bly, a photographer, of Hanover, New Hampshire. A spectroscope with seven prisms was, after removal of the eye-piece of a parallax telescope, screwed upon the same in a suitable manner; the telescope had an aperture of 6.4 inches, and a focus of nine feet, the object-picture being about one inch in diameter. A portion of the sun's limb, projected upon the slit of the spectroscope, gave a spectrum picture, in which the protuberances were represented by single bright lines. At the eye-piece of the spectroscope was placed a small camera, six inches in length and one and a quarter in diameter, upon the focussing screen of which the eye-piece (as in the case of Rutherford's arrangement) rendered an image of the lines. (By the way, it is not stated which of the lines were focussed.) The telescope was set in motion by clockwork, which, unfortunately, did not work very regularly, and the result was, therefore, not very clearly defined. The exposure allowed was from three and a half to five minutes, the chemicals and solutions employed being those in ordinary use.

It is to be regretted that it was impossible, at the time, to repeat the experiment with better means and apparatus, as the telescope which served to obtain the results was required for the purposes of the recent eclipse, and had to be sent off at once, with a party of astronomers, to Spain.

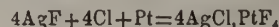
Only two of the lines shown in the pictures are of a bright character, and these to the extent of but two or three millimetres. The distortion of the lines is very remarkable, and is due to the imperfection of the lens employed in their reproduction. The same defect was to be noticed in Rutherford's pictures, taken in the same manner, viz., by means of the eye-piece of a telescope. This instrument is not designed for photographic purposes, but merely for ocular observation, as, indeed, its name implies; and it is no wonder, therefore, if it fulfils imperfectly any other use to which it may be put. Only the

very centre of the image can be relied upon as correct, if the eye piece of a telescope is made to do duty as a photographic lens; and it is far better, where a registered result of this nature is required, to employ an instrument specially corrected, as in the case of the Steinheil lens, used by the Aden eclipse expedition.

ON FLUORIDE OF SILVER.

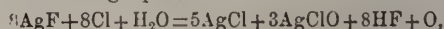
BY GEORGE GORE, F.R.S.*

THIS paper contains an exhaustive account of the behaviour of argentic fluoride in vessels of platinum, carbon, and various fluorides in contact with chlorine, bromine, and iodine at various temperatures. When argentic fluoride is completely decomposed by chlorine in platinum vessels at a red heat, the reaction agrees with the following equation:—

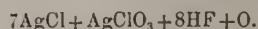


Vessels of cryolite and of fluor spar were found incapable of retaining argentic fluoride in a melted state. Other vessels were also made by melting and casting various mixtures of earthy fluorides at a high temperature; and although forming beautiful products, probably capable of technical uses, they were not capable of retaining silver fluoride in a state of fusion. Numerous vessels were also made of seventeen different fluorides by moulding them in the state of clay and baking them at suitable temperatures; these also were found incapable of holding melted fluoride of silver. Argentic fluoride was only superficially decomposed by chlorine at 60° F. during thirty-eight days. When heated to 230° F. during fifteen days in a platinum vessel in chlorine, it was very little decomposed. Chloride of silver heated to fusion in a platinum vessel in chlorine corroded the vessel and formed a platinum salt, as when fluoride of silver was employed.

An aqueous solution of argentic fluoride agitated with chlorine evolved heat and set free oxygen, in accordance with the following equation:—



or—



Dry hydrochloric acid gas completely decomposed argentic fluoride in a melted state, but only acted upon it superficially at 60° F. A saturated aqueous solution of argentic fluoride was not precipitated by chloric acid.

Perfectly anhydrous fluoride of silver was only superficially decomposed by contact with bromine in a platinum vessel during thirty-six days at 60° F., or during two days at 200° F. At a low red heat, in vessels of platinum, argentic fluoride was completely decomposed by a current of bromine vapour, a portion of its fluorine being expelled and a portion corroding the platinum and forming an insoluble compound of fluoride of platinum and bromide of silver. In carbon boats at the same temperature the whole of the silver salt was converted into bromide, the boat being corroded and the fluoride escaping in chemical union with the carbon. The action of bromine on an aqueous solution of argentic fluoride was similar to the action of chlorine. A solution of argentic fluoride yielded copious precipitates both with hydrobromic and bromic acids.

Under the influence of a temperature of 200° to 600° F. in closed platinum vessels, iodine very slowly and incompletely decomposes argentic fluoride without corroding the vessels and produces a feeble compound of argentic iodide, fluorine, and iodine, from which the two latter substances are expelled at a red heat. At a red heat in platinum vessels, iodine produces argentic iodide, and in the presence of free argentic fluoride corrodes the vessels in consequence of formation of platinum fluoride; iodine and fluorine pass away together during the reaction. In vessels of carbon at the same temperature argentic iodide

* Abstract of a paper read before the Royal Society.

is formed, the vessels are corroded, and a gaseous compound of fluorine and carbon is produced. By treating an aqueous solution of argentic fluoride with iodine, similar results are produced as with bromine and chlorine; a similar solution yields copious precipitates both with hydriodic and iodic acids.

A mode of analysis of iodine is also fully described in the paper. A known weight of iodine was dissolved in absolute alcohol, a strong solution of argentic nitrate of known strength added to it in portions at a time, with stirring until the colour of iodine exactly disappeared. The mixture was evaporated, the free nitric acid expelled by careful heat, and the residue weighed. The residue was then heated to fusion, to convert the iodate of silver into iodide, and again weighed. Two experiments of this kind yielded accurate results, and the process was easy and expeditious.—*Chemical News.*

A FEW ITEMS WORTH REMEMBERING.

BY JOHN C. BROWNE.*

DRAINING GLASS PLATES.

A VERY simple and excellent plan for draining glass plates is to drive nails into the wall or partition of the dark-room, and cover them with tight-fitting rubber tubing, which can be cut into the exact lengths required, and easily adjusted. The head of the nail prevents the plate slipping off, and, by varnishing the rubber, all liability to staining, which sometimes occurs from iron-rust, &c., will be avoided.

VARNISHING.

To obtain a good coating of varnish upon the negative, allow the greater part of the varnish to flow off the plate as is usually done, then reverse the drainage by turning the plate up side down, and give it a gentle rocking motion to prevent lines of drainage. This may be done to advantage by resting the plate upon several folds of tissue-paper. Apply the varnish in a warm room free from drafts and dust. It is well to brush the film, before applying the varnish, with a wide camel's-hair gilder's brush, using great care not to injure the surface by rough handling. Do not drain the varnish back again into the bottle from which it was poured, but have a wide-mouthed bottle ready for that purpose. Plates varnished as described will be free from dust and floating particles, and present a uniform surface which protects the negative perfectly.

CUTTING AND MOUNTING PRINTS.

These final operations are too often hurried over as matters of but little consequence, and photographs that otherwise would be perfect, are seriously damaged by not being cut straight in trimming, and afterwards carelessly mounted. It is a good plan, in trimming prints, to use pieces of plate glass cut to the required size, having the edges ground accurately; by this means the picture can be cut perfectly straight and with great rapidity.

Cleanliness in mounting is absolutely necessary, otherwise the photograph cannot present other than a slovenly appearance. Use good fresh paste for this purpose. (I prefer gelatine.) If it is necessary to introduce any substance to preserve it in warm weather, add a few drops of carbohic acid; but paste made fresh each day is much more reliable. In mounting, be particular to press down the edges of the print on the card, and make due allowance for the expansion of large prints, if mounted after they are dry, for wetting them with paste causes the paper to expand very much. Adopt, if possible, a cardboard having a lithographed space in the centre, so that there will be a sufficient margin of the oil tint outside of the edge of the picture. The tint adds much to the appearance, and undoubtedly preserves the photograph from the action of hurtful chemicals often to be found in the mounting cards.

After mounting, roll the picture several times under heavy pressure. Some advocate that the finished picture be

rubbed over with a composition of wax, lard, camphor, &c., with a piece of cotton or wool, the advantages claimed for it being that the pores of the paper are closed, thereby preventing atmospheric and local influences; but if put on too thickly, which is often the case, marks are made in handling the print which are very perceptible. A card, rolled under pressure sufficient to give a brilliant surface to the photograph, is, in my judgment, more desirable than treatment with wax, &c.

CHLORIDE OF PALLADIUM FOR TONING GLASS POSITIVES.

Now that slides for the magic lantern are so much sought after, the best method of printing and toning such pictures is of considerable interest. In the treatment of glass positives that require additional contrast after fixing, many chemicals have been suggested, and, after a careful trial of their merits, I am disposed to consider chloride of palladium as the most reliable chemical that has come under my notice. Its action is perfectly manageable, easy to prepare, will not stain, and gives uniformly good results. The toning solution that I use is made as follows:—

Add six drops from the stock bottle of chloride of palladium to each ounce of water; this solution should be of a delicate straw colour. No other manipulation is required. After the plate has been developed and fixed, wash as usual, then apply the toning solution by flowing it over the plate similar to the developer. Its action will be quick, giving a black tone to the positive. Wash well, dry, and varnish if desirable. Allowance must be made, in toning, for the kind of light to be used in the lantern; the oxyhydrogen, magnesium, and electric lights require that the positive should be made more dense than for lanterns depending upon coal oil for illumination.

TO REPAIR LEAKY DIPPING BATHS.

Baths that are composed of glass and rubber very often give great annoyance by leaking, and from my experience with a small dipping bath attached to a Nelson Wright box, I almost gave up the idea in despair ever to make it hold nitrate of silver. After repeated disappointments with both patching compounds, I tried a solution of gutta-percha in chloroform with good success, as the bath is now perfectly tight. At first I was unsuccessful with this mixture, as the attempt was made to apply the solution with a brush, but afterwards several ounces of this solution were poured into the bath (which had previously been allowed to dry perfectly), then by turning it so that the solution should remain for some time on each corner or joint, the chloroform evaporated, leaving the gum in quite a perceptible deposit all over the joints. After that, the bath was found to hold silver, and has not shown any signs of leaking for over a year.

NOTES ON THE COLLODIO-BROMIDE PROCESS.

BY HENRY COOPER, JUN.*

In preparing the bromized collodion, great care must be taken to have the solvents of good quality. Pure alcohol of sp. gr. 805, and purified and rectified methylated ether of 730, are required.

Alcohol of 825 is also needed; but unless the commercial article is proved to be very good, it is better to dilute the absolute alcohol with distilled water to this strength.

The formula for the bromized collodion is as follows:—

Ether, sp. gr. 730 ...	...	...	4 fl. ozs.
Alcohol, sp. gr. 805 ...	...	...	2 "
Bromide of cadmium ...	...	...	40 grs.
Bromide of ammonium ...	...	...	24 "
Pyroxyline ...	...	from 40 to 50	"

In mixing, the bromides must be first dissolved in the alcohol, the ether added, and, lastly, the pyroxyline. As

* *Photographic World.*

* Continued from p. 33.

soon as thoroughly settled it is ready for use, provided the pyroxyline have been of suitable quality. With an ordinary cotton the collodion will require keeping for some time in a warm and light place to ripen.

I shall, however, presently show how a new collodion may be made to give satisfactory results, even when it is not specially adapted for the process.

We now come to the quantity of nitrate of silver required to form the emulsion of collodio-bromide. You will all doubtless remember the discussion that arose last spring as to the combining equivalent of bromide of cadmium. It is undoubtedly true that sufficient notice has not hitherto been taken of the fact that commercial bromide of cadmium contains a variable quantity of water of crystallization. And so large a quantity does it usually contain (four equivalents), that unless this be taken into consideration, we may make some egregious mistakes in compounding the emulsion. If no objection be made to the slight extra trouble, it is a great advantage to thoroughly dry the bromide of cadmium before use, so as to drive off this tiresome water of crystallization by means of heat, or by enclosing the bromide in an air-tight vessel for some time with some substance specially greedy of moisture, such as dry chloride of calcium. If the bromide be submitted to gentle heat for a few hours until it becomes white and powdery, we may conclude that it is rendered practically anhydrous.

I think that a still better plan in future will be to use the double bromide of cadmium and ammonium, which is anhydrous, and does not readily absorb moisture from the air. Some persons have objected to its use on the ground that it was not yet ascertained whether only single equivalents of each bromide went to form the double salt, and that, therefore, we were employing a salt with the constitution of which we were not thoroughly acquainted. In the case of some of the other double iodides and bromides recently investigated, it has been found that sometimes two eqs. of one salt is united with one of the other, or in other variable proportions. I naturally feel great diffidence in expressing an opinion on the subject; but my own experiments have pointed to the conclusion that, in the case of the double bromide of cadmium and ammonium, the two salts are united in single equivalents.

Fortunately, however, there is a practical method of making use of the good qualities of the double salt without allowing any uncertainty to creep in.

The mode of proceeding is to weigh 172 grs. of freshly crystallized bromide of cadmium ($\text{Cd Br} + 4 \text{HO} = 172$), or 136 grs. of the anhydrous salt ($\text{Cd Br} = 136$), and 98 grs. of bromide of ammonium ($\text{NH}_4 \text{Br} = 98$). Dissolve the two in a small quantity of distilled water, and very carefully evaporate to dryness. Finally, powder the dry salt obtained, and preserve for use in a well-stoppered bottle. Use 64 grs. of this double salt instead of the separate bromides in the collodion.

If the collodion be bromized with this double salt, or with dry anhydrous Cd Br, $10\frac{1}{2}$ grs of pure nitrate of silver will be required for each 6 fl. drs. of collodion, so as to leave a proper proportion of bromide unconverted. If crystallized bromide of cadmium have been used, $9\frac{1}{2}$ grs. will be sufficient.

As regards the mode of mixing the silver and collodion to form the emulsion of collodio-bromide, I am decidedly of opinion that it is far better to dissolve the silver in alcohol and add it to the collodion, than to adopt the early method of merely grinding it up with the alcohol in a tube mortar and gradually adding the collodion thereto. There are many reasons for this, but I will only mention one or two. In the first place, by absolutely dissolving the nitrate of silver we run no risk of leaving small particles unconverted, and thus we are not only more certain of having the proper quantity of the bromide present, but the collodion is much sooner fit for use.

Again, the bromide of silver is formed in a much finer

state when the nitrate of silver is added to the bromized collodion than when the process is reversed. Had I been present I would have exemplified this by pouring a solution of nitrate of silver into one of bromide of cadmium, and then pouring a solution of the bromide into one of silver, and allowing you to compare the two results.

The third reason I shall mention is the fact that, when the alcohol and silver are added to the bromized collodion, there is no danger of precipitating any of the pyroxyline; at least, the chances of such an occurrence are reduced to a minimum.

Now, in employing the other method, I have many a time been mortified to find the pyroxyline and bromide thrown down in stringy looking lumps. This is caused, as you will readily perceive, by the first portions of collodion poured into the mixing mortar becoming so diluted by the alcohol as to render the solvents unable to hold the cotton in solution; and when once this precipitation has occurred, the collodion will generally have to be put on one side as useless, as, owing to the pyroxyline and bromide going down together, it is well nigh impossible to redissolve the former and diffuse the latter.

Before describing my mode of preparing the emulsion, I must call your attention to one or two other points.

It is generally acknowledged by all workers with collodio-bromide, that the emulsion becomes very much more sensitive by desensitizing and keeping before again adding nitrate of silver. The oftener this sensitizing with silver and desensitizing with fresh bromized collodion is repeated, so much the more sensitive does the film become, until at last, as the maximum is reached, fog begins to make its unwelcome appearance. By always saving the residual collodion after preparing a few plates, desensitizing, and then adding the proper quantity of silver when another batch is to be prepared, this sensitiveness of film is readily obtained. But then comes the trouble that no two batches are equally sensitive, so that here a most undesirable element of uncertainty is introduced. I have, therefore, discarded this way of working. Again, it is a useful axiom to remember that, everything else being equal, the more *creamy* the film the more sensitive it is to light. This brings us to another point worthy of remark. If the bromide of silver be formed in the presence of an excess of nitrate of silver, the film produced by the emulsion is much more creamy than if it be produced in presence of excess of bromide. You will remember that I have already said that, at the moment of using the emulsion, the bromide must be in excess.

I have dwelt slightly upon these several points here, so that you may the more readily understand the *rationale* of my method of mixing the emulsion without further explanation. What I had to accomplish was to produce a collodio-bromide that should give the maximum of sensitiveness and opacity of film, combined with general constancy of result.

To do this, I proceed in the following manner:—Measure 12 fluid drachms of bromized collodion into a four-ounce bottle. (We will suppose that the collodion has been bromized with anhydrous bromide of cadmium, or with the double salt. If the crystallized bromide has been used, the quantity of silver must be altered.) Carefully weigh 32 grs. of finely powdered pure neutral nitrate of silver, and, without losing a morsel, convey it by means of a strip of paper, folded lengthwise, to the bottom of a clean test-tube. Pour upon it 3 fl. drs. alcohol 825, and raise it to the boiling-point over a spirit-lamp, occasionally shaking the tube round and round, so as to disperse the particles of silver throughout the spirit. When cooled down, pour off the dissolved nitrate from the few remaining particles into the 12 drs. of collodion, little by little, agitating the mixture two or three times meanwhile. Now boil the remainder of the nitrate in the test-tube with 3 fl. drs. more of alcohol until completely dissolved, and add it to the emulsion in the same manner as the first quantity.

You will notice that as I have taken sufficient nitrate of silver to sensitize 18 drs. of collodion, and mixed it with only 12 drs., that the nitrate is considerably *in excess*. After standing for a few hours, 12 more fl. drs. of collodion are to be added, and the mixture well shaken. We have now the *bromide* in such excess (there being 24 drs. of bromized collodion, and silver only for 18 drs.), that the emulsion will keep uninjured for a very long time. When required for use, 10½ grs. of nitrate of silver and 2 drs. of alcohol are to be added; and after standing at rest for about an hour the collodion is ready for the immediate preparation of the plates. No filtering is required. Of course it is not at all necessary to sensitize the whole of the collodion at once. One-half or any other quantity may be taken, and a proper proportion of nitrate of silver and alcohol added to it.

One of the great advantages of this mode of preparing the emulsion is, that a large quantity can be made up at one time; and the amount of silver requisite to be added to a given quantity having been calculated and marked on the bottle, we have a good working collodion always ready for use. By adding the silver in excess in the first instance, we not only obtain a good creamy film, but the combination of the silver and organic matter of the collodion (previously referred to) is the more readily formed, and extra sensitiveness thereby obtained.

(To be continued.)

Correspondence.

CARBON PRINTING V. SILVER PRINTING.

DEAR SIR,—Your consistent advocacy of carbon printing having extended over a long series of years, I have no reason to complain of your adverse commentary on the remarks I offered in reference to that mode of photographic reproduction which you have so faithfully and, I might add, so ably defended whenever its qualifications have been brought into question. You will, however, admit that the tenor of your remarks imperatively recalls me to the front to act on the defensive as best I can. My inclination would have been better suited by a less conspicuous antagonist; nevertheless, as your pen has drawn me into the controversial arena, I hesitate not to accept the challenge by at once putting my friendly lance in rest to argue, with honesty of purpose, and without fear or favour, in defence of the views I advisedly entertain respecting the subject now at issue, trusting that the result of the contest may work good to photography.

Your first objection I am unable to answer as I would wish, for, unfortunately, I am, in the most essential particulars, bound down to silence; otherwise I could a tale unfold which would prove all sufficient to drive conviction home to the minds of the most sceptical that my conclusions are based on something more substantial than an insufficient evidence or a fallacious estimate of evidence adduced from observation and hearsay. Honour, however, leaves me sufficient material to work out the object I have in view, which consists of a desire to elicit the truth; and nothing but the truth will satisfy my endeavours.

[To secure brevity and the absence of repetition we will, as shortly as may be, add our answer to each point as it arises. Our position was, and is, not simply that Mr. Bovey's evidence was based on hearsay, but that all the evidence in existence at present is insufficient to support his conclusion, the trial being as yet too limited.—Ed.]

The principles on which the various forms of carbon printing are grounded have for years been, to myself, an earnest study; and although I candidly admit that my experience is not strictly practical, yet I flatter myself that I am sufficiently acquainted with the working of each carbon process to detect its weak points without any serious tripping over of my power of judging.

[It is very easy to detail the weak points of any process, but a conclusion based on such detail must obviously be erroneous. This is our objection to Mr. Bovey's conclusion. A correct estimate must include strong as well as weak points, which Mr. Bovey's did not.—Ed.]

In reply to my statement that carbon printing has been tried and found wanting, you express your impression that there are *not* half a dozen portraitists in the United Kingdom who have tried the process on a commercial scale. But does this assertion aid your case? [Yes; it proves the process has not been tried.—Ed.] As a man of business, you must admit that a process of such alleged value could not have been overlooked by photographers, whose special characteristics have been to err in an opposite direction to that of indifference. Can you believe it possible that the process has not been tested by more than the number who have undertaken the work on a commercial scale? Doubtless prudence has, in a hundred cases, dictated the necessity of the preliminary test, experiment; and yet, by your own showing, there are *not* half a dozen persons who practise the process commercially! What does this, by inference, prove? Simply that "carbon printing has been tried, and found wanting"! Were I at liberty to mention names, I could, on more reliable grounds than inference, show that the process has been tried by some of the most able exponents of photography, and they, at least, have satisfied themselves that the Autotype does not answer for general print production—that it cannot occupy the place of silver printing. [Two or three experimental trials are not test in any satisfactory sense, nor could the results of such trial form any fit comparison with the silver prints produced by trained skill. To give this evidence any value, it should be specific, not general. The nature of the tests upon which conclusion has been made should be stated, and the names of the witnesses. We know of none who have made trial and found carbon printing wanting.—Ed.] Would A. Salomon, Mr. Robinson, Blanchard, or any one who is qualified to rank with these master portraitists, consent to stake their great reputation on carbon printing as a sole mode of production from their negatives? I challenge a reply to this query. Would either of the gentlemen I have named or alluded to hesitate one minute to adopt a permanent process if such process was, in practice, as capable as the doubtful system necessity compels them to retain? Their well known devotion to their art elicits the reply: "I trow not."

[If general evidence be inadmissible and inconclusive, still more is hypothetical evidence valueless; nay, rather does the production of assumed evidence, not based on fact, suggest the non-existence of actual evidence of any real weight. M. Adam Salomon and Mr. Blanchard have not tried carbon printing. Mr. Robinson has or is doing so, and doubtless his evidence will be forthcoming when he himself thinks it right or desirable to give it; but we cannot admit assumed evidence as of any weight whatever. If these gentlemen hold the views ascribed to them by Mr. Bovey, they doubtless will, when they think proper, express them with their own explanations. Until then their names can have no place in the controversy.—Ed.]

Your fourth paragraph opens with an assertion that I have admitted the superiority of carbon prints taken off a good negative. In point of fact, I have made no admission in the direction from which your view is taken, although the absence of an explanatory context makes your error quite natural. The superlative I applied was comparative with carbon, *not* with silver; the remark simply implied that carbon prints from "show negatives" are *superior* to the many hundreds of carbon proofs that surrounded me in the room where the conversation to which I made some allusion occurred.

[We drew the natural conclusion from the words. It would be easy to adduce evidence to prove that with ordinary good negatives carbon prints can scarcely be distinguished from silver. At the Photographic Department of

the Royal Arsenal, for instance, where carbon has been adopted, this is the case.—Ed.]

For argument sake, I will, if you please, admit the somewhat paradoxical point that the imperfections of Autotype are due to its finely balanced perfections; in other words, the imperfections of carbon printing arise from an inherent defect in the process; but they owe their being to the damaging uncertainties which beset negative production. Were all negatives perfect, the Autotype could command an equality of perfection. My concession, however, affords no aid to a final settlement, as it must be allowed that physical and chemical conditions intervene to make it a matter of absolute impossibility to produce negatives of uniform excellence. Where one really good negative is produced, there are at least fifty, on an average, taken that range from indifferent to moderately good, no matter whether the operator be a captain or a lieutenant of his art. And what inference may we draw from such a fact? Why, that no printing process can be accepted as commercially practicable that is incapable of neutralizing the defects to which negatives are, without the possibility of alteration, subject. You, sir, with much candour, admit that in some instances a carbon print taken from the same negative is not equal to one produced in silver; but you attribute the shortcomings of the former to a want of the requisite experience on the part of carbon printers. In point of actual fact, the silver process, although known during the period you state, was not extensively practised prior to the years '59 and '60. It has certainly enjoyed a large patronage since those dates were current; but the perfections of silver printing are due to the labours of comparatively few among the multitude of practitioners, and these were in no case blessed with the pecuniary aid which the Autotype has received.

[For the first twenty years of its existence silver printing was probably practised by a hundred times as many, and for the last ten years by a thousand times more, than carbon printing has been in the six years of its existence. All workers contribute, in a greater or less degree, to forming the status of a process.—Ed.]

In your case, curiously enough, you concede a broad position in your remarks respecting the paucity of workers in carbon, and your statement "that a greater familiarity with the possibilities of the carbon process will probably produce equal skill in humouring faulty negatives," goes to show that the carbon process is not a tried process—ergo, it is not a perfected process—because a larger number of workers are needed to develop its capabilities. But is it possible to make the process practically perfect?

[It is certainly not, in any complete sense, a tried process, and, probably, by no means a perfected process. In all ordinary probability, each skilled worker who takes it in hand for some time will make it more perfect in some point; but in the balance of qualities we think it is more perfect than silver printing now; but it requires skill and experience to work it successfully.—Ed.]

You must remember that silver printers dodge in the light, and on this point lies the chief value of the method; whilst carbon workers must dodge in darkness. Would a Salomon like to undertake such a task?

[When the occasion arises we have no doubt means will be found.—Ed.]

If carbon printing has lacked helpers, it most certainly has not wanted for those better sinews, funds. One firm alone has expended more pounds on the process than I should care to count against time. Why, I hesitate not to assert that a twentieth part of the sum spent would set me up in heliotype printing on an extended scale; and I would stake my existence on the results of printing being equal to anything the carbon process is capable of yielding under the most favourable conditions.

[As no one yet has produced prints by any of the photographic processes equal to the ordinary run of good carbon prints, Mr. Bovey's pledge must remain in abeyance until we see his work in this direction.—Ed.]

Your statement that the Autotype Company are working profitably, and biding their time for a wider development, which they expect, and are preparing for, but do not care to hasten, has a dash of romance about it which cannot be overlooked. Why do they continue to advertise so industriously, and to push their process in every possible direction? But you reply, the process has never been pushed. I readily admit that Mr. Swan did not personally push his invention. He probably had a higher game in view; but there were, at all events, no lack of pushers devoted to his cause, even though there has turned out a paucity of labourers to engage in the perfecting of the pushed and puffed process. Holloway himself might have envied the pushing Autotype has been subjected to. The advertisement pages of the photographic journals teem and have teemed with efforts to push carbon printing. The same pages have made public the wranglings of rival inventors in a manner more curious than instructive.

Oppositionist has hurled threats of legal proceedings against opposition, who, in turn, quoted law, whilst it was quite apparent that both parties feared to take action. In behalf of Autotype, dozens of leaders, supplemented by scores of contributed articles and letters, have appeared in the several journals devoted to photography, and, in addition to these supports, the process has entire publications devoted to its interests. The most influential of the daily press has recited in its praise, and several of the industrial serials have joined in the laudation. Yet, with all these formidable aids to commercial progression, "carbon printing, has not been pushed"! If such be so, I am certainly at sea in my definition of the verb to push as applied in a commercial sense. Vested interests must, indeed, constitute a barrier more stout than even a battalion of Prussians, or it must long since have yielded to such a pressure. But can it, I ask, be vested interests only that oppose themselves against an alleged valuable process? If so, the obstructive power of those interests have no parallel in the annals of commerce, except in cases where parochial bumbledom thrust its stupidity in the way to block progress. History certainly records instances of long struggling efforts to push useful inventions into notice; but, as a rule, the struggling ones floundered in that bog of neglect, which poverty generates. Autotype knows no such experience, as it has never lacked funds to back its efforts.

[We repeat our statement that, except by journalists discharging their duty in proclaiming aloud that permanent printing is possible, carbon printing has not been pushed. The quarrels of inventors and patentees are not aids to pushing, but really repressive, and have deterred many from engaging in a process which might involve them in possible litigation. The advertisements are just such as ordinarily intelligent men of business employ, and certainly are neither excessive in quantity nor puffing in verbiage. The amount of capital expended is in all cases, we believe, found to be a good investment, a fact which proves success, not failure.—Ed.]

In conclusion, I desire that it should be distinctly understood, in the event of this discussion being continued, in order that the subject might be kept within comprehensive bounds, I have no wish to deny the ingenuity displayed in the disputed process, neither do I call into question its exceptional adaptability for the reproduction of such subjects as Brauu has made his speciality, as both stand unquestionable. My sole object is to see decided, once and for all, whether the carbon process is capable of occupying the place of silver printing. I have no attachment to old methods, no vested interests I value before progress, no feelings of conservatism to interpose objections. Let it be clearly proved that carbon printing is better than I believe it to be, and I at once recant, and shall enrol myself among its most ardent admirers. That you might be in a position to offer such proofs is the desire of,—Yours truly,

W. T. BOVEY.

2, Charlton Villas, Park Road East, Acton, W.

[In the absence of new facts a discussion of this kind results in little beyond the expression of opinion, or of conclusions from facts known to the public, who, after all, will form their own conclusions on the evidence. At present the great element of time and experience is wanting. An established system in full work, and upon the working of which incomes and the maintenance of families depend, will not be easily uprooted by another until perfect assurance is attained that it will not peril those incomes in any degree. The mass of photographers naturally wait for the experience of the more wealthy or adventurous. This will gradually come; until it does come—and it is, as we know, in formation—decided opinion on the capability and fitness of carbon printing for general work is premature, and prophecies of failure at once foolish and unfair.—Ed.]

DISSOLVING VIEW LANTERN FOR PHOTOGRAPHIC SLIDES ONLY.

DEAR SIR,—I have been much interested in the correspondence on the above subject, but am sorry to see it leading to such useless controversy, instead of tending to solve the problem. May I, with all humility, offer to your notice the following plan? Of course it will not do for lever slides, &c.

Instead of the slide-holder being made in the usual manner, let it be so that the slide can be inserted like the dark slide or focussing screen of the camera; let there be two grooves in close contact, like the grooves of a plate box. Instead of the pinion head for focussing, have a small winch, and if the tube is a little longer than usual, so much better. Have, also, a long wire pinion from the lamp through a small hole in the lantern side, so that the light can be raised or lowered without opening the lantern-door. Aftershowing the picture, turn the winch till quite out of all focus, gradually lowering the light at the same time; then gradually lower the next picture in the empty groove, and raise out the other one; turn back the winch, and also the light; and that's all.

Another Plan.—Instead of lowering the light, get a large vignetting glass about 5 by 4, cut the opaque portion from one end, and glue it on the other opaque portion, so that it will be double; place it in a wood or tin frame, fitted only at both sides and on the opaque end, where it should be hinged to the bottom of the lantern; this should be flat when not in use. To use it, have the pinion wire about two inches longer at the opposite end from the winch; on this have a barrel, to which attach a cord of proper length; pass the cord through a hole at the top of the lantern, and fasten it to one corner of the frame of flashed glass. After a picture has been shown by turning the focussing winch, you dissolve the picture in two ways at the same time by putting it out of focus and excluding the light.

I do not know if I have been sufficiently explicit, but I think if some manufacturer would take up the subject, a dissolving view lantern would find a good sale.—Faithfully yours,
WILLIAMS.

PIRACY AND COPYRIGHT.

SIR,—As some of your scientific correspondents begrudge the space given in your columns for the discussion of copyright, let me remind them of its close relation to the honesty and morality of a large portion of the photographic trade. Where a portrait photographer produces one picture, the illustrator of a book produces a hundred, and the scrap dealer a thousand. Wherefore, the discussion of the right and wrong of this trade is of as much practical value as a debate upon the eccentricities of an acid or the haziness of a film.

I shall be glad if the author of "Echoes of the Month" will, in his next communication, point out some of my "manifest errors." Let me remind him that in order to prove the creation of an artistic copyright, it is only necessary to show, in the case of a painting, drawing, or photograph, that the provisions of the first section 25 and 26

Victoria, cap. 68, have been observed; and, in the case of an engraving, that the name of the proprietor and date of publication have been truly engraved upon the plate, and printed upon every print. There may be fifteen Acts of Parliament relating to various kinds of copyright, literary, sculpture, engraving, paintings, and designs; but my letters relate directly only to one, viz., the Artistic Copyright Act, and only incidentally to one other, viz., Hogarth's Act. I have not said that the whole of the law of copyright is simple, but only that the conditions upon the performance of which copyright can be claimed are simple; and I must repeat, that they can scarcely be made more simple. I am surprised that the lengthened experience of "An Old Photographer" has not shown him how wide-spread and important are the industries concerned in this question of what may or may not be done in photographic copying.

Now that various methods of printing in carbon have been perfected, without question an immense impetus will be given to the trade in reproductions of works of fine art, and it is of consequence that those who embark their time and capital in that trade should know precisely how they may be affected by the operation of the law of copyright.

"Justitia" says, "I know nothing of the law of copyright beyond what I have learnt from this correspondence;" and then, with feminine haste, jumps to the conclusion that the law is "miserably uncertain and perplexing." Will "Justitia" read the first sections of the Acts 8, Geo. 2, cap. 13, and 25 and 26 Victoria, cap. 68, and then say what he finds there to be perplexing. My arguments refer only to the conditions necessary to be observed in order to obtain copyright, and not to the whole law of the subject, which is beside the matter we are discussing. He adds: "As it was never denied that these copyrights had been dearly bought and honestly paid for, and that, therefore, they ought to be inaccessible." I have never had occasion to deny the truth of that novel proposition, but will do so now. "Justitia" surely does not mean to maintain that copyrights ought to be inaccessible because they are "dearly bought," and for that reason men who infringe them should be sent to prison whether the conditions of the Act have or have not been complied with. I can hardly think this to be his meaning, because a little further he observes that it would be in the highest degree wrong to send such men to prison. Upon that point we agree. Perhaps he means that the proprietors should render their copyrights inaccessible by complying with the provisions of the statute; but, as he justly remarks, they, through "sheer stupidity," fail to do so. That copyrights are "dearly bought," I do not admit. Artists will tell "Justitia" that publishers are keen at driving a bargain. That copyrights are "honestly paid for" is open to question, and I will state a case in illustration. A lady painted a certain charming picture, from which a popular engraving has been made. This picture, while upon the easel, she sold, without the copyright, to a picture dealer for £60, who paid to her a deposit of £5. The picture was exhibited, and was seen by a publisher, who wished to purchase it. He bought it of the picture dealer at an advanced price, upon the understanding that he should pay to the artist, on behalf of the dealer, the sum of £55, making, with the deposit of £5, the sum of £60, the original price of the picture. This money was paid to the lady by two instalments. When she received the last instalment, the publisher placed before her a receipt for her signature, stating the total amount as being for picture and copyright. The lady objected to sign, and wished to know why copyright was mentioned in the receipt. The publisher assured her that it was perfectly regular, and that the copyright always went with the picture. The lady then signed the receipt. At that time she was the registered proprietor of the copyright. Will "Justitia" think that the copyright was "honestly paid for," or will he think, with me, that it was an immoral proceeding on the part of the publisher? Although I object to moral platitudes in a legal discussion as being perfectly useless, elsewhere I do

not object to morality. "Justitia" writes of "some people whom Mr. Cunningham defends," meaning thereby pirates. In my letters I have only attacked the legality of certain convictions; and surely "Justitia" will allow me to do that without imputing to me a desire to defend piracy. I admit "law to be the means and justice the end of jurisprudence," but I cannot admit that the Copyright Act defeats its end. Let "Justitia" prove that. If it does, so much the worse for the legal reputations of Lord Westbury and Sir Roundell Palmer, who are generally considered to be able lawyers.

As regards "the judge and magistrates," with the exception of "Colonel" Burke's case, no question of validity of copyright under the Act of 1862 has been brought before a judge. "Justitia's" assertion that certain photographs exhibited in a shop window defeat a righteous law, is a non-sequitur. A work of art is either copyright or non-copyright; if it be copyright, a piratical copy will not defeat the copyright; and if it be non-copyright, a copy of it, if it be immoral, is certainly not illegal, and, therefore, does not defeat the law.

It is also open to question whether a publisher of engravings has any moral right to protection under the Act of 1862. He has a legal right in some instances, and yet it is certain that the Legislature never intended him to have that. The Act is intended, *inter alia*, to prevent the illegal copying of paintings, drawings, and photographs. When it so happens that the publisher of an engraving is the owner of a copyright of the painting from which the engraving has been made, and an illegal copy has been produced from the engraving, he has the power to sue under this Act, not for piracy of the engraving, but for piracy of the painting, a copy made from the engraving being necessarily a copy of the picture; but the mischief contemplated by the Act is the direct copying of pictures, drawings, and photographs by means *ejusdem generis*. That such was the intention of the Legislature is evidenced by the 8th section of the Act, which provides that any pecuniary penalty incurred pursuant to any Act for the protection of copyright engravings may be recovered under this Act. The penalty under the Engraving Act for each piratical copy is five shillings.

Soon after the Act passed, proceedings were taken to recover five shilling penalties; but as the case was tried before a magistrate at Bow Street who possessed a logical mind, and who did not desire "to crack the nut and get quickly at the kernel," he took time to study the Act before giving his decision. When he did so he dismissed the summons, in consequence of certain words having been omitted in the Engraving Act, at the same time pointing out to the complainant that he had a remedy in the County Court.

The offence provided against by the statute is that of making illegal copies of paintings, &c.; the penalty for each illegal copy is not to exceed £10 by summary conviction, and it is not inflicted so much by way of punishment upon the offender, as by way of recompense to the complainant, the amount not being payable to the Crown, but to the person aggrieved. It is, therefore, the duty of the magistrate to ascertain what is the probable loss occasioned to the complainant by the particular Act charged, and to amerce the defendant accordingly. When the loss to the complainant amounts to £1, it is unjust on the part of the magistrate to inflict a penalty of £5. That this view of the law is reasonable is, I think, shown by the remarks of Lord Chief Justice Erle, who, in trying a case where two defendants were charged with selling three illegal photographs, and in which the plaintiff's counsel urged the jury to give exemplary damages because his client had suffered much from piracy, said, in his charge, that he entirely disagreed with the arguments of the plaintiff's counsel; the defendants were before them to answer for what they themselves had done, and not for the acts of other people. All that had been proved against them was that they had sold three

photographs; he thought the damages should be moderate. The jury returned a verdict with £1 damages in each case.

The administration of the law is anomalous. Piracy can only be punished on summary proceedings by a pecuniary penalty. The magistrate can only order imprisonment upon non-payment of the penalty. But persons have been arrested on warrants, and thus been subjected to imprisonment before any offence had been proved against them, a proceeding evidently antagonistic to the spirit of the law. Warrants have also been granted without any sworn information having been first made; for that, however, the magistrate is responsible. When the Copyright Act passed, the Small Penalties Act was not in existence. Magistrates then sometimes inflicted the full penalty of £10. In default of payment there was no power to imprison; the penalty could only be recovered by a warrant of distress. After the passing of the Small Penalties Act, by reducing the penalties to £5, magistrates obtained the power to imprison for non-payment for a period not exceeding two months in each case. But the operation of the Act only extends to England, therefore in other parts of the United Kingdom piracy cannot be punished by imprisonment.—I am, sir, your obedient servant,
J. CUNNINGTON.

London, January 10th, 1871.

FADING OF PRINTS.

SIR,—In the last number of the NEWS Mr. Bovey has a paper on "Autotype Printing, and a few hints on the causes which affect the permanency of silver prints." May I ask if the principal reason for the fading of many silver prints is not to be found in the wretched remuneration doled out to photographic printers. I really believe there is not a man so employed in this city who gets more than £1 per week; this is considered a high rate of wages; the usual rate is from 5s. to 10s. per week. How can it be expected that such miserable pay will induce persons of any chemical knowledge whatever to undertake such work as photographic printing? Apart from this, I do not think the fading of prints (I am speaking of portraits) is of such importance as many articles in the papers would lead us to suppose. How often are photographers called upon to produce prints from negatives three or four years old? Fashion in dress varies so continually in the present day, that every one must be taken in the newest rig: this is fortunate for the photographer. In this city most of the photography is carried on by persons having other businesses. The proprietors have no knowledge whatever of photography themselves, but merely engage operators, printers, &c., to do the work; and the fading of prints which would be heartrending to a Williams and Mayall is passed by, in this happy land, with the greatest composure. So long as a printer can get off so many sheets per diem, it matters not much how they are done, so long as they are got out of the house. I do not think the public care much about the prints in their possession turning a bit yellow; they take it for something akin to the mellowing of paintings by time; and certainly not during my experience as a printer for many years do I ever remember a print being complained of on account of fading. I believe that carbon printing is a grand advance in the art, and is of the highest importance in fixing indelibly the images of great worthies, scenes, &c., &c., but for general work I fancy silver will do well enough.

I now wish to trouble you, sir, with one question on a subject which comes directly home to me.

If an employer who is not a photographer himself, and has scarcely ever seen a number of the PHOTOGRAPHIC NEWS, takes apprentices, am I, as a printer, bound to instruct them without premium, so that, as soon as they are able to do in some way or other, I am discharged to make way for the young recruit?—I am, sir, yours obediently,
P. MURPHY.

Dublin, January 22nd, 1871.

POSTAGE OF PHOTOGRAPHS AND INVOICES.

DEAR SIR,—Enclosed I beg to hand you copy of letter to Post Office, and their reply, by which it is shown that one can send *photographs* and an *invoice*, if weighing less than two ounces, for a halfpenny. To show that this is not generally known, only last week I received three cartes from an eminent publishing firm, postage one halfpenny, and invoice per letter post, postage one penny. The two would have come for the halfpenny.

Enclosed carte (a trifle flat) is an example of long exposure, being over one minute, during which time conversation was kept up.—Yours faithfully,
ARCHER CLARKE.

To the Postmaster-General.

DEAR SIR,—Your reply to following three questions will oblige:—

No. 1. Is string allowed round packet containing cartes-de-visite?

No. 2. Is an invoice allowed enclosed in packet containing cartes-de-visite?

No. 3. Are cards allowed for halfpenny postage, the same not being a post card as issued by the Post Office?

REPLY—C134780.—Stourbridge.—To inform the applicant that a book packet containing photographs may be fastened by means of string in the manner shown in the specimen.

[Note.—Two strings were used, one round and one across.]

An invoice *strictly* such, and bearing no communication of the nature of a letter, may be enclosed in a book packet.

He should also be told that, except in the case of circulars intended for transmission in *identical terms* to several persons, no card other than one of those issued by the Government will pass under a halfpenny stamp, if it bear on it a written communication of the nature of a letter. See page 14 of the British Postal Guide.

PHOTOGRAPHIC RAMBLE IN A VAN.

SIR,—I and a friend wish to make a short photographic tour in Ireland during the summer months, and we are thinking of traveling in a gipsy or travelling photographer's van. We believe that this mode of photographing has been tried before; and we would thank any of your correspondents who have done so, to inform us as to whether their tour proved successful, and how they procured the van—whether bought or hired.

A few hints as to how it was fitted up would also be very acceptable.—Yours truly,
W. G. C.

2, Warrior Terrace, Hastings.

COMBINATION PRINTING-FRAMES.

SIR,—I beg to thank "Ingenie" for his letter in your last.

I must again say, that my principle is quite different from Mr. Edwards's, and far less costly.

Mr. Edwards has only to refer to my letter in the NEWS of the 6th to find the explanation he asks for.

I have the best legal advice as to Mr. Edwards's patent being quite worthless.—Yours, &c.,
H. STUART WORTLEY.

Talk in the Studio.

SUBSTITUTE FOR YELLOW GLASS.—As a substitute for yellow glass in the dark-room, Mr. Fr. Hangk recommends common window glass which has been coloured on one or both sides yellow with collodion prepared in the following manner: 30 gram. Pernambuco wood are covered with 180 gram. absolute alcohol, and 60 gram. ether. This is left to digest for a few days. The liquid is now decanted and digested with 2½ gram.

gamboge. After a few hours this is to be filtered, and sufficient pyroxyline (about 10 gram.) is to be added, so as to form a rather thick collodion. The liquid is poured on the glass, and care must be taken to keep the plate as nearly as possible in a horizontal position while the collodion drains off. When it has become dry, the opaque film is to be covered again with the same collodion, leaving out, however, the gamboge. The glass is then ready for use. Annatto or saffren may also be used for colouring collodion yellow; but all organic bodies of this kind should be examined from time to time, as they generally lose the adiacinic colour.

A WATERPROOF COMPOSITION.—Dr. Scherzer, an Austrian official at Pekin, has just sent to his government some specimens of a Chinese composition called "Schiociao," which has the property of making wood and other substances perfectly water-tight. He says that he has seen in Pekin wooden chests which had been to St. Petersburg, and had come back uninjured, and that the Chinese use the composition also for covering straw baskets, which are afterwards employed in carrying oil for long distances. Cardboard, when covered with the composition, becomes as hard as wood; and most wooden buildings in Pekin have a coating of it. It consists of three parts of blood deprived of its fibrine, four of lime, and a little alum.—*Eastern Budget.*

SHAM BANK NOTES.—According to the latest information, the hoax of counterfeit sovereigns is only the last of a series of transatlantic swindles on the same principle. The United States notes were first imitated. Circulars were sent to almost all the business men in the States, offering thousands of dollars' worth of such imitations at a charge of one-tenth of the nominal value. A guarantee was given that the notes would be perfect facsimiles of the real thing, every letter, line, dot, and mark being right. When the dishonest fly fell into the spider's web and sent his money, he received in due time a mysterious package. The imitation of the notes was perfect, but they were only one-third of the right size, being, indeed, nothing else than photographs of real notes. This business flourished bravely for some time, as, of course, the victims were not the men to publish their own shame.—*Observer.*

PHOTOGRAPHY AND THE PIGEON POST.—In an article in the *City Press* of Jan. 1, the writer, after remarking that it is estimated that one pigeon can carry 15,000 messages, and that the public have yet to learn the particulars of their condensation, arrangement, and transit, concludes by saying that "no doubt photography on silk is the proximate agent, as, without question, the pigeon is the ultimate agent."

IODIDE OF SILVER IN ITS PHOTOGRAPHIC-CHEMICAL RELATIONS.—In a paper in the *Polytechnisches Journal*, Dr. J. Schnazs points out that there exist two modifications of iodide of silver one of which is actinic—that is to say, sensitive to light—while the other is not so. The author also points out that iodide of silver is very soluble (up to equal equivalents) in a solution of nitrate of silver, forming therewith a double salt, AgO,NO₃+AgI, which, if the solution of the nitrate is quite neutral, is far more sensitive to light than either of the two salts by themselves.

PHOTOGRAPHY AND THE DIPLOMATIC CONFERENCE.—The *Telegraph*, referring to the fact that other important Congresses have formed the subjects of interesting paintings, remarks:—"At the first blush there would not appear to be much that was favourable to the picturesque element in a Conference. The painter called upon to portray the assemblage of so many dignified Plenipotentiaries met to discuss political questions, might reply that he would as soon delineate the characteristics of a banking-house or a parliamentary committee-room; and that, if mere portraits were desired, the subject was one more for photography than for fine art." The writer then proceeds to speak of pictures of such conferences which have acquired historic interest. These have been produced by painters. In many respects, however, the future interest of such pictures will depend more on the precision of likeness than on pictorial effect, always difficult to secure in such groups. Mr. McLachlan's large photographic group of the Committee of the Cotton Famine Fund, and the groups of members of the British Association, are admirable examples of what may be done in this way, and we doubt not that a worthy photographic representation of the members of the Diplomatic Conference would possess an interest for the future scarcely inferior to that which could be secured by a painting.

To Correspondents.

ADVICE TO CORRESPONDENTS.—We are at all times glad to advise our readers on any subject connected with the art upon which information can be given in this column; but to enable us to do so with efficiency, and without unnecessary waste of time and space, it is desirable that a few conditions should be observed by correspondents. All questions should be stated clearly, and written legibly on sheets of note paper, small scraps of paper and sheets of foolscap being equally unsuitable and inconvenient. Where several questions are asked, they should be kept distinct and numbered. Where processes and formulæ have been stated in our pages, it is better for correspondents to refer thereto than to request us to do so, as we cannot, with fairness, occupy space by repeating formulæ which have once appeared, merely to save a little trouble to individuals. Correspondents should use distinctive names or initials: such signatures as "A Subscriber," "An Amateur," and others of a general character being often adopted by a few correspondents in the same week leads to confusion.

OWEN CHESTER.—As different opinions prevail amongst high authorities, it is difficult to say which is the best dry process. The gum-gallic process, about which you enquire, is a very excellent process. 2. A preliminary coating of one grain of india-rubber in an ounce of chloroform is recommended by Mr. R. Manners Gordon. It is applied by flooding the plate as with collodion. 3. Plates should be dried by heat; a drying-box is useful for the purpose. These boxes are made in various ways. A tin-lined box heated with gas is useful for the purpose. 4. Mr. Gordon, who has experimented most extensively in the process, finds that plates prepared as he instructs will keep for months. You will find full instructions in the YEAR-BOOK you have just received. 5. There are many articles on the subject of micro-photography scattered through the whole of our volumes; but in many cases they are on especial points of the subject. For instance, there is very excellent information on the use of the magnesium light in micro-photography on pp. 320 and 330 of our last volume. There are some good practical articles on the general subject in our Seventh Volume. There is a useful little pamphlet on the subject published by Cox, of Ludgate Hill.

J. H. WOOLLEY.—The plan you propose appears excellent, and will, we have no doubt, answer well. There will be no need for glass on the south side. White screens for reflection will, at times, be useful; and, in some instances, quartering the head round a little towards the light, placing the sitter and camera cross-cornerwise of the room, will be useful.

ONE WHO WISHES TO LEARN.—The heads you enclose are lighted a little too directly from the front, or, rather, with too much front top light. A little more side light is desirable. A profile is generally more effective when lighted partially from the side and back of the head. Otherwise, the work has much promise.

OXONIENSIS.—We do not know whether the use of ground glass for negatives has been much adopted. It is only ground on one side, and the negative is taken on the polished side. We presume that any photographic dealer will supply ground glass suitable for the purpose; either plate glass or crown would answer. We doubt whether the result is worth the trouble, although it undoubtedly produces a little softening. Try it for yourself. No method of this kind will produce the same effect as retouching the negative. The latter involves the use of intelligence, such portions being touched, and such defects, coarsenesses, and rugosities being removed as interfere with truth or beauty in the picture. A mechanical method merely softens all portions alike, without selection. Perhaps the best of these methods is that which Carl Meinerth has so well carried out under the name of photo-mezzotint. It consists in printing with direct sunlight, with a piece of thin glass between paper and negative. 2. We do not know much of B personally, but, from what we learn, we believe A to be the best and most rapid.

ENQUIRER.—Make the transparencies the same size as the original, or, rather, enlarge them a little. Nothing could be gained by reducing them, but something must be lost, because in that case the physical defects due to possible structure in the collodion film of the transparency, or granulation in the deposit forming the image, will suffer in proportion to the extent of the amplification. A good portrait lens well stopped down, or a rapid rectilinear, will answer best.

H. S.—Quick-lime is used. We are not practically familiar with the manufacture, but presume them to be made by the manufacturers and dealers in philosophical apparatus.

OPAL.—There is no process of printing direct on opal glass without the intervention of a film. A surface must be sufficiently absorbent to receive the chemicals forming the sensitive coating. Possibly a process might be devised in which a sensitive coating could be formed on a ground-glass surface sufficiently adherent without a film; but we have never heard of any attempt of the kind. It would be troublesome, and possess no advantage that we can see.

CAPTAIN THETFORD.—The best known method of preparing sensitive albuminized paper for keeping is to excite on a neutral bath, and wash the free silver away, as described in various articles in our last volume and in our YEAR-BOOK. The paper may then be packed tight by rolling up, or other means, and put into a tin box, air-tight if possible. In this state it will keep for some time; before use, fume with ammonia.

W. W.—We do not advise the use of ground-glass except for windows where direct sunlight constantly finds access. It intercepts a large amount of light, easily gets soiled, and is not easily kept clean. Blinds for occasional use are much better. Delicacy and softness are not the result of too little light, but of plenty of light judiciously arranged, and of chemicals in harmonious condition with lighting. 2. You may use less chloride of calcium. It is probably chiefly due to this that a little half-tone is lost. Or, better, still keep the bath longer before use. It will bleach most whilst new. 3. Of course the greater the amount of chloride of silver present the longer the time of fixing. 4. Yes; the cheapest will be good enough for the purpose. 5. The nitrate of ammonia has probably been contaminated with chloride, and the precipitate chloride of silver. A bath of nitrate of silver and nitrate of ammonia is best decolorized by means of a solution of chloride of sodium. 6. Carbonate of silver is alkaline. 7. The pads should not be sensibly damp, although not "bone-dry."

INGENIO.—Will this correspondent kindly send us his address, as we have a communication awaiting him.

AN OLD SUBSCRIBER.—We have not seen the lamp in question; but the probability is that the hydro-carbon will give a more intense light than the camphorated sperm oil; but the latter is safer in use.

P. R. II.—We have never met with such a case, and can only suppose it to be due to some curious defect in the paper. For a paper salted with six grains of chloride of ammonium and three grains chloride of sodium we should recommend a bath of from forty-five to fifty grains of nitrate of silver. If you send a sample of the paper unexcited, we will try to ascertain the cause.

JOHN B. BEST.—Thanks. In our next.

MARS.—Place a screen with an oval aperture midway between the screen which receives the image and the lens. The aperture may have a serrated edge. The size of the aperture must be regulated by the position, size of the plate, &c., and may easily be ascertained by experiment. 2. The opal picture which has turned yellow was probably fixed in old or acid hypo. You do not state what process you are using, by which you wish to obtain black tones. Do you work by development or by collodio-chloride?

EOB.—The negative from which the print enclosed is taken appears to be a good one. Except so far as the element of time is concerned, single lenses give very good results in portraiture, but the images are not quite so sharp, and the exposure is inevitably longer. One advantage is, that, as a rule, the single lens gives more depth of definition than the portrait lens. We shall have pleasure in hearing details of your printing experiments. 2. We have no personal familiarity with chloroform. It was recently introduced by Professor Gamgee with high praise, but we have since heard that it had been over-praised. As it is stated to be harmless, a moderately weak solution may be tried without much risk.

C. B. RIVERSDALE.—We should prefer that which you indicate by No. 1. The term true focus should mean equivalent focus if applied to a compound lens, but has no especial meaning applied to a single lens, except, possibly, to indicate that there need be no uncertainty. The screw adjustment, we presume, refers to a quick screw in the mount for adjusting the position of the stop. The lectures are not generally published. There was nothing especially photographic in the bearing of the recent lecture. We shall give the question attention when it arrives.

H. II. II.—The additional glass marked in your diagram will doubtless be an improvement, but you should obtain some side-light if possible. We should place the sitter and background at the west, in such a position that the north top-light acts as a high side-light. Try the use of a white reflecting-screen.

R. TUDOR WILLIAMS.—Thanks. The prints are very excellent indeed. We will write to you shortly.

DAVID REES.—Thanks. We will communicate with you personally.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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FORMULE IN AMERICAN STUDIOS.

A VERY natural curiosity generally prevails as to the precise formulæ used by the most successful photographers. It is true that it is almost invariably found that a knowledge of these formulæ, when gained, rarely reveals any great novelty, the materials used and the proportions in which they are employed differing little in the studios sending out the finest pictures from those used issuing the meanest travesties of which the art is capable. Still it is pleasant to know that ordinary chemicals, in ordinary proportions, have produced this exquisite gem or that picture of rare grandeur which has won the admiration of all beholders. The *Photographer's Friend*, an American quarterly journal, in recognition of this interest, gives details of the formulæ used in four of the most celebrated in New York, those of Kurtz, Gurney, Fredericks, and Napoleon Sarony, all of whom issue as fine work as can be desired. Mr. D. D. T. Davie, an old and well-known photographer, proposed a trial of skill to these four photographers, Mr. Davie himself sitting to each for the test negative. The result was in each case, we are informed, very excellent; but whilst the character of the result was different in each instance, the general excellence was so great that no decision could be made as to which was absolutely best. Details of the mode of producing each portrait were then furnished at length, the most important portions of which we reproduce. Before doing so, we call attention to a fact characteristic of American institutions, which will interest many of our readers. It is customary here, and more or less throughout the world, for the principal of an establishment to be recognized as the producer of all the work issued by it, the persons employed in the work sinking their identity in that of the establishment. We do not here discuss the propriety of this practice, as much can be said on both sides; we merely note it to point out the variation. In sending in the formulæ from each studio, it is done, in each case, under the name of the operator whose work is concerned, and the printer producing the prints.

FREDERICK'S FORMULÆ.

Dating from Frederick's studio, Mr. Hugh O'Neil sends the following:—

Cleaning the Glass.—Immerse the glass for several hours in a strong solution of common washing soda, then wash well under a tap, and stand them up to dry. Finish with alcohol and Joseph paper.

Negative Bath.—This bath should be kept 40 grains strong, iodized with iodide of silver, and made slightly acid with nitric acid.

Collodion.—Ether and alcohol, equal parts; iodide of ammonium, 4½ grains; bromide of potassium, 2 grains; gun-cotton, 6 to 7 grs., washed in ammonia; excite the ether and alcohol, then add the cotton.

Developer.—Water, 2 qts.; protosulphate of iron, 2 ozs.; acetic acid, as little as can be used, and have it flow well.

Re-developer.—Citric acid, 50 grs.; pyrogallic acid, 25 grs.; water, one pint; add a few drops of the bath silver solution just before using.

How to Renew the Bath.—If additional silver is required, add it to the bath, then boil down one-half, add as much water as is necessary to give the proper strength, then filter, and it is ready for use.

Fixing the Negative.—Nearly saturate water with hyposulphate of soda, to which add ½-oz. cyanide of potassium.

Mr. James Watson, the foreman printer of the same establishment, sends the following details of printing:—

Silver Solution for Sensitizing the Paper.—Solution, 35 grs. of silver to the oz.; to each ½ gall. of solution add a ¼ oz. muriatic acid. Neutralize with liquid ammonia. The muriatic acid forms chloride of silver, which filter out, continuing to use the same filter. Float 30 seconds, and fume 10 minutes.

Toning Bath.—To ½ gall. water add ¼ oz. saturated solution of common washing soda, or enough to make it feel slippery to the fingers, then add chloride of gold sufficient for the occasion.

Fixing Bath.—Water, ½ gall.; hyposulphite of soda, 12 ozs.

Remark.—By this method the strength of the picture is not very much reduced. In washing your prints, to the two first waters add acetic acid in proportion as one drachm to 2 qts. water; let the third washing be done in plain water, preparatory for toning.

GURNEY'S FORMULÆ.

Dating from Gurney's studio, Mr. James L. Forbes gives the following:—

Cleaning Glass.—Immerse the glass several hours in a strong solution of potash, or concentrated lye; then wash carefully under a tap, sponging the glass thoroughly; and finally rinse very carefully, and dry on nails in a room free from dust and stench. Before using, rub the side that is to receive the picture with a few drops of alcohol and Joseph paper.

Negative Silver Bath.—I keep my bath as near 40 grs. to the oz. as I can, slightly acidulated with nitric acid, and iodized with iodide of silver, and occasionally reduce it one-half or thereabout, and boil it down one-half or three-quarters, then reduce to proper strength, and filter. If fresh silver is required, add it before boiling.

Collodion.—Ether and alcohol, equal parts; iodide of ammonium, 5 grs. to the ounce; bromide of cadmium, 1½ grs.; and bromide of ammonium, 1¼ grs.; cotton, 5 to 7 grs. I find this collodion works best from 10 to 30 days old.

Developer.—Protosulphate of iron, dissolved in water, 25 grs. of iron to the oz. of water, and as little acetic acid as will make it flow evenly.

Remark.—I rarely redevelop, but occasionally find it necessary, and use the ordinary pyrogallie preparation.

The printing details at the same establishment are sent by Mr. John J. Street, as follows:—

Sensitizing Bath.—Water, 1 oz.; nitrate of silver, 40 grs.; ammonia, 1 drop, or slightly alkaline; float 40 seconds, and fume 10 minutes.

Toning Bath.—Water made alkaline with common washing soda; add chloride of gold enough to do the required toning. After the gold is in solution it should be sufficiently alkaline to change litmus paper readily. The tone of the picture will be varied by more or less exposure in the bath.

Fixing Bath.—Water, 1 gal.; hyposulphite of soda, 12 ozs.; common salt, 1 oz.; fix until the prints are thoroughly clear, and no longer. Before toning, wash the prints in at least three waters, using 4 drachms of acetic acid to the gallon of water for the two first washings, and finally wash in plain water.

(To be continued.)

PERMANGANATE OF SILVER FOR PURIFYING THE NEGATIVE BATH.

It is somewhat curious, at times, to note the progress of discovery and re-discovery. About four years ago we published, in these pages, the first suggestion of the use of permanganate of silver for the purpose of removing organic matter and other injurious substances from water for use in the silver bath, the article being from the able pen of Mr. Wm. Crookes, F.R.S. Taking advantage of the well known property of permanganates in oxidizing organic matter, Mr. Crookes undertook some experiments with permanganate of silver, and proved its complete efficacy. Putrid water, from a pond mixed with old hypo baths, cyanide solution, putrid albumen, and other deleterious substances, was found, after treatment with the proposed salt, to be perfectly pure and fit for use in making a nitrate bath. Twelve months later, Mr. J. R. Johnson read a paper at the Photographic Society, detailing experiments suggested by those of Mr. Crookes, in which permanganate of potash was used for removing organic matter from a fogging nitrate bath, and with complete success. The relative value of the plan of adding permanganate of silver direct to the bath, and of forming it in the bath, was at the time discussed in our pages, the general conclusion being in favour of permanganate of potash as an equally efficacious and more accessible salt. In a recent article in the *Photographische Zeitung* the value of permanganate of potash being admitted, the superiority of permanganate of silver is suggested, but without any reference to the original proposition. Our chief object in referring to the matter is not, however, to refer to this omission, but to point out the fact that, where permanganate of potash is used with reasonable care it does not, as is suggested, introduce anything which is calculated to injure the bath; and that permanganate of silver used without care may be found very injurious. Although it is very insoluble, it may remain in solution in the bath to the extent of four grains in each ounce, in which proportion, or less, it would be found a powerful retarder, materially destroying sensitiveness. If, after correcting a bath, any trace of colour be apparent, due to the presence of permanganate of silver in solution, the bath should be filtered through clean filtering-paper, the contact of which will decompose and remove the excess of permanganate.

THE VICTORIA CARD.

NOTWITHSTANDING the coldness—or, rather, we should say, perhaps, the indifference—with which the portrait *format* recently proposed by our American neighbours has been

received in this country, the chances of its ultimate success are becoming every day greater. It will be remembered that the suggestion to start a style of portraiture between the sizes of the carte and cabinet was in the first place made in the last September number of the *Philadelphia Photographer*, the dimensions proposed being five inches long by three inches and a-quarter wide, and the name of "Bon Ton Carte" was mentioned as an appropriate designation for such pictures.

The pretensions of the new size consist mainly in its convenient form and dimensions, which are stated to be those of an ordinary envelope; in its economical production, from the circumstance that albuminized paper may be cut up without waste; and in the fact that ordinary carte lenses and appliances are suitable for obtaining them. The proportions being larger than those of the carte, the size of the portrait when taken full-length is not so excessively small, while for the bust pictures, so prevalent just now, more margin could be allowed, and thus the finish and effect considerably improved. Of course, there are several objections that could be offered in one way or another against the introduction of a new style of picture before the cabinet form is more thoroughly established in this country; but, then, we must remember that England has certainly been more backward in adopting this latter form of portrait than other countries, and that while cabinets are still a rarity with us, with some foreign photographers they are as much in demand as cartes. But the cabinet is in any case always an expensive production, and when ordered by the dozen necessitate some considerable outlay on the part of the customer, and for this reason alone it can never become thoroughly vulgarized. At the same time we are all agreed upon the fact that the carte is, as a rule, too small to render full justice either to the photographer or his model, and that some extension of its limits would certainly be desirable if such innovation could be made wisely and with one accord.

Whether it is desired to adopt the new style in this country (for we have not, as yet, seen any English pictures of this description) is, however, not now the question, for, instead of being a matter of choice with us, it will, in all probability, be a matter of necessity. The "Bon Ton Carte," or Victoria Card, or Elizabeth Card, as it has been successively called, has already found sufficient favour and support in the eyes of foreign photographers to render it altogether independent of the behaviour of English artists. It was just the same in regard to the cabinet picture in this country; for some time after this elegant form had been proposed, there was no energy or enterprise exhibited by us to push the same forward, and to establish it on a firm and substantial footing, and it was not until half a dozen decided and resolute artists, such as Notman of Montreal, Rentlinger of Paris, Milster of Berlin, Angerer of Vienna, &c., took the matter up, that there was any chance of its adoption as a type by photographers, and then, as a matter of course, the form became universal, in spite of any individual opposition.

We believe it will be very much the same thing with the Victoria Card. The form is altogether a good one, and has much to recommend it, and accordingly, on its announcement in the various journals, it was received with unusual favour. Poor Paris has, of course, been unable to speak her mind in the matter, but at New York, Berlin, Vienna, and St. Petersburg, the new card has been promptly adopted, and this, not by firms of unknown repute, but by some of the best portraitists of the day. Thus, among others, we may mention Anthony of New York, Fritz Luckhardt of Vienna, and, we believe, Loescher and Petz of Berlin. M. Luckhardt, who, by the way, has just been appointed Imperial Photographer, introduced the pictures on a recent occasion to the Vienna Society, and loyally proposed to substitute the name of Elizabeth for that of Victoria, the former being the name of the Empress of Austria. He has already briskly commenced

the production of them at his Viennese studio, for they are, in fact, very suitable for those large bust pictures with which his name is associated. The *Mittheilungen*, *Correspondenz*, and *Archiv* have all given full and explicit directions in regard to the sizes and production of the cards, and have exerted themselves to give publicity to their claims and advantages, and there is no doubt, therefore, that the combined influence of the foreign journals and leading photographers will have the effect of rapidly bringing the Victoria Card before the public.

The manufacture of albums suitable for this particular form has, in all probability, not yet commenced, but should the public verdict be favourable, and should Paris photographers hereafter adopt the size, albums will soon be forthcoming, for the interest of the manufacturer is identical with that of the photographer in inducing or pushing the demand for new articles. During the coming season there would be a good opening for a novelty of this kind if properly placed before the public, and we fully believe that the style would become a popular one, which the cabinet picture, owing to its cost, can never be. Let those, of course, who find a ready market for large pictures, keep open that market; but where cartes-de-visite form the staple article of demand, the Victoria Card will be a real and welcome innovation.

PHOTOGRAPHY AND ITS RELATIONS WITH THE STATE.

BY STEPHEN THOMPSON.

OF all the applied sciences—and photography, in many of its aspects, is a piece of pure science—I here hazard the assertion that not one has been so little indebted to governmental aid in its development and progress as photography. Indeed, it owes literally nothing to State aid; which is more than can be said of contemporary sciences equally prominent—such as geology, astronomy, telegraphy, and others. And yet one constantly hears, at popular lectures and literary and scientific gatherings, photography and telegraphy spoken of as the two great inventions of the age! Neither has it made its way without, in some quarters, unfair criticism, and even injustice; and in others fierce obstructiveness, and obloquy. This, perhaps, was owing to the fact that, unlike telegraphy, which displaced no rival, interfered with no vested interests, photography, in some fields, *has* done so. However, photography had no helping hand, and thus may stand before the public with all the just pride, even bordering on arrogance, of the self-made man. Neither is it that it was immediately self-supporting to all who took it up. Mountains of gratuitous labour have been contributed to it in all directions. Geology and telegraphy were sooner converted into professional and payment-charging pursuits.

On the other hand, the State has not scrupled to appropriate, on various occasions, the results of the labours of the photographic community without acknowledgment. On one notable occasion it did so, and rewarded the mere organizer of a governmental department with a knighthood (!) When one remembers the labours of Poitevin and others who bore all the heat and burthen of the day, one is apt to wonder at the disposition of all mundane things, and to ejaculate such fatalism as is implied in the Mussulman's apostrophe, "Great is Allah, and Mahomet is his prophet!"

The Government at all times arrogates to itself the right to use any patent whatever in the service of the State, without reference to the patentee, and, by some pleasant fiction, is supposed to compensate the patentee in exact proportion to the use made of his invention. But, through inexperience or bungling, great damage may be done to the *prestige* of an invention, of which the patentee becomes the sufferer.

The American eclipse expedition of a year or more

ago—admirably planned, admirably carried out—might have shamed the powers that be, when another occasion arose, into the recognition of the existence of the *Photographic Society*, a body properly organized on the same basis as other scientific societies, taking cognizance of all matters appertaining to the specific sciences for which they were called into existence. When the £3,000 so tardily awarded for the purposes of the expedition was distributed, although photography was confessedly of the utmost importance in connection with it, calling for the very best aid, and the best appliances that could be obtained, the members of the other scientific societies were allowed to expend the whole of the money without one thought of their younger sister in science. When her existence and importance were at length suddenly remembered, it was not considered at all immodest to expect her to find all her outfit, *matériel*, &c., for the campaign, at her own cost. Is this fair? Is this kind of thing to go on? Why is photography, as represented by its Society, not to be consulted, and have communications opened up with it like others? Quite recently the Ethnological Society, in the person of its president (Prof. Huxley) and council, was consulted by the Government on a much less important matter. Would there be anything *infra dig.* in communicating with a president of Mr. Glaisher's scientific standing, and the council representing the Society? Is photography always to do yeoman's service?

En passant, with customary wasteful economy in such cases, the tardy grant necessitated such hot haste that it may be fairly questioned whether it did not indirectly lead to the loss of the "Psyche," with one section of the breathless party on board. The whole thing was hurried. The dispatch, in midwinter, of the "Psyche" from Naples to Sicily well illustrated the Laureate's line—

"Raw Haste, half-sister to delay."

Ten minutes hurriedly begged of the commander from the deck by Mr. Norman Lockyer for consultation below, and in half that brief time the young sub-officer in charge had lost the ship. Counting the value of H.M.S. "Psyche," the cost of futile efforts to get her off the rocks, court-martial, and other contingent expenses, probably in all some £50,000—enough to pay for all the eclipse expeditions for the next half century at least.

A fitting time has again arrived to re-open this question, because the State will shortly need to avail itself of the latest and most perfect developments of photography as a science. This is to be a military session, as everyone knows. With the general questions of army efficiency the daily press will deal. The specific one of photography in its applications to war purposes our own journals may fairly discuss. At the head of the department of military photography at Chatham there is now an officer of proved ability and rare zeal. There should be no cheese-paring policy pursued in its administration. Lt. De W. Abney, R.E., should have placed at his disposal ample means to put it on an even better footing than that of the Prussian service. The Society should not be ignored when occasion offered. Two heads are better than one in such matters. Many valuable hints might be given in details of organization. We know the enormous use made of photography by the Prussian army. But years before the war broke out the same forethought was exercised in photography as in other branches of the service. It is known that Prussian officers "settled down," before the campaign in Austria in '66, as "photographers" in villages and small towns situate in districts where topographical knowledge was likely to be "wanted," pursuing their business as if for a living, taking cheap portraits, and, while ostensibly taking local views about, secured all the topographical and strategical features of the country, and then disappeared. When next seen in those localities, it was in uniform at the head of their men. This was also done in France. I do not say we should exactly follow their example, but I do say that we should possess a bureau

for the deposition of topographical knowledge of places it is known that in the event of war we should require some knowledge of.

To organize a thoroughly efficient and reliable military department of photography is an object worthy of the ambition of any man. It might be made a storehouse of information, an unerring and indisputable historical record of facts, a circulating channel of important information, and, by microscopic reduction, a means of communication when all else fails, a topographical *compagnon de voyage* that never misleads, and a general *aide de camp* indispensable in modern warfare. Photography is a science as well as an art, and possibly might, in competent and daring hands, be made of as much importance to an army in the field as telegraphy. As well as an efficient staff at quarters for the rapid multiplication of proofs, photography should have its Uhlans. In *reconnaissance* it might be made most useful. With well-devised and extremely portable apparatus and a sensitive dry-plate, and the exercise of tact and intelligence, information might frequently be obtained of more reliable value than verbal reports. The matter is an important one. It is not sufficient to do what has already been done by others in this direction. *Not to advance is to retrograde* in such matters.

One of the most remarkable features of this war has been the extraordinary topographical knowledge of an enemy's country displayed by the Prussians. Only the other day, in a remote district on the Loire, a great success was attained, while a battle was raging, by a minute knowledge of the ground furnished by the Prussian system. Modern warfare is more a game of skill than ever it was, and that power is best prepared which most ably avails itself of the appliances modern science has placed at its disposal.

The French error of excessive organization should be avoided. When the strain comes, a single establishment is not always equal to it. Should, by the very ordinary contingency of illness or wounds, the chief, or chiefs, be placed *hors de combat*, the whole department would be liable to break down at once.

In addition to the establishment at head-quarters, there should be branch establishments localized at all important commands, such as Aldershot, Shorncliffe, Portsmouth, the Curragh, &c., and they would furnish the additional advantages of familiarizing the army to its uses and operations, and give the staff the necessary rehearsals of their duties in mimic warfare. The Prussian forces were continually exercised in all the minutest details of an army on the march, and taught how to deal with all possible contingencies and difficulties of real warfare.

The organization of a complete system of military photography is of the first importance. And here, at the very outset, arises a source of danger which it is most essential to guard against.

There is a disposition abroad just now to rely too much upon organization. That it is "German organization" that has achieved all the recent successes is the belief of many. The question presents itself, what is organization? In itself, organization simply means the provision and arrangement of organs with a view to the performance of different functions in a co-operative manner; and organization may easily be made so elaborate and complicated as to defeat the very objects for which it was contrived. System is of use only so far as it can aid or replace individual energy and intelligence. Without some kind of organization there could, of course, be no cohesion or concentration of effort. On the other hand, room must always be allowed for individual discretion and intelligence. The happy medium lies between too much and too little organization—a system sufficiently compact and sufficiently elastic to admit of a good deal of personal freedom of action. The more the German organization in all its branches is examined, the more it will be found to owe its success quite as much to its freedom and elasticity as to elaborate preparations

beforehand. It is hard to say whether there is more danger in trusting everything to the inspiration of the moment, with a blind confidence that, somehow or other, one will pull through, or in relying on rigid pre-arrangements, which may not only be useless, but mischievously destructive, in the event of things not turning out exactly as expected. The secret of German success I believe to lie in the superior intelligence of all placed in the smallest offices of trust, the division of labour among them, the great discretion then safely allowed, and the responsibility thus directly fastened upon them.

This brings me to an important part of the subject. Photography is a pursuit that requires for its successful practice habits of forethought, and reflection, and exactitude, and a far higher intelligence than is commonly supposed by the outside world. These qualities are requisite for its ordinary practice, while a yet higher intelligence, that of the man of science, may find it *a sea to swim in*, and not the mere puddle popularly imagined.

It will be quite inadequate for the chief of the staff to be *facile princeps*, unless a high standard prevails amongst all his subordinates. Ubiquity is impossible; and when disappointments and break-downs come, as come they may, theirs may be the fault, and his the ignominy. It takes years of training ere men can be thoroughly up to getting good photographs with a field equipment *under every possible variety of circumstances*. In my own experience, extending from the Hebrides to the Alps and the Apennines, I know how many capable men I have found who are always at fault and resourceless away from the appointments of a laboratory. Men like Mr. Bedford, Mr. England, and others, must have much to suggest as to field equipment, and its essential requisites for specific purposes away from a base of operations. One must grow accustomed to such small accidents as a tent blown over on a bleak mountain side in a sudden *sirocco*, and the improvising temporary shifts and expedients, to say nothing of graver matters.

The essentials, then, are organization up to a certain point, remembering that it is a thing of which it is possible to have too much, and a superior class of well-paid subordinates (the cheapest ultimately), who can be trusted to sometimes think for themselves. It is very easy to make so many organized arrangements beforehand—swathing oneself, so to speak, in so tremendous an equipment, and overloading oneself with so many implements and accoutrements—as to be unable to stir a step. There were many vulnerable points in the Abyssinian Photographic Department, which would have infallibly broken down had it been subjected to the strain of being harassed by an enemy in an enemy's country, as might have been reasonably expected.

I will conclude with an amusing instance of the prevailing tendency to attribute everything to German organization, and nothing to personal or more mobile qualities, related in a leading journal a few days ago. An Englishman who had been dining at the head-quarters of the Prince of Saxony had just reached the door of his lodgings, when a provision waggon which was passing suddenly broke down. It was discovered that one of the wheels had given way; and our countryman was still wondering how the deficiency could be repaired, when the driver quickly produced another wheel in a stolid, matter-of-fact way, as if he had anticipated the accident, and had taken care to provide himself with an ample supply of extra wheels to meet every contingency. The new wheel was put on, and the waggon rolled on as if nothing had happened. It must be confessed that a more striking example of the providence and promptitude of German organization could hardly be desired. Far away from a wheelwright, on a lonely country road, in the middle of the night, a wheel breaks; and yet so thorough is the organization that, in a few minutes, another wheel is on, and the waggon once

more rolling onwards. Admiringly pondering these things, the Englishman happened to glance at his trap under a shed, and observed something peculiar in its appearance. The wheel of the trap was gone! It was this wheel, in fact, which he had just seen stuck on to the provision waggon. The incident gave his thoughts a new turn in regard to the much-vaunted system. I leave its application to the subject under consideration to others.

THE SOLAR ECLIPSE IN SICILY.

BY DR. H. VOGEL.*

SINCE the occasion of the great eclipse in 1868, which I had the opportunity of observing as a member of the North German expedition, our scientific knowledge of the sun has much increased, the new method of observation by means of the spectroscope having yielded some very surprising results. The puzzling nature of those cloud-like flames which extend for many thousand miles around the sun are now capable of being examined at other times besides that of an eclipse; and, indeed, the only point upon which information was still anxiously sought for was in regard to the corona, that bright halo of light which, on the occasion of totality, is seen to envelop the protuberances and limb of the sun. The excellent observations made by the Americans in August 1869 yielded some interesting results in regard to this "crown of glory." Its wonderful trapezoid form, for instance, was secured photographically; its nature was tested by means of the spectroscope and polariscope, and the data thus obtained seemed to establish the fact of its being a description of aurora borealis surrounding the orb.

The scientific results were, however, by no means conclusive on this point, being, in some cases, of a contradictory nature, and many philosophers expressed an opinion as to the phenomenon being due simply to our own earth atmosphere; and it was mainly for the purpose of setting this point at rest that a resolve was made to prosecute the research on the occasion of the solar eclipse of the 22nd December, which took place in Southern Spain, Algiers, Sicily, and Greece. The Americans were the first to seize this valuable opportunity for further experiment, and fitted out for the occasion two expeditions furnished with means of a most efficient nature, one of which was despatched to Spain and the other to Sicily. Their example fired the enthusiasm of English and Italian astronomers, as also that of the Austrians, MM. Weiss and Oppolzer being sent out to represent the interests of the latter, and it was only, indeed, the Germans and the French who remained behind. *Inter arma silent leges et scientiæ.*

An invitation had been extended to me to join the English expedition, one which I gladly accepted, notwithstanding the circumstances that I had but just returned from my long and pleasant American journey, and had not yet quite settled down in Europe; and despite, moreover, several inconveniences in regard to time and means. To travel through Germany, in mid-winter, as far as Trent, in the Tyrol, when the ground is hidden by a thick coverlet of snow, and the thermometer marks eight degrees of frost, and the railway arrangements are out of order by reason of the war, is by no means a pleasurable undertaking. The glory of beholding the scenery of the Bavarian Alps and Inn Valley is, moreover, considerably lessened by the physical sensation of freezing, and even Munich, in such weather, notwithstanding a bright December sun, created a most frosty impression. It was at Munich that I joined the English expedition bound for Sicily, another staff having been despatched to Cadiz, and a third to Oran. The Sicilian expedition, including your humble servant, consisted of seventeen members and two assistants, under the direction of Mr. Lockyer, the well-known spectra analyst. Duties had been already assigned to the various members of the staff, seven being detailed for spectro-

scopic observation—among whom were Mr. Lockyer and a lady assistant, his wife, as also Professor Roscoe; four were told off to polariscope observations, two were to sketch the corona, and three—Mr. Brothers, Mr. Fry, and myself—were to be engaged in photography. Moreover, Mr. Thorpe was to occupy himself with photo-chemical measurements, and Mr. Viguolle and his son with time and general observations.

This short sketch of our programme will show that every possible exertion was made to scrape an acquaintance with the corona, and to lift the veil which hid its nature from us. Truly, it could not have been assailed with more vigour and energy had it been an earthly crown.

The expedition was equipped in a most excellent manner. A courier speaking fluently the English, French, German, and Italian languages, occupied himself with all business arrangements, and provided the necessary railway tickets, quarters, refreshments, carriages, &c., the personal comfort of the staff being greatly enhanced by their occupation of one saloon compartment during the whole of the journey from Cologne to Verona. Fortunately, the speed of the journey was now and then slackened, from a desire to afford our lady companion some interval of rest; and thus, at Verona, half a day was allowed, which was spent, for the most part, in visiting the lions of the city. The more quickly, however, had we to speed through Vicenza, Padua, Ferrara, Bologna, and Florence; in Padua, indeed, I was the only one who, during the one hour's halt, was successful in making a visit to the Cathedral of St. Antony. At Verona we arrived on the 10th December, where we found a comparatively mild temperature; but farther south snow lay upon the ground, and we were colder actually than we had been in Germany. It was only when we reached Tuscany that we found ourselves in a warm climate, and that the myrtle and laurel showed us that we really were in Italy. But it was truly pitiable to be compelled to rush so swiftly past all these beautiful places, and to turn over, at a time, sixty or eighty pages of the guide-book in our hands, telling us of glorious things and places well worthy of inspection.

In Rome we were allowed one day of repose. Who could rest, however, in the midst of such wonders of all ages as are here gathered together? Regardless of all pain and fatigue, we rushed out from the Hotel Constance to visit the Piazza del Popolo, the Corso, the Engelsburg, St. Peter's, Montorio, Via Appia, St. Paul's Basilica, the Catacombs, and came actually before sunset to the Therma of Caracalla, the Colosseum, the Forum, and the Capitol. It was, in truth, a giant's tour; but the beauty, novelty, and grandeur of the scenes exerted quite an electric influence upon one's nerves, and it was not until our return to the hotel that any feeling of fatigue was perceptible.

A twelve hours' railway journey brought us to Naples. The weather here was, unfortunately, very unfavourable, the cloudy sky allowing one to appreciate but few only of the beauties of this earthly paradise; but even if this had not been the case, the arrangements for the prolongation of our journey would have prevented us from enjoying any opportunity to visit the neighbourhood.

(To be continued.)

NOTES ON THE COLLODIO-BROMIDE PROCESS.

BY HENRY COOPER, JUN.*

THE best way of utilizing the residue remaining after preparing a batch of plates, is to mix it with a quantity of plain bromized collodion, say six fluid drachms, and place it in a clean bottle. The residue of the next batch may be likewise added to it; and when sufficient has thus accumulated, it may be fully sensitized and used up. As the resensitizing will have been done only once, the plates prepared with it will not differ greatly from those pre-

* *Photographische Mittheilungen*

* Continued from p. 43.

viously made. The residues must not on any account be mixed with the stock emulsion.

You will doubtless have noticed that I recommend that the solution of nitrate of silver in alcohol should be allowed to cool before pouring it into the bromized collodion. This is certainly the best way when using a pyroxyline thoroughly adapted for this process; but if we have to work with a rather horny and new collodion, we can take advantage of the physical effect of heat upon the pyroxyline, and add the alcohol whilst it is nearly boiling. (Need I say that in such a case the bottle containing the collodion must not be allowed to stand near a flame when the temperature is thus raised?) I remember on one occasion having a rather large quantity of collodion that I could not use at all, when employing the tube-mortar method, for the bromide was invariably thrown down in stringy-looking lumps. I then tried adding the silver in solution *cold*. The bromide was no longer precipitated, but the film given was most unsatisfactory. As a last resource, I added the silver and alcohol whilst boiling hot, and to my great delight I obtained some most excellent plates with the previously unmanageable collodion.

I will not detain you with the details of the preparation of the plates, as they have been so often fully described, though I must touch slightly on one or two points.

A substratum of some kind is necessary with most collodions; I prefer 1 gr. of pure india-rubber dissolved in 1 fl. oz. of chloroform. One thing I have learned by experience is, not to make up much of this solution at a time. I have so often noticed that when freshly mixed, the collodion will take kindly to, and flow easily over, the slight film of rubber upon the plate; but, after a time, the same solution will give a film that energetically repels the collodion in a most tiresome fashion. By mixing with some newly made solution this annoyance will cease for a time. Had there been time, I should have liked to have called your attention to some other curious freaks of the rubber solution, but must forbear.

After the collodio-bromide has well set, the plate is washed in two changes of filtered water, and then soaked for an hour in a pan, or other convenient vessel, holding a good bulk of water. With less soaking, the plates will not be so sensitive. I am aware that by so arranging our collodion as only to leave a *minimum* of free bromide, we could dispense with this washing altogether; but, on the whole, I think it safer to adopt the proportions of nitrate of silver and bromides recommended. In working with small quantities of material, it would be exceedingly difficult to avoid error if the proportions were too delicately balanced.

I have tried many preservatives for these plates, and of all that have come under my notice I prefer a mixture of gum arabic, tannin, and sugar. For ordinary use, the following proportions have been found to work exceedingly well:—

Gum arabic	15	grs.
Tannin	4	"
White sugar	4	"
Distilled water	1	oz.

This must be used the same day as mixed, and may be poured over the plate and retained on the surface for about a minute in the usual way. Unless a large number of plates are in progress, it is better to apply the organifier in this way than by immersion of the plate, as sometimes recommended.

The plates must be backed to prevent blurring. The exposure ought to be about twice that required for a good wet plate, though sometimes I have found collodio-bromide very nearly as sensitive as the wet.

The details of alkaline development are so well known that I need not go into this part of the process here; but there is one point to which I desire to call special attention: that is, that plates prepared as I have described will usually require an intensification with acid pyro and silver.

We have, hitherto, been generally led to expect that no silver would be required in the development, and that the full intensity could be readily obtained with pyro and ammonia alone; and I have met several persons who have been greatly disappointed at finding they could not thus satisfactorily develop their plates. Collodio-bromide plates can very often be brought up to the full intensity with the alkaline developer alone; but although these plates are very beautiful to the eye, they are not nearly so good as *negatives*—as those that have required and received an intensification with silver. Experimenters are sometimes apt to forget that the great end of any process is to produce *good pictures*; and that, therefore, the negative is only one of the means, although undoubtedly the most important, for obtaining this end. Our best workers will, I am sure, fully bear me out when I say that, as a rule, the prettiest negatives do not give the best prints.

A freshly mixed emulsion of collodio-bromide, or one containing a large proportion of soluble bromide, will often give plates requiring no intensification; but when the collodion has been got, by keeping or otherwise, into such a condition that the plates prepared with it shall be very sensitive, and at the same time give, with proper treatment, a really good printing negative, it will generally be found that the image produced by the primary development is exceedingly thin and delicate, and if we attempt to force the intensity with the alkaline solution, fog will probably be induced. As soon as the details are well out the plate should be thoroughly washed, flooded with acid pyro, and then intensified in the usual way.

The colour of the image varies so much (often from bright orange to pale green or brown) that it is a good plan to sometimes print a trial proof before varnishing.

If found too weak, it may easily be strengthened with more silver and pyro, preceded by a wash of iodine solution, or with uranium and red prussiate of potash.

By far the safest and best mode of using this latter intensifier is to wet the plate, and then flood it with a sufficient quantity of a five-grain solution of nitrate of uranium; after allowing it to soak into the film, pour off the solution into the measure, and mix it with an equal quantity of a five-grain solution of red prussiate of potash; return the mixed solution to the plate, and keep it in motion until the desired effect is obtained. If any great amount of intensification is needed, it is better to first strengthen the image with silver and pyro, and then change the colour with the uranium. Although by continuing the application of uranium and potash almost any depth of tint may be obtained, yet it is not wise to force the effect of this intensifier, as I have often found the film split up on drying when the intensity has been thus pushed. The colour materially darkens on drying, but upon varnishing the plate it returns to the same tint as when wet.

If, on the other hand, the negative be too intense, it may be reduced by soaking for a few minutes in a solution of iodine and iodide of potassium (half gr. of each to one oz. of water), and then transferring the plate to a *very weak* solution of cyanide. The same method will very often answer for removing a slight veil of fog, whether caused by over-exposure or abnormal reduction. Of course, great care is needed in using the iodine and cyanide; but if they are sufficiently dilute, it will not be found difficult to control their action upon the image.

This paper has so much exceeded the limit I originally intended that I have not space to enter upon the interesting question of the effect of a *chloride* in the collodion. I must, therefore, defer until another opportunity the remarks I had wished to make upon this branch of the subject.

Many friends, among them Mr. Spiller, are well aware that this point has engaged my attention for *more than two years*, and I hope, at some future time, not only to publish the results of my experiments, but to still further carry out my investigations.

In conclusion, I would add, that if I can assist any fellow-worker by further reference to my "Note-Book," I shall have great pleasure in placing at his disposal any records that I possess of other experiments.

USE OF PYROGALLIC ACID IN RECOVERING WASTE GOLD SOLUTIONS.

BY WILLIAM BELL.*

MANY photographers do not recover their gold from their waste solutions themselves, deeming it troublesome. Now no operation in photography is more simple or less conducive of trouble, and the slight trouble so well repaid. My mode is, to collect the used gold solution into a gallon bottle, and, when nearly full, neutralize the alcohol in it by hydrochloric acid, making it just acid (no more); then taking two ounces of pyrogallie acid solution to twenty grains strong; pouring this into the neutralized waste gold solution, shaking well; let it stand for twenty-four hours, to allow the precipitated gold to settle; then pouring off (into waste barrel) the upper solution, being careful not to lose any of the precipitate, which catch on a filter; wash two or three times in water. Now place precipitate and filter into an evaporator, and dissolve with nitro-muriatic acid (one ounce nitric to four ounces of muriatic); this I keep already mixed, using only so much at a time as is necessary to dissolve the gold; evaporate over a water or sand bath, and there is no danger of overheating in evaporating. The gold solution produced by precipitating with pyro will be found to be of the best toning properties—even better than that precipitated by iron, as there is always more or less danger of iron being present.

Correspondence.

CARBON V. SILVER PRINTING.

SIR,—There is one point in your carbon controversy with Mr. Bovey that I think you have overlooked, but which shows pretty clearly that he is practically ignorant of the process. I mean the plea that it cannot dodge or humour the prints as, by means of masks, double printing, &c., silver printing does: the fact being, that by means of hot water, a portion of a carbon print can be reduced to any extent during development; and, when mounted, you can again work on them to almost any extent with a sharp penknife.

The real fact of the matter is, that negatives at present are positively spoiled, by intensification, to fit them for silver printing, and are thus unfit for Swan's process, which gives the best result with delicate negatives that would not produce satisfactory silver prints.

Trusting that this may be of use, and that you will excuse such a hurried scrawl—Yours truly, J. COOPER.

Bowling Green Street, Leicester, January 26th, 1871.

CARBON, HELIOTYPE, AND SILVER PRINTING.

ICILIIUS—I would have pledged my life—

VIRGINIUS.—'Twas a high gage, and men have staked a higher
On grounds as poor as yours.

SHERIDAN KNOWLES.

SIR,—Mr. Bovey, it seems, is willing to stake his existence that if he were set up in heliotype printing, he would produce by that process results equal to anything, not only which carbon printing has produced, but to anything which it is "capable of producing under the most favourable conditions." When one reads a sentence like that, one is sorely puzzled to determine whether the writer holds his existence as a very worthless thing, or has not seen good carbon prints, or has a very imperfect appreciation of what good results are, or is simply indulging in an ebullition of that sheer nonsense he is so fond of denouncing in others. These and

similar alternatives pass through my mind; but I never dream for a moment—nor will any one else, I imagine—of believing that he can produce heliotypic results comparable to the best carbon has already produced. I will say nothing of what it is capable, for, as you have already shown Mr. Bovey, hypothetical arguments in such matters are worse than idle.

I will give my reasons for attaching no weight to Mr. Bovey's opinion, or pledge, as expressed. The heliotype process is, in its mode of working, strictly analogous to lithography, and its highest results must of necessity partake of the character of lithographic work. It cannot rise higher than the best lithography, and this, as every one in the slightest degree familiar with the graphic arts knows full well, is, at best, inferior to good engraving of any kind. The blacks have not, and cannot have, the same depth and richness possessed by the engraving, and, as a rule, a weak woolliness prevails. Carbon prints, on the other hand, have been issued, which have been, and are, accepted as fine engravings. So much for the possibilities of heliotype printing; as for what it has already effected, still less can be said. Take the examples at the last exhibition in Conduit Street. Carbon was very imperfectly represented there, whilst the heliotype process was exceedingly well represented; but did the results admit of the slightest comparison? Was the best heliotype print equal, in any one point of excellence, to the noble print of the Manchester Cotton Famine Committee, sent by Mr. Sarony? Portraiture is said to be the crucial test of a process. Well, could anything have been finer than the carbon portrait exhibited by Messrs. Downey, or need anything have been worse than the heliotype portraits exhibited? The heliotype prints of rustic or architectural subjects, and reproductions, were better; but they, the latter especially, were rotten in gradation, showing all the special faults of the lithographic impression.

I do not wish to be unjust, and must, therefore, interpolate here my high relative opinion of the heliotype process. It is a high success of *its class*, and I hope for it wide success; but its class is of necessity lower, at its best, than carbon printing.

Mr. Bovey concludes his first article by saying:—"Make such results [silver prints] permanent, and the process cannot sink into oblivion until the day when the Heliotype or Woodburytype work shall be in a position to challenge comparison with the best silver printing." Make silver prints permanent! Is Mr. Bovey laughing at photographers, or is he aiming to make himself a laughing stock? Why, that is what photographers have been trying to do for a quarter of a century, and are now no nearer than ever. Mr. Bovey admits that silver prints are a "bye-word and a shame," and the exercise of a very little intelligence might convince anyone that if the possibility of change constitute a bye-word and a shame, that stigma must for ever attach to silver prints, because it belongs absolutely to the material of which they are formed. Ask any silversmith if he can keep his goods from tarnishing; ask any housekeeper if she can keep her silver teapot or cruet-stand from discolouration. The mournful negative will follow both questions. Until all silver is eliminated from silver prints, or until it is protected absolutely from contact with the air of towns, silver prints will be liable to change.

Another strange absurdity: Mr. Bovey denounces carbon prints as imperfect, and lauds Woodbury prints, when the fact is, they are in character absolutely identical. Both are prints formed of colour imprisoned in gelatine; but one is produced by light, the other by mechanical means. This is the advantage of the Woodbury process, that it may rival carbon, which any photo-lithographic process never can.

From Mr. Bovey's remarks about the limited capacity of carbon printing, and the impossibility of dodging, one is inevitably led to the conclusion that he knows nothing of it practically. The capacity of carbon printing, and its range of modifying power, is of necessity much wider than silver printing can possess. By modifying the proportion

* *The Photographer's Friend.*

of colour and gelatine, any kind of result, delicate or brilliant can be secured; by modifying the heat of the water, and prolonging or shortening its action, almost any degree of depth can be secured in developing, and this can be done locally, or generally, at will.

It is not difficult to understand why photographers generally delay, and hesitate to give up, their usual practice, to adopt something which may turn out difficult—may turn out a failure. They wait, naturally, for a few persons of position, reputation, and wealth, to set the example. It is the way of the world. And as no one has really a duty of this kind, each of the authorities waits his own good time, seeing no reason for risking anything until he is well satisfied, or has time, or can well afford the experiment. But I must confess that I think it unworthy of any photographer of respectable position to endeavour to justify a natural hesitation to change by an attempt to denounce or undermine the beautiful permanent process whose existence as an unadopted possibility is a shame and reproach to the whole of us as a body.—Yours truly,
X. Y. Z.

CARBON PRINTING V. SILVER PRINTING.

DEAR SIR,—As in war, so in logic, the defence of a weak position demands, as a rule, an exercise of subtle strategy which, in practice, is rarely complete in conception, more seldom still in execution. Now, in reference to the general tenor of your replies to the observations contained in my letter, whilst I tender my full admiration of your faithfulness, and of the skill evidenced in the construction of your defensive arguments, yet, as I read them, they convey to my mind an impression that you have unconsciously admitted the correctness of the chief points I urged against carbon printing, as you unreservedly admit, in reference thereto, that the present position of the process is not one of perfection. But you qualify the concession by the addition that the imperfections of the system are not inherent, but they arise from the limited extent to which the process has been hitherto worked; thus implying that a more extended band of workers are needed for the development of a complete success. Now, sir, before I proceed further, to be comprehensive, I restate our position in a few words.

I insist on the present imperfections of the carbon process, as compared with silver, for general work. You admit present defects, but imperatively insist on the certainty of its future development; thus it is made most clear that your reliance is based not on proofs realized, but on the assumption of what the future might unfold. But are you quite consistent in the line of argument you have chosen? By your own showing, if general evidence be inadmissible because of its inconclusiveness, still less can hypothetical evidence be admitted as sound argument; clearly this rule, if correct, should apply aptly to *pro* as well as *con*. Plainly you base the strength of your position, *not* on what has been accomplished, but on improvements which time has yet to unfold. This, to all intents and purposes, constitutes an argument based on that species of hypothetical evidence which you have unreservedly pronounced inadmissible.

[Our correspondent clearly misconceives our position. We readily admitted that as carbon printing is still undergoing improvement, it cannot be called a perfected process, and we expressed a conviction that increased experience would bring higher excellence; but we based no argument on this anticipation. We simply pointed out that no fair comparison could be made between the results of a process which had been practised by thousands of persons during thirty years, and those of a process which had been practised by tens only during six years; but, so far from basing an argument on hypothetical possibilities, we distinctly stated our conviction that, "in the balance of qualities, it is more perfect than silver printing now." It must be distinctly understood, however, that in commenting on Mr. Bovey's remarks, we have not entered in any complete manner upon a defence of carbon printing, but have rather

aimed to correct erroneous conclusions based on fallacious evidence. The major proposition of Mr. Bovey's lengthened argument was, that carbon printing had been tried and failed, and the minor proposition, that it had failed because of inherent imperfection; and the conclusion was, that it would never supersede silver printing. We denied both proposition and conclusion; but it was only necessary to point out that the alleged trial had not been made, and all the rest of necessity falls to the ground.—Ed.]

If, however, we take as granted that the carbon process is capable of greater extension, and requires only the fostering of a more general practice to develop its latent capabilities, the query suggests itself: can the supposition be brought within the bounds of reasonable expectancy that a patented process will ever receive the amount of attention silver printing has been and still is favoured with? This last system being free to all comers, improvements may be adopted by all without let or hindrance. But how stands this matter with protected autotype? Every experimentalist would, per force, be saddled with the depressing condition of paying for the liberty of working the process his labours to improve.

[This is an error; no charge is made for permission to work the process.—Ed.]

More than this, he would stand in danger of seeing his improvements snapped up by the patentees. He might succeed in improving the gelatine tissue (which is no difficult feat to accomplish), but he is forbidden to manufacture or sell such tissue without a license. Your reply to this would be: such improvement might probably be patented.

[An improvement may be patented or not, as the maker of it may choose; but he is quite at liberty to use it without patenting.—Ed.]

Hard to say; for in all my experience I have not known a patent so elastic in its specified demands as that filed in the English Patent Office by Mr. Swan.

[An elastic patent is useless; it must be specific. Eminent patent authorities say this is so.—Ed.]

Depend upon it, if the perfecting of a patented invention depends on the exertions of licensees, such invention will receive scant support, and few experimenting supporters.

[Herein we fully agree with our correspondent; the progress of a patented invention towards its highest development of excellence of a patented improvement is much slower than that of a free one. This is another of the unequal conditions of a competition in universality between carbon and silver.—Ed.]

This is certainly arguing on presumptive evidence; but in this respect we are, as I have shown, standing on equal ground.

In reply to your objection to the mention I made of names, I must direct your attention to the fact of the gentlemen named having, by their skilful works, raised the status of photography to a sphere of refinement, and an elevated reorganization, and that they certainly have strong claims to be regarded as the legitimate representatives of the art. It might, therefore, without cause of offence, be assumed that they, at least, would spare no pains to impart to their productions a permanent existence if it could be shown that quality is not compromised by the conditions of a yet untested means of stability.

[Until they have stated their reasons *pro* and *con*, no possible argument on the subject can be coupled with their names. It is true that the photographic community owe them something; but what do they owe the community, that they are to be placed upon their defence, or called upon for explanations, much less have arguments put into their mouths, until they desire to speak?—Ed.]

Doubtless the dodges as practised in silver printing might be successfully adopted by printers in carbon, in some instances. Nevertheless, dodging is sometimes practised on even the highest class pictures, which no blind mechanical means could execute.

A word about puffing. If my definition be correct, I

understand puffing to imply the over-rating of quality or qualifications. If, therefore, either of these are over-stated, the puff is as great a reality as a show advertisement which dubs Mr. Snooks "The Flying Horseman of the Prairie," or humble Miss Jincks "The Ariel Sprite" who licks creation at long jumps; no matter whether the representation proceed from a loudly worded advertisement or a soberly stated circular.

[Our correspondent overlooks the fact that he *assumes* this over-stating. We deny it.—Ed.]

You state your belief that in the balance of qualities carbon printing, even now, surpasses silver. This mode of generalizing is no reply to my arguments; but I will suggest a practical mode of answering them conclusively. Bring exceptional and experienced skill to the front—Mr. Johnson, for example. I have several hundreds of negatives which fairly average the products of photography. Let a skilled hand at carbon work take, haphazard, from among these, half-a-dozen plates, and produce from each a copy in carbon. I will follow suite with silver. If the carbon proofs excel, or even equal, the silver prints, "dodges" inclusive, I shall directly recall all I have advanced against the process, and henceforth will array myself on the side of its most ardent advocates.

[We shall have pleasure in seeing such a trial under fair conditions, and our correspondent will see that in another column Mr. Johnson proposes a similar test.—Ed.]

I ask such a test, because carbon workers have proved so singularly oblivious to the advantages for comparative trial offered by the annual exhibitions. In reproductions of drawings and line subjects (strong points of the process which I have always admitted), carbon printing has always been profusely represented, but in portraiture and landscape the examples have hitherto been few and far between.

[In our experience we have seen as many portraits as anything else in carbon. Portrait subjects have repeatedly been issued in carbon as presentation prints to societies, and always equalling silver.—Ed.]

You will probably feel disposed to assign, as a reason for the omission, that in reproductions of the kind stated, the process is chiefly employed; but this fact affords no proof of incapacity in portraiture.

[A very easy answer to this would be the simple statement that paintings, as a rule, being better art than photographs from nature, the printing process best suited to the highest art must have the best qualities. But the truth is this: reproduction has been undertaken as a business by the Autotype Company and other carbon printers, and they have produced suitable negatives for the work; whilst in portraiture, the negatives, being usually produced with a view to silver printing, are not necessarily the best for carbon work. Some of the portraits illustrating our work on pigment printing were equal to anything we have seen in silver.—Ed.]

But, in reply, I must remind you that Autotype aspires to an introduction among portraitists. They require proofs. Why not give them?

[Commercial companies generally occupy themselves most with that which pays best. The Autotype is no exception in this respect.—Ed.]

Certainly, at the exhibition of '69, a frame of Autotypes, printed from really fine negatives, were shown. The prints, however, were conspicuous for their lack of "pluck," and "washy" appearance.

[This is a question of taste. We heard them constantly admired by artists and men of the best taste.—Ed.]

With this remark, as far as I am concerned, the discussion ends, except new ground is broken; for, as you justly observed, arguments that rest on words only must remain subjects, not of proof, but of diverse opinions. I had hoped that my former remarks would have drawn out those who are so profuse in their denunciation of vested interests, as it would seem that whilst they upbraid obstinacy, they show nothing practicable to prove that photographers, by reject-

ing Autotype, are refusing a boon of unequalled capability. We have had enough of words. The time has arrived when something more substantial than words should be forthcoming.

[We must remind our correspondent that we have certainly had more work than words from carbon printers generally.—Ed.]

Having now "had my say," and relieved my conscience, I now shake hands, and consent to bury the war-hatchet, and remain, as before, yours truly,

W. T. BOVEY.

2, Charlton Villas, Park Road East, Acton, W.

CARBON VERSUS SILVER.

DEAR SIR,—It is difficult to imagine more cogent arguments against the continued practice of silver printing than the facts adduced by Mr. Bovey in his letter printed in your issue of January 20th. I have read none of the many articles upon the advantages of Autotype printing which has said so much to the disparagement of the old method of printing as Mr. Bovey's in that journal. We have heard much of the inherent properties of silver, its great affinity for sulphur unfitting it for use as a permanent pigment or colouring matter. It has been pointed out that we cannot put away even our utensils of solid silver, well protected by wrappings, in the secret recesses of our chests and safes, without their becoming yellow and tarnished by the sulphur compounds in the atmosphere. We have heard an eminent chemical and photographic authority, while suggesting means of rendering silver prints permanent, naively admit that that metal is one of the best tests of free sulphur with which he is acquainted; and we know that that element exists not only in the air of our dwellings, but in the very medium employed to hold or suspend the silver pigment in the formation of the picture. But all these sources, although productive of certain ultimate change, and essentially destructive to the picture sooner or later, act slowly. In a dry atmosphere, the sulphur is present in minute quantities only; so that, under favourable conditions, years may elapse before the action set up becomes visible and detrimental.

In the case, however, pointed out by Mr. Bovey—viz., the mixing of a "minute trace" of a solution essential to the production of the silver prints, at one stage, with the water employed in washing them at another—the action thereby set up, "catalytic" or otherwise, will ensure their perfect destruction in a few months; or will, at least, to use Mr. Bovey's only too familiar illustration, "unkennel as goodly a show of yellow streaks and jaundiced prints as ever disgraced a London photographer's show case, or a lady's gorgeously bound album."

If your readers have ever entered the back kitchen or cooped-up crib in which silver prints are only too often produced, or if in better localities—they will remember that in Mr. Bovey's late experience of "only too numerous" a batch of printers "their appearance varied from that of a cross between a dog-fancier and pugilist, to that of a swell out at elbows as well as out of luck"—they will see how little hope there is of that care and absolute cleanliness which alone can prevent the minute taint in question. A splashed sleeve, a dirty finger, an unbrushed nail—each is sufficient for the destructive taint. Nay, even were the rooms, vessels, and operators separated, it is not without the bounds of possibility that even a fly might communicate the cause of evil. A bee will impregnate a gourd with the pollen of one of another species situated miles away; a wading bird can stock a fish-pond; a fly will communicate putrefaction from putrescent to putrescible matter at a distance. Why not a "minute trace" of a strong solution of hypo in one room to a dish of water in another? At any rate, no honest photographer, after having had pointed out to him, in such forcible language, and with such illustrative facts, general and personal, the great probability of the destructive mixture occurring, should sell a silver print of any value without a guarantee that the fatal admixture has

not occurred during its production, or without a warranty for the absolute stability of that print for at least a few months. Yet, if even "care" is sometimes the cause of the evil, how can this be done conscientiously?

Depend upon it, some such assurance will be required if silver printing be continued. It is only the ignorance of the public with Mr. Bovey's facts which causes silver prints to be still sold; and it is their gradual acquaintance with them through the "yellow streaks and jaundiced" appearance of their albums which is the cause of the present declining state of photography.

Were the persons interested in Autotype printing as desirous of pushing their saleable wares as Mr. Bovey supposes, they should print his and similar articles, not in the columns of a journal devoted to technical matters, but for general circulation in our daily and weekly papers. It would then be seen that a system exists by which permanent prints can be undoubtedly obtained; and that, in the hands of photographers who can produce a good negative, such prints are admitted to be "superior." Now if, in addition to this, it were shown, and proof offered, that there are photographers who habitually produce good negatives, and who use the permanent process, there can, I think, be no doubt but that the public would profit by the information, and Mr. Bovey, and *id genus omne*, would soon follow in the rear of the successful portraitist. If it were admitted that the permanent pictures are not superior, or even barely equal, to silver prints—and no more has been said, even by persons whose prejudices or "vested interests" render them actively hostile, by word and pen, against the new system—we believe that, when supplied with the knowledge as to when and where such pictures could be obtained, these would receive the preference, inasmuch as the chief object of purchasing a photograph is to perpetuate the likeness of some dear friend or relative, and not to purchase a pretty toy, which may vanish, or pass into the stage of "yellow streaks and jaundice" in a few months, even when preserved in a glazed show-case or costly clasped volume. It is surely an odd way to perpetuate the existence of beloved but fleeting features by a memento which may, and probably will (crede Mr. Bovey), vanish in as many weeks as the original may live years!

At present it does not suit the Company's interests to do this: their standing advertisements merely show that there is no restriction to the use of the process. In the future it may suit their convenience to address the public, and instruct them, with Mr. Bovey's aid, on the shortcomings of silver, and the superiority of the Autotype, not only in permanence, but in other qualities; for assuredly the inferiority of the latter only exists in Mr. Bovey's imagination. His evidence, it will be observed, is merely hearsay evidence, and would not be received in a court of justice. Why through the columns of a public journal? Nor is the evidence unbiassed, apart from its unsoundness. There is a tone about Mr. Bovey's letter which clearly evinces a certain animus. It is transparent that Mr. Bovey was not sorry to have his preconceived opinions confirmed, and that the wish was father to the thought. It is not improbable that Mr. Bovey has "been fooled to his own bent." I can give him the names of commercial persons who practise the carbon process habitually, who use the fact extensively, but quietly, and most successfully, to attract clients, and disparage the silver prints of their neighbours, but who also equally habitually decry the process to enquiring friends. May not Mr. Bovey have met some such persons? Do his friends in trade always tell him the amount of their returns upon a given article, and "let him into a good thing" when they happen to secure one.

No amount of assertion, pro or con, can determine the relative value of the two opposing systems, the permanent and the fugitive. Does Mr. Bovey really wish to know the real merits of the two systems? If so, I shall be happy to meet him on any neutral ground in the presence of a few selected friends, for a day's printing in carbon and silver

respectively, from the same negatives, on the understanding that a report shall be made of the results, and the prints be exhibited. He will thus have an opportunity of really knowing the capabilities of the process he volunteers to decry. In the future his lucubrations on the subject in the public journals will then have the same value as his testimony to the causes of the "yellow streaks and jaundiced prints which disgrace (only too often) a London photographer's show-case, or a lady's gorgeously bound album, and which causes are, according to him (no mean authority), almost inevitable. At present such lucubrations are mere unaccredited gossip, unworthy of being repeated, still less of being recorded in the columns of a scientific journal.—I am, dear sir, J. R. JOHNSON.

CARBON FOR PORTRAITURE.

DEAR SIR,—It seems to me that answers to the following questions will materially contribute to solve the doubts respecting the probability of the carbon process superseding the present method of silver printing:—

1. Can carte-de-visite portraits be printed in carbon equal to silver prints?

2. Is it possible to make carbon vignettes with a clean white ground?

I have been quite unable to succeed in either of the above cases, and strongly suspect that this is the real cause of the general reluctance to adopt the new method of printing, as, of course, no photographer would be willing to adopt a process unsuitable for a large portion of his work.

If you have space, I should feel obliged by your insertion of this in the *News*.—I am, sir, yours obediently,

Tunbridge, January 30. P. A.

[Some of the finest card portraits we have seen were printed in carbon, and we have ourselves printed vignettes in carbon with perfectly clean whites.—Ed.]

DEVELOPING IN DISHES.

MY DEAR SIR,—As I do not know Mr. England's address, will you kindly allow me the use of your columns to cordially thank him for his reply to my question on dishes for development?—I am, yours faithfully,

OXONIENSIS.

THE LATE THOMAS ROSS.

DEAR SIR,—Being the only surviving member of the family of the late Andrew Ross, optician, I deeply regret not having seen the announcement of the death of my brother in the last number of your journal. The only one that it has appeared in is the *British Journal*, on page 20, and he is mentioned as Mr. Ross, of Kilburn, not Thomas Ross, optician. If you will kindly insert in your next number that my brother, Thomas Ross, optician, of 2, Featherstone Buildings, and 7, Wigmore Street, died at his residence, 1, Upton Villas, Kilburn, on the 16th of December last, after a short illness, I shall feel much obliged.—I am, dear sir, yours truly,

SARAH S. ROSS.

5, Harringay Villas, Green Lanes, N., January 31st, 1871.

[We refrained from any announcement of the death of Mr. Thomas Ross in deference to the wish of his family, as especially expressed in a message sent from his house, not from neglect or indifference; indeed, the obituary notice was partly written when we received the message, which we felt we had no right to disregard.—Ed.]

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE first monthly meeting of this Association for the present year was held on Tuesday evening, the 31st ult., at the Free Library, William Brown Street.

Arranged on the tables and around the room were a large number of photographs taken by the members during the past

year. Many of these were exceedingly beautiful, and a small print by Mr. E. L. Williams, Jun., "On the Sands," attracted much attention, many members expressing a wish that prints could be obtainable.

Mr. HIGGIN showed a number of *Art*, illustrated with pictures printed in printer's ink on a printer's press from negatives.

The SECRETARY exhibited an enlargement by Mr. Winstanley, of Manchester.

The minutes of the last meeting having been read and confirmed,

Mr. JOHN HENDERSON, on retiring from the office of President, stated that the Society was still in a flourishing condition, the number of members being about the same as last year. The following papers had been read:—"On the Infusion of Quassa as Applied to Dry Plates," by Mr. J. N. Sladdon; "Photography as Applied to the Purposes of Education," by Mr. T. Higgin; "Carbon by Single Transfer," by Mr. J. A. Forrest. There had also been a lantern exhibition, by Mr. Lewis Hughes. Unfortunately, the weather had not been favourable on the excursion days—those to Furness Abbey and up the Weaver River being the most agreeable. He (Mr. Henderson) also alluded to the loss the Society had sustained by the retirement of Mr. Guyton, their late Secretary, and concluded by thanking the members for their courtesy towards him during his term of office as President.

Mr. THOMAS HIGGIN, the newly-elected President, then took the chair.

Messrs. G. R. Isbern and W. H. Tyerman were elected members of the Association.

A vote of thanks was passed to Mr. Edwin Flukes, of Bath, for his present to the Society's album of three twelve by ten views of Wells Cathedral, which were much admired.

Messrs. Wilson, Green, and Henderson were the appointed judges to award Messrs. Robinson and Cherrill's prize for the best year's work. They made the following report:—

"The Sub-Committee appointed to decide on the respective merits of the photographs exhibited for competition this evening have found special difficulty in making their award, owing to the very diverse character of the two best collections, viz., those of Mr. T. Higgin and Mr. E. Leader Williams, Jun. After careful inspection and consideration, they award the palm for the best year's work to Mr. Higgin for his large and beautiful collection of microphotographs, and only regret it is not in their power to bestow a second prize on Mr. Williams for his very excellent collection of landscape and figure subjects. Prints exhibited by Mr. Higgin, 82; Mr. Williams, 39. There was no competition for the smaller prizes."

The PRESIDENT then read his address, which will appear in our next.

A vote of thanks was then passed to the President for his able address, proposed by the Rev. T. B. Banner, seconded by Mr. J. A. Forrest.

The Rev. T. B. BANNER hoped that the members would follow many of the suggestions proposed by the President. He thought that, looking at the splendid productions before them, it would be advisable that, instead of buying the presentation print of the year from a professional photographer, they should prints taken by some of their own members, for he was quite sure some of the specimens exhibited that evening could not be surpassed by any professional.

Mr. GREEN offered to take a photograph suitable for a presentation print during the year, if other members would do the same.

Mr. J. A. FORREST remarked that May would be the best month for taking them, as it would give time for printing the requisite number of copies. The arrangement was left to the Council.

Mr. FORREST called attention to the fact of there being a room in the building, fitted up with all the appliances for photography, which he thought might be obtained for the use of the members.

Messrs. Wilson and Forrest were requested to experiment and report on the carbon-printing process.

The Excursion Committee were desired to report, at the next meeting, the most suitable places to visit, so that excursions might take place early in the year.

A lantern exhibition by Mr. E. L. Williams was announced for next meeting, on the 28th of February, to which members were invited to bring their friends.

The meeting was then adjourned.

Talk in the Studio.

How THE "TIMES" WAS SENT TO PARIS.—Attempts to establish a ready communication between the beleaguered inhabitants of Paris and their relatives and friends beyond the German lines have given rise to many contrivances which are not unlikely to make a new era in the history both of aeronautics and photography. Among them may be mentioned the ingenious device by which the matter of two whole pages of the *Times* has been transmitted from London to Paris. This has been accomplished by photography. Those pages of the paper which contained communications to relatives in Paris were photographed with great care by the London Stereoscopic and Photographic Company on pieces of thin and almost transparent paper, about an inch and a half in length by an inch in width. On these impressions there could be seen by the naked eye only two legible words, the "*Times*," and six narrow brown bands representing the six columns of printed matter forming a page of the newspaper. Under the microscope, however, the brown spaces become legible, and every line of the newspaper was found to have been distinctly copied, and with the greatest clearness. The photographs were sent to Bordeaux, for transmission thence by carrier pigeon to Paris. When received there they were magnified, by the aid of the magic lantern, to a large size, and thrown upon a screen. A staff of clerks immediately transcribed the messages, and sent them off to the places indicated by the advertisers. The success of this experiment gives rise to the hope that the new art of compressing printed matter into a small compass will not stop here. If a page of the *Times* can be compressed into a space little larger than that occupied by a postage stamp, the matter of an octavo volume might be made to cover not more than two of its own pages, and a library could be reduced to the dimensions of the smallest prayer book. What a relief it would be to the learned persons who frequent the library of the British Museum if, instead of having to make fatiguing journeys from letter A to letter B of the ponderous catalogue of books, they had its many hundred volumes reduced to a space a yard square, over which a microscope could be hurriedly passed. Such suggestions are now occupying the thoughts of photographers.—*Times*.

A MORTUARY ALBUM.—Mr. W. H. Russell, writing from the German headquarters at Versailles in the *Times*, says:—"After dinner last evening there was produced at headquarters a massive album, as large as a quarto edition of the Bible, and elaborately bound in embossed leather. In the centre of the cover were the arms of Saxony; on the four corners is the insignia of the iron cross. The officers stood round the table as the album was opened, and I thought it contained scenes in the war; but on the pictures being exhibited, I saw that each was a large-sized photograph, and I was informed that it was the likeness of a Saxon officer killed during the present campaign. Portrait after portrait was taken out for a quarter of an hour. It was a sad sight. Most of the originals were very young men when they fell, and had been the comrades of the officers who were now, and more than one of them with wet eyes, gazing on the portraits. I expressed my surprise at the number of these mortuary photographs, and was told that they represented only one half the officers who had fallen. Another such volume would be filled before the sad series would have been completed up to the present time. Short of seeing the dead bodies of all these victims, nothing could have brought home to one's mind with more painful vividness the widespread mourning which this war must be causing in Germany. Be it remembered that those gentlemen were all commissioned officers in a single Army Corps. What if we had the portraits of all the rank and file killed in this same corps! What a lesson might be learnt from such a gallery!"

HOME PHOTOGRAPHS IN CAMP.—A letter from the special correspondent of the *Daily News* at the German headquarters gives a graphic account of the universality of home photographs amongst the German soldiers. He says:—"I never knew a German officer or soldier who was a family man that did not carry about with him photographs of the wife and the children. By this time the cartes are getting dirty and thumb-marked, for they are had out for inspection and admiration very often. You will see a couple of officers in the casino, or at the mess table, interchanging sights of photographs, and then comes a gossip about the children's ages. I have watched the growth of a warm friendship between two gentlemen I have the pleasure to know, the first link in which was the discovery at one of these quiet talks over the pictures, that one had a

boy and the other a girl, who were born on the very same day of the very same year. I have seen two huge hairy sentinels at a double post far to the front exhibiting one to the other the gallery of family portraits, fetched out of a sweat-besmirched pocket in the breast of the tunic. This afternoon I was standing by the white house on the hill behind Andilly, trying, with but little success, to get a glimpse of the firing through the fog bank, when there joined me two or three men of the 26th Regiment, and we naturally fell into conversation. Presently, as I turned to go, one of them remarked, in perfectly good English, "Heigho! I wish this weary war was over, and I back in New York." The man had been for some years earning his two dollars a day as a house-painter in New York, and had got married and begot sons and daughters. When the war broke out he threw down his brush, shipped himself, wife, and daughter—the boys were dead—on board a North German Lloyd steamer, and had fallen into his place in the ranks with no more fuss, or consciousness of extra patriotism, than if he had come for a holiday. Of course, out came the photographs—he carried them, to be handy, inside the folded cuff of his great coat. "Ah! isn't she a fine woman just; and isn't the girl a beauty?" He was proud of his belongings, and had no stuck-up rotteness about owning up to his pride. As I walked home, after leaving him, I fell a pondering on the differences in national idiosyncracies, and there came to my recollection the pictorial contents of sundry French officers' knapsacks that German officers spoke of after Sedan and Metz, their noses in the air as if they inhaled a foul stink."

PRISONERS REFUSING TO BE PHOTOGRAPHED.—Recently a gaol session was held at Liverpool, when the visiting justices drew attention to the fact of two prisoners, who had been committed for trial, refusing to have their photographs taken, for the purpose of having them forwarded elsewhere, that their antecedents might be known. These men had not been found guilty, and therefore the officials of the gaol could not force them to be photographed. The visiting justices thought that the Home Office should be consulted with as to the desirability of forming some resolution of which the Home Secretary might approve, by which it would be made compulsory on all prisoners to be photographed, and could be punished on their refusing. It was resolved to communicate with the Home Secretary on the subject. The *Daily News* thus comments on the subject: "How far it is permissible to introduce torture by photography into our penal code, and to exclude other and far less trying forms of punishment, is a question more easily put than answered. It has been decided, however, that, in the interests of the State, convicted wrong-doers shall be photographed, and it is said that the photographs of these gaol-birds have proved very useful in furthering the ends of justice. So well pleased are the authorities of the Liverpool Gaol with the system, which enables the countenances of criminals to be limned with perfect fidelity, that they wish to extend the practice, and to get all the prisoners photographed who pass through their hands. Two prisoners having refused to submit to the process, and the authorities being without power to apply compulsion, an attempt is now being made to obtain the requisite authorization from the Home Secretary. Now, it must be remembered that not every prisoner is a criminal. A prisoner in gaol awaiting his trial is innocent in the eye of the law. He has done that which makes him the subject of strong suspicion, but he may be able to show when the trial comes that the suspicions were baseless. To photograph such a prisoner may sometimes contribute to bring about his conviction; yet it may likewise redound unfairly to his prejudice. When his innocence has been demonstrated, it is the reverse of satisfactory to think that his photograph has been extensively circulated by the police. This innovation in the accustomed mode of dealing with unconvicted prisoners is so important as to deserve full and careful consideration before receiving official or Parliamentary sanction."

A PHOTOGRAPHIC PRESENTATION.—The members of the City Police Band have presented Inspector J. R. Foulger, the president of the band, with a life-size portrait of himself. The presentation took place at Mr. Making's, St. Paul's Churchyard. The artists were Messrs. D. B. James and Co.—*City Press*.

To Correspondents.

MORRIS BEACFORT.—Apply to the Autotype Company, 36, Rathbone Place, for carbon printing; and to Mr. Henderson, 49, London Bridge, for printing in a ceramic surface in vitreous colours.

CHLORIDE.—A mixture of equal parts of powdered carbonate of soda and carbonate of potash is an excellent flux for chloride of silver. Mix this flux, quite dry, with an equal proportion of chloride of silver, mixing them intimately in the crucible. Other residues require other fluxes; see some of the many articles we have published on the subject. 2. Pure metallic silver is worth about 5s. 6d. per ounce.

J. MALEB.—It is probable that you will find both your baths in good condition. They will not injure by keeping in a bottle.

C. G. F.—The masks in the advertisement in question are, as you will see, announced as procurable of all photographic dealers, from which it is presumable that the manufacturer does not wish to supply them direct to photographers, but through dealers.

W. W.—A toning bath will generally ripen more quickly from exposure to the atmosphere. 2. Your still will doubtless answer well. 3. It is illegal to employ a still for any purpose without communication with the Inland Revenue authorities, but how far the matter is pressed we cannot say. 4. Your general ideas on the studio question are correct: 15 feet of side-light will be sufficient.

D. G. (Subscriber).—The sandy-looking deposit on the negative is generally due to the presence of excess of iodide of silver in the nitrate bath. Dilute the bath with twice its bulk of distilled water, filter out the turbidity, and then add nitrate of silver to make the solution of the proper strength.

THE REV. S.—Full details of the modifications in the collodio-albumen process, proposed by Petschler and Mann, in the *PHOTOGRAPHIC NEWS*, Vol. IV. We do not remember any other place with certainty. 2. The keeping qualities of tannin plates are uncertain. 3. The best dry plates for keeping qualities are those prepared by Mr. R. Mannors Gordon's gum-gallic process, or the collodio-albumen process with the final wash of gallic acid. Plates by either of these processes may be kept several weeks—or even months—before and after exposure, without injury.

F. G. N.—Liquid glue is altogether unsuitable for mounting photographs. It is made by adding acid to an ordinary hot solution of glue, and stirring well together. The result is, that the glue remains fluid on cooling, instead of setting. It is very useful for many purposes, but should not be used for mounting photographs.

GLENAVONIENSIS.—The most probable supposition is, that the film had dried round the edges, which, in hot weather, with some samples of collodion, rapidly takes place. This would prevent the bath solution permeating the dried portion. It is possible that you were using a new bath which had not been properly iodized, in which case the bath would dissolve out the iodide of silver first formed, and as this generally commences at the edges, they might be left transparent from that cause. Light entering the bath could not produce such an effect.

J. TURNLY.—The solution used by M. de Constant for strengthening the image, after faulty development, is three grammes ammonia-sulphate of iron, three grammes of sulphate of copper, and three grammes of citric acid in three and a-half ounces of water. We shall shortly publish fuller details of his process. 2. If the alcove background be made of green wood, and kept in the open air, it will be difficult to avoid shrinking, so as to show the divisions between the pieces of wood; but if it be made of seasoned wood, in as many narrow pieces as possible, and be kept fairly from the damp, it may be covered with brown paper, and then painted. 3. In using mercury as an intensifying agent, we have generally first applied the mercury solution, and then the iodide solution.

G. A.—The card vignette in an opal aperture, with grey border, is very pretty, but not new. The photo-micrograph is very good.

MARS.—The best method of getting black tones on developed opal prints is by toning them with a moderately strong neutral solution of chloride of gold. They should not be too light at first, as gold toning slightly bleaches the image. The formulae given by Mr. Burgess for producing eburneum prints will give good results on opal glass. 2. Gelatine negatives are not common. The mixture of gelatine and bichromate is not sufficiently sensitive for images in the camera. 3. The spottiness and dullness which sometimes occur in collodio-chloride prints on opal glass is generally a result of allowing the film to dry spontaneously, and allowing too long a time before it is printed after coating the plate. We prefer drying the film before the fire as soon as it is set, and then printing as soon as it has cooled. 4. Hard sized papers or cards give very good results with collodio-chloride without preliminary preparation. Ordinary photographic paper should be first sized with arrowroot, and then rolled.

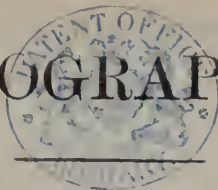
G. LLELWYNS.—We should recommend No. 2. We do not know of one for sale at present. Look amongst the advertisements on the third advertisement page. 2. It is impossible to say which State you would succeed best in, as so much depends on circumstances. See Mr. Wilson's recent remarks on the subject. We should recommend you to endeavour to get an engagement as operator for a time, before commencing the business, and so get an opportunity of looking about you before you settle in any place. In the States there is an immensely wide range of country to choose from.

J. MARTIN.—Received.

J. CUNNINGTON.—In our next.

W. C., T. S. APPLETON, J. B. BEST, M., and several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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A NEW PHOTOGRAPHIC AGENT—INDIA-RUBBER.

A VERY brief and modest article contributed to our YEAR-BOOK by Mr. J. W. Swan describes a possible method of producing photo-lithographic printing surfaces by means of india-rubber, which is sufficiently sensitive to the action of light to be available for the purpose in question. The process described is suggestive of much more than is indicated, and has, we believe, in experimental trials, given, in Mr. Swan's hands, considerable promise of much wider possibilities than he has entered into in the article in question, and which, to make our further remarks clear, we will quote. Mr. Swan says:—

“I have found that caoutchouc is so altered by the action of light, that whereas in its natural state it does not communicate to a clean lithographic stone an ink-imbibing quality, by being strongly pressed into contact with it, after being exposed to a few hours' sunshine, it will, by strong pressure, ‘set off,’ and give to a lithographic stone a strong affinity for ink.

“The discovery of this fact provides the means of an extremely simple photo-lithographic process. It is only necessary to coat paper with a solution of caoutchouc, and, after the thorough evaporation of the solvent (which, in my experiments, was benzole), expose the sheet (under a negative) to sunshine, and it is at once in a condition to transfer to stone, in the usual way, the greasy image which the light has engendered.

“The caoutchouc with which I experimented was in the condition known as ‘masticated rubber.’ I mention this because I think it is not unlikely that the comparatively great sensibility to light which I found it possessed may be a peculiarity of caoutchouc *in that state*. I have not experimentally verified the idea of the peculiar sensibility of masticated over native caoutchouc, but theoretical considerations suggest the probability of its correctness.”

Professor Seely, of New York, some years ago, pointed out that the compound of india-rubber and sulphur employed in producing vulcanized india-rubber was sensitive to the action of light, and that light produced a similar result as heat in the process of vulcanizing. He suggested two or three methods of utilizing the property in question for producing images by the action of light through a negative on a layer of india-rubber and sulphur. After exposure the layer, being treated with a solvent, became swollen in the protected portions, the sunned parts having become impermeable to the solvent. Casts of the image in relief might, it was suggested, be secured. If the sunned film were treated for a moment with a solvent, it was suggested that it would become sufficiently sticky to permit the adhesion of a black powder, and so yield a picture. So far as we know, these suggestions were never

carried out, Mr. Seely himself remarking that he recorded the possibilities in question rather as matter of scientific interest than for the probability of practical value which they possessed.

Without, we believe, having any knowledge of the experiments of Professor Seely, Mr. Swan, in the course of his experiments in carbon printing, discovered the fact that india-rubber was decidedly sensitive to the action of light, and that some very curious results arose out of this fact. He mentioned the matter to us some years ago, as one still in course of experiment, not to be mentioned until further worked out. As other pressing engagements have driven the matter aside from time to time, we are now at liberty to suggest the subject to other investigators, as one which will probably repay experiment.

One of the earliest peculiarities of india-rubber which Mr. Swan noticed was, the fact that a film of this substance having been exposed to light ceased to be soluble in the ordinary menstrua—such as turpentine, benzole, and similar fluids—but it had become soluble in another fluid, which had no action upon it in its unsunned state, namely in alcohol. Hence, a film of india-rubber exposed under a negative—or, rather, under a transparency—and treated with alcohol, having become soluble in those parts upon which light had acted, and in proportion to the action of light, would yield a picture with all the gradations of the negative represented by the undissolved portions of this india-rubber. If a suitable pigment or other colouring substance were mixed with the solution of india-rubber used in forming the film, the picture would be formed of such colour as imprisoned by the insoluble india-rubber. As in this case the image consists of the portions in contact with the paper which were at first, and continue throughout the process, insoluble, the portions of the film removed by the alcoholic solvent being those acted upon by light—and not the portions protected from light—as they are in ordinary chromo-gelatin carbon process, it follows that the film does not require to be exposed from the back, nor is any transfer required before development. The india-rubber and pigment coated paper would be exposed with its coated side in contact with the negative, and developed with alcohol on the same side.

To what extent the principle involved in these changed conditions of solubility, as the result of the action of light, may be carried, yet requires to be ascertained. It has been long known to telegraphic engineers that india-rubber, when used as an insulating substance, rapidly perished under the influence of light and air, but was much more durable when protected from their action. Mr. Spiller has shown that india-rubber used in making waterproof felting for ammunition purposes gradually became oxidized, losing its elasticity, and acquiring the character of a friable resin. It was reserved for Mr. Swan to discover that these changes

were due to the action of light, and to note that a changed character, in respect to solubility, accompanied the other visible changes.

Before leaving the subject, we may mention another possibility in connection with the use of the photographic india-rubber which Mr. Swan has mentioned in a recent letter, and which, it will be seen, has close analogies with the lithographic process he has described. In the plan to which we refer, Mr. Swan proposes that the portion which has been rendered soft or soluble by the action of light shall form the picture instead of the insoluble portion. In this case a layer of india-rubber, or india-rubber and colour, would be exposed under a negative, and then placed in contact with a sheet of paper moistened with the solvent, and submitted to pressure like an engraved plate, and an image thus printed on the sheet of paper. The subject is new, and the material comparatively untried; but here are, we think, probabilities indicated which make it fully worthy of further investigation.

FORMULÆ IN AMERICAN STUDIOS.*

NAPOLÉON SARONY'S FORMULÆ.

FROM Mr. Napoleon Sarony's gallery, Mr. B. T. Richardson gives the following details:—

Cleaning Glass.—Soak the glass several hours in a strong solution of common washing soda, then wash thoroughly under a running stream of water with a clean sponge, and finally rinse with care, and place the glass in a rack to dry. Before using, clean with alcohol and cotton flannel.

Negative Silver Bath.—Forty grs. nitrate of silver to the oz. of water, iodized with iodide of silver, and slightly acidulated with nitric acid.

Remarks.—A bath that is well iodized with me gives better results, clearer, and more definition than one neglected in this respect. When the bath wants renovating, boil it down to dryness, redissolve, and add iodide of potassium in proportion as 2 grs. for each oz. of nitrate of silver it contains. Also add a few drops of nitric acid, say 5 drops to the gallon of solution. By this management of my bath I always find it to work from the word "Go!" Never allow the bath to run down. Be diligent, watchful, and extremely careful. When it calls for food, give it something to eat, and it will never go wrong.

Negative Collodion.—Ether and alcohol, equal parts; iodide of ammonium, $4\frac{1}{2}$ grs.; bromide of potassium, 2 grs.; cotton, 5 to 7 grs. Iodize the ether and alcohol, then add the cotton.

Remarks.—Wash the cotton thoroughly in liquid ammonia one part, water four parts, and let it dry before using it; or, if necessity requires its immediate use, wash it in alcohol by saturating it two or three times, and squeezing it out each time. Collodion made in this way should mature at least ten days before it is used.

Developer.—Water, 64 ozs.; protosulphate of iron, 4 ozs.; acetic acid to suit circumstances.

Remarks.—Much depends upon having the developer harmonize properly with the free silver on the plate. I often find a little more or less acid, or a little stronger or weaker iron, very beneficial. In fact, a man must use brains withal, and adapt himself to circumstances. In warm weather, less strength of developer is preferable. The fineness and gradation depend much on the developing. Under or over developing will entirely change the character, and almost destroy the beauty, of the negative.

Re-developer.—Water, 1 pt.; citric acid, 45 grs.; pyrogallie acid, 20 grs.; to which add a few drops of negative bath as it is required for use.

Remarks.—I rarely find it necessary to re-develop my life negatives, aiming to avoid it when I can.

Fixing Bath.—Water, 4 qts.; hyposulphate of soda, 1 lb. or more; cyanide of potassium, 1 oz.

Remarks.—Owing to the fact that this bath soon becomes more or less saturated with silver, it is necessary that it should be replenished, or strengthened often with hypo, and changed entire every few days.

Mr. Charles Hoffman gives the printing details as follows:—

Sensitizing Silver Solution.—Water, 1 oz.; nitrate of silver, 50 to 55 grs.; nitric acid, to render it very slightly acidulated. Float 1 minute, and fume 15 minutes.

Remark.—Float less time in warm than in cold weather.

Toning Bath.—Water, 3 qts.; common washing soda, $\frac{1}{2}$ lb.; and as much chloride of gold as the prints to be toned will require.

Remarks.—The tone of the prints will depend entirely upon the length of time they are allowed to remain in toning. If a warm sepia be desired, tone light; if brown, tone more; if blue be required, tone accordingly.

Hypo Fixing Bath.—Water, 12 qts.; hyposulphate of soda, 2 lb.

Remarks.—Never allow the prints to remain in fixing bath after they have become clear and brilliant.

KURTZ'S FORMULÆ.

FROM the studio of Mr. Kurtz, Mr. Elbert Anderson, with whose name our readers are favourably familiar, writes the following details:—

Cleaning the Glass.—The manner in which we clean our glass for negatives is to immerse them several hours in a strong solution of common washing soda, then rinse off and place them in nitric acid 1 part to water 2 parts. After remaining in acid from one to two hours, wash thoroughly under a stream of water, rubbing the glass with a clean sponge until all deposits are removed; then rinse well, and after the water has partially dripped off, proceed at once to coat the side that is intended to receive the impressions with the following preparations:—

Water, 24 ozs.; albumen (the white of one fresh hen's egg) so thoroughly beat that the vessel containing the froth may be turned bottom upward without spilling the substance. Let the froth stand over night to subside. In the morning add the clear liquid to the water; shake it thoroughly, then filter, and it is ready for use. Pour as much of this on the glass as will flow it nicely, and run the surplus into the sink; then place the glass on nails to dry, free from dust. As soon as the albumen is thoroughly dry, the glass is ready for use. Glass prepared in this way will keep for months without deteriorating.

Negative Bath.—Water, 1 oz.; nitrate of silver, 40 grs.; iodized with iodide of silver, and slightly acidulated with nitric acid.

Renovating the Bath.—Boil it down one-half or more, then dilute with water to its proper strength, and filter. This operation must be repeated as often as the bath becomes foul. I never add new silver to an old bath. If the amount of solution require increasing, I add from another old bath that is in good working order, or the old solution may be added before boiling, and all boiled down together.

Negative Collodion.—Ether and alcohol equal parts; iodide of ammonium, 4 grains; iodide of cadmium, 2 grs.; bromide of potassium, 2 grs. It will mature in one or two days suitable for use.

Developer.—Water, 16 ozs.; protosulphate of iron, 1 oz.; acetic acid, 1 oz.; alcohol, $\frac{1}{2}$ oz., if the developer does not flow without it. Avoid its use when not needed.

Re-developer.—Citric acid, 40 grs.; pyrogallie acid, 40 grs.; water, 24 ozs. I do not find occasion to re-develop very many of my life negatives, preferring them without, unless a negative is weak, and re-development is necessary.

Fixing Solution.—Water, 1 gal.; saturated with hyposulphate of soda, to which add 1 oz. of cyanide of potassium.

Mr. Richard Howe gives the printing details of the same establishment, apologizing, by the way, for some delay, on the ground that he has the printing of from

* Continued from p. 56.

sixty to eighty negatives daily under his charge. His method is as follows:—

Silver Bath.—Water, 1 oz.; nitrate of silver, 60 grs., slightly acidulated with nitric acid; float one minute in warm and two minutes in cold weather. Fume from 15 to 20 minutes, according to the temperature of the atmosphere.

Toning Bath.—Water, 32 ozs.; acetate of soda, 15 grs.; chloride of sodium, 15 grs.; chloride of gold, 7 grs.; neutralize the gold with bicarbonate of soda before adding it. Vary the tone of the prints by allowing them to remain a longer or shorter time in the toning solution.

Fixing Bath.—Water, 6 oz.; hyposulphate of soda, 1 oz.; continue the process of fixing until the paper has become clear, and the picture brilliant, and no longer.

It will be noted that all the formulæ have much in common, and that none vary much from those in general use in this country. In three of the establishments, it will be seen that common washing soda is employed to neutralize the toning bath, and that the proportions of gold and soda are added by rule of thumb, a plan only admissible on the assumption that the workman possesses great skill and experience.

MODES OF LIGHTING.

The mode of lighting, being, at least, as important as the chemicals, is also described in each case, as follows:—

C. D. Fredericks and Co.—The light used in this establishment in the production of the test negative is wholly a top light, slanting to the west at an angle of about 40 degrees, and is 16 feet square. The lower portion of the light is about 7 feet from the floor of the skylight room. Notwithstanding the light is wholly admitted from the top, the invincible Hugh O'Neil so guides the vertical pencil by using screens and reflectors, as to produce Rembrandt and other shadowy effects with all the power and brilliancy imaginable.

Gurney and Son use a top and side light combined. The top light fronts nearly to the north, and lies on an angle of 60 degrees, and is 16 feet square, with a side light extending to the floor, and the same length as the top light. The height from the floor to the top light, at its lowest extremity, is about 8 feet. In producing single sittings, much of the light is shut out with curtains, and screens and reflectors are used in producing shadowy effects.

W. Kurtz's main light—the one used in making the test negative—is facing to the north on an angle of about 45 degrees, with side lights combined. Mr. Kurtz has somehow a peculiar faculty in the management of sun-beams. He has a way of his own in making light shine in the very spot it is wanted, by the use of shades, screens, reflectors, and counter-reflectors. Beyond all question or doubt, he possesses a skill in the distribution of light on his subjects superior to the most of even those considered first-class photographers. His method of managing light is highly worthy the consideration of every photographer.

N. Sarony and Co.—The light used in this establishment for producing the test negative nearly resembles that of C. D. F. and Co.'s, fronting to the north instead of west, and somewhat lower and steeper in its angle. Very few photographers in this or any other country have been able so to manage light in their studios as to completely model the entire faces of their subjects in portraiture as he has done. He resorts but very little to screens and reflectors, aiming mostly to pose his subject in unreflected and unobstructed light.

Two of the studios, it will be noted, have what is termed top-light only, resembling that in the studio of Mr. T. R. Williams, but which is, by its construction, position, and management, practically used as a high side-light. Mr. Kurtz, who is one of the ablest masters of the art of lighting in the photographic profession, makes especial use of side-light.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

THE FORTHCOMING INTERNATIONAL EXHIBITION—APPRENTICESHIP IN PHOTOGRAPHY—THE FORTHCOMING TRIAL BETWEEN CARBON AND SILVER PRINTING—THE COPYRIGHT DISCUSSION—EXPRESSION AND LONG EXPOSURE—COLLODIO-BROMIDE.

THE repeated allusions and announcements in various journals during the last few weeks, having reference to the forthcoming international exhibition, the first of an interminable annual series, give assurance that, notwithstanding the untoward state of events on the continent, the exhibition experiment has to be proceeded with. I hope its success will be greater than many of the indications seem to promise. France and Prussia cannot contribute, and the absence of two such nations from a representation of the fine and industrial arts must of necessity cause a sad hiatus. In this country I do not hear any very enthusiastic anticipations expressed. Many houses connected with industrial art seem to regard it with distaste: they must exhibit to maintain their status, and the result, they seem to think, will scarcely be worth the cost. How it will be with photography it is difficult to guess. A few of the best photographers will doubtless contribute, but I fancy that the photographic contributions will not be extensive. Is it not more than time, by the way, that photographers should be made acquainted with the names of the gentlemen forming the committee of selection to whose judgment their works must be submitted for approval before they can be exhibited? Photographers must send in their contributions in less than a fortnight. Is it fair that they should do so in the dark as to the tribunal to which such works will be submitted? Is there any reason for secrecy in such a matter? Rumour has whispered that one distinguished amateur would form the committee, and issue his fiat without consultation or control. I do not doubt that it would be both honest and competent; but still, as a matter of respect to photographers, I am glad to remember that you have already announced that the committee would consist of three gentlemen, whom you appeared to know and approve.

Your esteemed American correspondent, I notice, has recently referred to an important question which has yet received little attention amongst photographers. I mean the subject of apprenticeship. At present by far the greater number of professional photographers are self-educated in their art: they have "picked it up," having commenced life with some other business or profession. As a rule, men who thus "pick up" an art have some original fitness or proclivity for its exercise. But whence come into the art such men as Mr. Bovey recently described as familiar types of the photographic printer—the men who varied in appearance from that of a cross between a dog-fancier and a pugilist, and a scedy out-at-elbows swell? These never became photographers from natural fitness or affinity: they were never apprenticed to the art. Whence came they, then? Perhaps the source is not difficult to trace; but it suggests the importance of the apprenticeship question. I fear a large number of those who have become photographic assistants of late years have first come into contact with the art as lads hired to clean glasses, and assist in the more mechanical departments of the studio, dark room and printing room. These also "pick up" some knowledge of the art, and eventually commit their fortunes for life to it; not because of artistic or scientific tastes and capacity, but because it seems to present the easiest and most handy means of making a living. If a system of apprenticeship were organized, it would remedy much of this. The apprentice who is specifically taught, and graduates in his art, would have in his indentures a charter to practise as a skilled man, and give him a distinction from the mere pretender. This is a question which touches the future

more than the present, but still it is worthy of thought now.

Reference to printing reminds me of the recent carbon discussion. I refer to it with reluctance and hesitation, as I take it for granted that you, in common with many of your readers, are sick of it. I only mention it to say how glad I am that the dreary war of words finishes with a prospect of a practical test, and to add a suggestion: it is, that Mr. Woodbury and Mr. Edwards should each have an opportunity of printing from the same negatives as are used in the carbon and silver trial. If half a dozen varied subjects from different kinds of negatives were produced by the methods in discussion—silver, carbon, and mechanical printing processes—and made accessible for examination by photographers, they would be more valuable, and certainly more interesting, than any amount of word-fencing or dogmatic expression of opinion. Examination of specimens possibly may change views and produce conviction. I doubt whether discussion ever does.

Notwithstanding the conviction just expressed as to the comparative uselessness of discussion, I shall be very willing, if the Editor permit or desire, to point out some of the errors of Mr. Cunningham, as he challenges me to do. But I should hesitate, without special permission, to do anything to protract a correspondence which has already been spuu out to a wearying extent. At any rate, it will be wise to wait until Mr. Cunningham is quite done before pointing out his errors.

Mr. Cocking, in his paper on expression and long exposure, struck a vein well worth consideration. An instantaneous exposure would be of comparatively little value in securing good expression, unless the moment could be seized when the sitter was unconscious of the operation. The great difficulty is, however, to get unconsciousness, and get rid of the "put-on" expression. The masters in our art often have the happy faculty of placing the sitter at his ease by inspiring confidence. I remember once being present in the studio of Mr. H. P. Robinson, when a lady asked, with nervous apprehension: "How am I to place myself, and what shall I look at, and where must I put my hands? I know you cannot make a nice portrait if I sit awkwardly." A reassuring smile accompanied the quiet answer, "Pray hold me responsible for all that, madame, and don't give yourself the slightest anxiety." I have understood that Mons. Adam-Salomou has a singular skill in inspiring confidence in the sitter. Now, in a long exposure, supposing the sitter to be firmly and easily placed, the first nervous feeling of apprehension has time to pass away, and a calm natural expression to succeed it. I give the opinion with hesitation, but I am not sure that a portrait produced in a sitting of three minutes would not be better than one produced in a minute; but I must admit that I think three seconds would be better than either. I have heard it said that a celebrated lady amateur once explained that her portraits were easy and successful because the sitting was so long that it scarcely mattered if the sitter left his seat and took a stroll round the room to stretch his legs during the sitting. But, of course, that's a fable.

The subject at the last meeting of the Photographic Society was full of interest. The principle of the collodion-bromide process always strikes me as so beautiful and philosophical that I wonder it has been so little practised. The varying conditions of sensitiveness appear to constitute the drawback, and, unless it can be overcome, must always be a barrier to its general use, for uncertainty in the matter of sensitiveness is, I think, of all faults, the worst in a dry plate, inasmuch as no preliminary test can be made in the field. In the wet process, if the first shot fail, a second is easily tried; but with a dry plate the result, if not certain, often causes irreparable loss.

AMERICAN CORRESPONDENCE.

PHOTOGRAPHY ON MOUNT WASHINGTON—THE USE OF WARM WATER IN TONING.

As I have previously communicated to you, a party of photographers, geologists, &c., proposed to spend the winter on the top of Mount Washington, N.H., the highest and grandest of New England's crown—the White Mountains. This, as you may perhaps guess, is a bold undertaking, for in September I have known icicles six inches long to hang upon the telegraph wires on the summit, and the wind to be of that velocity that one could scarcely stand if he had even the desire to go outside the rough but comfortable "tip top house" and make the experiment. These men of science, however, made every preparation to carry out their project, and are now comfortably quartered in a room in the railroad depot on the summit, almost a mile and a half above the sea. Coal, provisions, clothing, snow shoes, axes, &c., with photographic and meteorological apparatus, were amply provided, and a telegraph operator supplied by the Government to operate the telegraph, which was specially laid for their convenience. This telegraph is their only means of communication with the world below, except occasionally, when a hunter, or someone else, out of curiosity to see the party, makes them a visit, and, on his return, carries such letters to Littleton as they may want to send, and there posts them. By the latter means I have just received a letter from Mr. A. F. Clough, the head of the photographic department, and I give you a few extracts therefrom as another proof of the indefatigability of the photographer, when he feels that even by privation and hardship he can win fresh laurels to crown the wonderfully useful and beautiful art he follows.

The ascent was made by the party November 30th, and as the "bridal path" and the "carriage road" were hidden by the snow, the railroad track was selected as the surest way to guard against being lost, which latter is no uncommon thing in mid-summer; for, as you know, it is one thing to stand at the base of a mountain, high or low, and strike a bee-line with the eye to the top, and another thing to follow that bee-line to the summit. The railroad, a photograph of which you have been made familiar with by its issue with the December (1869) No. of the *Philadelphia Photographer*, was sure to lead to the summit, and so, as long as they kept near it, they would not be lost. Mr. Clough says:—

"When we started it was clear, and warm, and pleasant, and we perspired freely. As we got up out of the woods near 'Jacob's Ladder,' a high trestle on the railroad called by that name, the complexion of things changed; dark threatening clouds stretched along the crests of the Green Mountains, and were moving down upon us in a solid mass. We made haste to reach the top. Mr. Kimball, not being used to such tramps, was getting fatigued, and had left his pack at the foot of the ladder to lighten him for the rest of the journey.

"When we had got some way upon the open ground it was sunset, and the clouds had begun to drive across the top of the mountain; in fact, it began to look serious; but after some consultation, we determined to push up, as it was further back than up, and very dangerous walking on the railroad in the night. Moreover, there was no shelter but the depot at Waumbek Water Station, and no chance to make a fire even there. There was some danger of getting lost unless we kept in sight of the railroad. We were soon in a dense cloud. Mr. Bracy got separated from the rest of us here, and Mr. Kimball declared himself 'played out.' What were we to do? Leave him to perish and save ourselves, or to make an effort to get him up? I thought I had strength to do it. I certainly had the will. Mr. Cheney declared himself ready to try, so we went around a ridge a little, out of the wind, and rested. At the same time we rubbed and slapped

our exhausted friend with the flat of our hands, which does a great deal towards restoring a person in that condition.

"After a short rest, and having dropped all traps that would load us down, he took a small cord in his hand, whilst I drew the other end over my shoulder, Cheney locked arms with him, and then we pushed up into the clouds and darkness. We had a full mile to go, and he was growing worse fast; we had to resort to rubbing and slapping, letting him drop behind anything that would break the force of the wind. He begged us to leave him, and take care of ourselves. I was excited, and could have done a great deal more as long as my strength held out, and I knew if reaction did not set in, or Mr. Cheney give out, we could get him and ourselves up safe by resting often. We at last got up the steep part to where the ground was less rugged, and snow harder, with the wind on our backs, which helped us along. Across this we made rapid progress. Then we had to turn to the right, and go up a sharp rise to the depot at the summit, which brought the wind partially in our faces. We crossed over the track here to get some protection from the wind by tressel-work. Our friend was so far gone as to move mechanically, and we were obliged to let him rest often, dropping down helpless. We would wrap our overcoats about him and gathered close about so as to impart as much warmth as possible. We soon passed the spot where Miss Bourne perished at a much earlier season of the year. Could we make the rest of the way, or would there be a second monument of rough unhewn stones erected by strangers to the memory of one who had dared to face the fierce blasts of winter? I felt my strength leaving me; the excitement had driven me beyond my usual strength. I knew it was but a short distance, but my friend Cheney still supposed we had some way to go, and he worked bravely on. We could now go but a few feet at a time. The wind was blowing in our faces, the ground rough and steep, and I was obliged to rest often, and then exert myself for one more lift. At last, we caught sight of the house but a few feet away, and if ever there was a welcome sight, this was one to us. We gained the entrance and gave a shout, but the wind was so fierce as it rushed around the corner that we were thrown down. The party inside, members of our expedition who had gone before, heard us and rushed out, and dragged our now almost wholly unconscious burden into warm and comfortable quarters. No limbs were frozen, so we received no injuries except being exhausted."

So much for the perilous ascent. Since they have been on the summit they have had several days fit to photograph, and have made a great many beautiful frost and winter views, some of which I hope to send you soon after the negatives reach mother earth. I have not space or time to even begin to describe the grandeur of the scenery from one of these white mountains in winter. Many a tough struggle have I had on snow-shoes to get such views, in company with my good friend Kilburn, of Littleton, N.H.; and as we have arranged a trip up Mount Washington in a few weeks "to see the boys, and take them the PHOTO NEWS and some papers," I may be able to tell you more after I come down to my usual level as your correspondent again.

The Use of Warm Water in Toning.—At the last meeting of the Pennsylvania Photographic Society considerable discussion was had on the use of warm water in toning solutions. We all know that warm water will accelerate toning in cold weather, but the results are not so rich or pleasing. After prints are toned, and washed and dried, however, Mr. Shoemaker, assistant to Mr. Albert Moore, whose solar enlargements you have so much praised, declared that if they appeared too blue in colour, they could be improved by steeping in boiling water. Prints shown by him verified his assertion. In printing on opal glass, if the tone be too red, it may be improved in the same way.—Truly yours,
EDWARD L. WILSON.

Philadelphia, January 16th, 1871.

TESTS FOR THE PURITY OF PHOTOGRAPHIC CHEMICALS.

No. 1.

BY PROF. J. TOWLER, M.D.*

IN the present advanced condition of photography, it becomes important for the photographer to know how to test his chemicals for impurities; for such exist, more or less, either accidentally or intentionally, in many of the chemical ingredients used in the photographic art. The aim of the present article, therefore, is to give the photographer the requisite instruction in chemistry, by means of which he can form an independent judgment as to the normal or abnormal condition of what he uses.

TEST FOR NITRATE OF SILVER.

Nitrate of silver crystallizes in plates, which are quite peculiar and easily distinguished from other almost similar crystals—as, for instance, from those of the iodide of cadmium. The crystals of nitrate of silver are very heavy. If crystals of quite a different shape from the tabular form are distinguished amongst the flat plates peculiar to nitrate of silver, there is a great probability that such crystals belong to some other substance; and by picking a few of these out by means of a pair of forceps, and submitting them to the following chemical test, you will easily be convinced of this fact.

TEST WITH HYDROCHLORIC ACID OR A SOLUBLE CHLORIDE.

This test is one of the best, for it shows the presence of silver very distinctly, and requires only one extra test, in reality, for its corroboration, but others may be added. This reagent, too, separates silver from many of its solutions completely in the form of the chloride of silver. Add, therefore, a drop or two of hydrochloric acid, or of a solution of common salt, to the solution of the supposed nitrate of silver (two or three grains of the salt in a drachm of pure water). If the salt is really that of nitrate of silver, a slightly bluish-white precipitate is produced. Such a precipitate, and one that is almost similar in colour, is produced by this reagent when it is added to a soluble lead salt (nitrate of lead, acetate of lead), as also when certain soluble chlorides are added to a solution of bichloride of mercury. It is therefore necessary to determine, by a second test, whether the precipitate in question is chloride of silver, chloride of lead, or chloride of mercury. As I said before, one single test is capable of doing this; namely, pour the liquid off from the settled precipitate, add water to the latter, shake the mixture well together, and then let the precipitate again settle to the bottom. Again pour off the supernatant liquid, and finally eject the moist precipitate into a white porcelain evaporating dish, and expose the contents for a few minutes to the direct rays of the sun. By this proceeding chloride of silver changes colour, and gradually assumes a lavender hue. Chloride of lead and chloride of mercury are not visibly affected by this treatment, as regards colour. Hence this test is decisive as to the presence of nitrate of silver; but, naturally, it does not prove that there is, or is not, either chloride of lead or chloride of mercury, either one or both, precipitated at the same time with the chloride of silver. To determine the presence of chloride of lead in the mixed chlorides, the latter are boiled in rain or distilled water, by which the chloride of lead is dissolved; the boiling-hot solution is separated from the insoluble residue by filtration or by decantation; and, on cooling, the chloride of lead again separates in brilliant crystals.

The presence of chloride of mercury is determined by adding to the two remaining chlorides a little ammonia, which easily dissolves the chloride of silver, but which turns the chloride of mercury black, or of a grey black.

Numerous other tests might be employed, but these will be found, I think, quite sufficient to determine the pre-

* Philadelphia Photographer.

sence of these three metals when combined or mixed as nitrates, and precipitated as chlorides.

But nitrate of silver is sometimes adulterated with nitrate of ammonia, which really does no injury if the salt is used simply for photographic printing on paper; but such an adulteration is an injury to the purse, and so far a fraud, because you have to pay for nitrate of ammonia the same price as for nitrate of silver.

TEST FOR NITRATE OF AMMONIA MIXED WITH NITRATE OF SILVER.

Take a few grains of nitrate of silver, and rub this salt intimately together in a mortar, with a little quicklime and a drop or two of water; if there is any ammoniacal salt present, the smell of ammonia will at once be evolved by this operation.

In order to ascertain the amount of nitrate of ammonia present, we proceed in the following manner:—Weigh out, for instance, twenty grains of the salt in question, and heat it by means of a spirit-lamp in a porcelain crucible (or weigh the crucible and the salt together); then, as soon as the salt melts, white fumes will be evolved, if there is any adulteration with nitrate of ammonia. Continue the heat gently, until no more white fumes pass off, let the crucible cool completely, and then finally again weigh the crucible and its contents; the difference in the two weights determines the amount of the nitrate of ammonia which had been mixed with the nitrate of silver.

But it may be that either the nitrate of soda or the nitrate of potassa may be the adulterating ingredient; and as neither substance is volatilized by heat, we have to show their presence and effect their separation in another way. Now we know that neither of these salts is precipitated by hydrochloric acid; therefore, add hydrochloric acid to a solution of the nitrate of silver under consideration as long as a white precipitate is thereby produced; afterwards separate the liquid portion from the deposit by filtration. This liquid portion contains the adulterating ingredient, be it either nitrate of soda or nitrate of potassa. Now evaporate the fluid to dryness, and divide the residue, if there is any, into two parts. Dissolve one part in a very small quantity of water, and divide the solution into two parts. To one of these add a drop or two of an alcoholic solution of bichloride of platinum, which will produce a yellow crystalline precipitate of the double chloride of platinum and potassium, if the substance in the solution is nitrate of potassa. Add to the other part of the solution a few drops of an alcoholic solution of carbazotic acid, which will produce, also, a yellow crystalline precipitate if a salt of potassa is present. These two reactions will fail if the adulterating material is a salt of soda.

Furthermore, we may test for the presence of a soda salt by using the portion of the dried deposit and placing it on a piece of burning charcoal; if soda is present, and especially the nitrate of soda, the salt will evolve a bright yellow flame, and decrepitate. If, however, the salt were pure nitrate of potassa, the flame would be of a light purple or rose colour.

Again, let us suppose that no deposit was left after evaporating the fluid—originally obtained by filtration—to dryness; this circumstance would indicate, if ammonia had already been tested for and found wanting, that the nitrate of silver under examination was pure from all metallic or basic compounds.

To test the solution of the nitrate of silver in question for any free acid, which ought not to be present, we use blue litmus paper, which turns red; if the colour is not changed, there is no free acid. If, however, the colour is changed to red, test for sulphuric acid by adding a drop or two of the solution of chloride of baryta to the solution of nitrate of silver; and if a milkiness is produced, this indicates that sulphuric acid is present, and this indication is strengthened if, on addition of nitric acid, the milkiness still remains.

More probably nitric acid may be present, and this, in very small quantity, will scarcely be injurious.

Many other substances might be present, but there is not much probability of finding anything besides what we have tested for.

ALKALINE DEVELOPMENT.

BY M. CAREY LEA.*

I RETURN to this subject to mention what I find to be a convenient and advantageous mode of managing it.

Before commencing to develop a set of plates, put into a small phial

80-gr. solution of carb. am....	...	3 drachms
60-gr. solution of bromide pot.	...	1 drachm

Shake these well together.

Next place (for a $6\frac{1}{2}$ by $8\frac{1}{2}$ plate) 4 ounces of water in a pan that will just take the brass plate. Add to this half a drachm of 60-grain solution of pyrogallie acid, agitate to mix, and put in the plate, which will simply need to have the backing sponged off, but not to have had the face washed.

The liquid moistens the plate all over, but does not develop anything (usually not, unless the exposure was too great, or the pyrogallie acid has traces of ammonia in it from being measured in the same minim glass as the alkaline mixture without intermediate washing). Now remove the plate, and add to the pyrogallie acid and water 20 minims of the mixture of carbonate and bromide; agitate, and put in the plate. The sky at once appears, and presently the details (in the case of collodio bromide plates, prepared as I have described; these come as rapidly as in wet plate development). Just as soon as the details are out, the plate is again taken out, and about 25 minims of the carbonate of ammonia solution, without the bromide, are added. This completes the development.

Always, however, the operator watches the character that his plates show. If there is a faint disposition to veil, the bromide should be increased. Any desired degree of brilliancy is got in this way, up to the most brilliant ambrotype effects. This last, however, is undesirable, and tends to the production of hard prints.

THE SOLAR ECLIPSE IN SICILY.

BY DR. H. VOGEL.†

THE English Government had placed at the disposal of the expedition a despatch boat, the "Psyche," a small, but swift and pretty vessel, which, on the afternoon of the 11th December, left the beautiful Bay of Naples, and reached, the next morning, the Faro of Messina. The pleasure of the trip along the coast of Sicily to Catania was much enhanced by fine weather, and was certainly one of the most enjoyable trips I have had in all my wanderings. Chains of hills run from point to point, each of them a landmark of some past glory; the blue Mediterranean, the picturesque cliffs, the giant Etna, towering above all, with its pyramidal snowy sides and smoking crater, compose, with human monuments of the past and present, a picture which must impress even the most stolid. It was in the midst of this beautiful scene that an unexpected calamity befel us: our vessel struck upon a submarine rock, some seven miles north of Catania, near Cape Mullini. Fortunately, we were all saved, with our luggage and apparatus, and were enabled to reach Catania in a boat the same day.

Here we met the American expedition. The staff—not so numerous as ours—had already found quarters in the gardens of a beautiful Benedictine monastery, where they had fitted up their observatory, and where we, in passing, gathered oranges from the trees. Here I found my old

* Philadelphia Photographer.
† Continued from p. 53.

friend Mr. Chapman, Professor Rutherford's assistant, with whom I had become acquainted in New York. He, together with Mr. Burgess and Mr. Fitz, of New York, formed the American photographic section, which was provided with a magnificent telescope having a six-inch aperture, and some beautiful landscape lenses. We were told, at this station, that the Italians had sent a photographic staff to Angusta, and these circumstances determined Lockyer to send Messrs. Brothers and Fry to Syracuse, while six other observers—of whom I was one—were to choose a more northern locality.

My first idea was to station myself upon a spot in the central line, where the eclipse would last longest; and here, with the aid of a heliostat, kindly lent to me by Professor Pogendorf, and an ordinary camera with a sliding dark-box arrangement, to obtain three pictures of the corona, one after the other. I could quite rely upon the possibility of such a course of proceeding. In Kentucky, on the 7th August, 1869, a picture of the corona was obtained in forty seconds with a telescope of $\frac{1}{15}$ * aperture; my lens was $\frac{1}{2}$ in relation to the aperture, and the light intensity of this, compared to that of the American instrument, would be $(\frac{1}{2})^2 : (\frac{1}{15})^2$, or nearly in the comparison of 1 : 4 $\frac{1}{2}$. With my instrument, therefore, I could work four and a-half times as quickly, and produce a picture in nine seconds. But it must be remembered that the mirror of my heliostat, which reflects the picture of the sun upon the lens of the camera, would absorb fifty per cent. of the light, and for this reason it would appear necessary that an exposure of twice the above period would be necessary. Under any circumstances, then, it would be possible to obtain three or four pictures during the one minute and a-half of totality with the facilities at my disposal. In obtaining pictures in this way, one after another, I was, moreover, anxious to confirm Gould's observations in America, which seemed to demonstrate the fact that the corona underwent some very striking and rapid modifications. I was likewise desirous of obtaining a picture of the corona through a piece of kalspar, in order to ascertain, by means of the double picture, whether the light of the corona was polarized or not.

Lockyer's wishes, however, altered my plans. In order to ascertain whether the corona was of atmospheric origin, it was of great importance to him to have observations of the same made at one spot situated a considerable distance above the level of the sea, for at such a point it is evident the atmospheric influence would be much less than at a lower station. The mountain of Etna, 10,200 feet in height, offered a favourable observatory of this kind; and for this reason a portion of the staff was despatched to Mount Etna, with orders to establish themselves as high up that mountain as circumstances would permit. Of this division I formed one, and was, indeed, the only photographer of the party. On the first days of our setting out, the weather appeared very promising. The purest spring atmosphere and a clear sky gave us a splendid view of the mountain, and raised our hopes to a high pitch. Of course the period of totality (about one minute) would be scarcely so favourable for my work, but then I trusted, on the other hand, that the clearness of the atmosphere would allow of a much shorter exposure.

On the 21st December—the day before the eclipse—we parted from our friends at Nicolosi, at the foot of Mount Etna, and commenced our ascent. Two American observers, Messrs. Peters and Einbeck (both of them Germans), accompanied us, and took up their station near the small crater of Monte Rosso, at a height of 2,550 feet. We entrusted our packages to a team of mules, and ascended in a long cavalcade. The path led over volcanic ashes, and then across the lava stream of 1573, whose irregular surface assumed all kinds of fantastic shapes in convincing the eyes, however, less than the feet. Numberless minor craters were to be seen on all sides, covering

almost the whole side of the mountain; they are said to be 800 in number. These craters have been quenched for some considerable time, and the surface of many of them, both outside and in, is covered with good arable land. From the very summit of the mountain evidence of subterranean fire was continually to be seen, sometimes a white and sometimes a grey vapour being discernible issuing from the crater. As we ascended, the cold became very perceptible. The thermometer sunk from 11 $\frac{1}{2}$ ° Reaumur to 8 $\frac{1}{2}$ ° on the further side of the lava stream, and finally to 5 $\frac{1}{2}$ ° at the Casa Ferentina, our destined goal.

(To be continued.)

Correspondence.

DEVELOPING TRAY.

DEAR SIR,—Having constructed a developing glass tray, I enclose you two drawings of it, which will, I think, serve as an answer to the enquiry of "Oxonensis" in a recent impression.

The frame, or sides of the tray, are of mahogany, about 1 $\frac{1}{2}$ inch deep, slanting down to about 1 inch to the right-hand side.

Fig. 1. represents a general view of the tray; A, the



Fig. 1.

plate-glass bottom, fitted into a rabbet in the wood with white lead, so as to leave a quarter of an inch between the glass and the table on which it stands. B represents one of the two pieces of mahogany (seen better in the bird's-eye view given in fig. 2 at B B), an inch in width, fitted to the inside

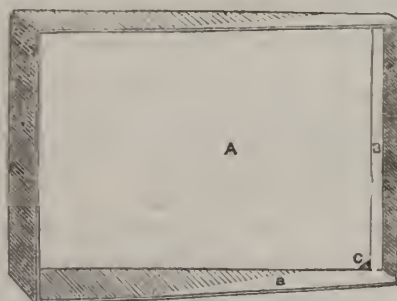


Fig. 2.

of the frame on the glass. These pieces are about twice the thickness of the collodion plate, and serve to form an inside tray one-eighth of an inch larger on every side than the plate itself. C represents the corner a little cut out to admit the finger-nail to lift up the plate. Shellac varnish covers the inside woodwork.

In this arrangement my aim has been to form a tray in which to develop a plate with the *smallest* possible quantity of solution, so as not to weaken the image. In use, you have only to tilt the tray towards the left hand, and slide the plate immediately into it.

The pieces of mahogany let in also serve to secure the developer without pouring it away when tilted up to watch the progress of the picture.

* Viz., comparison of aperture to focus.

If this communication should prove of any service to your correspondent or others, I shall be only too glad.—I remain, dear sir, yours faithfully,
JOHN B. BEST.

KEEPING SENSITIZED PAPER.

SIR,—I have tried the "washed paper and fuming process," and my experience is, that as regards the production of fine prints it is perfectly satisfactory; but still, as is not unusual in many other good things, it has its drawback—at any rate in my case. On account of my printing arrangements, I find it a very troublesome affair, with a large number of negatives, to fume the pads.

I have not used any of Mr. Darand's paper, which, he states, will keep two months, and may be used without fuming; but an amateur friend of mine reports very favourably of it, and I cannot but very much wish that some process was known by which photographers could sensitize their own paper with these advantages. I have no wish to deprive Mr. Durand of any advantage he may derive from keeping his process secret. No doubt he spent time and money in experiment, and he has a perfect right to endeavour to reimburse himself in any legitimate way he thinks proper. But, besides the desire which every photographer who takes an interest in his art has in knowing all about the materials he is using, it is rather troublesome to be constantly watching your stock of paper, so as to order it and not have any in hand more than two months. It would, therefore, be a most desirable thing that it should be generally known how to sensitize paper, and to keep it (if but a few weeks), and to work well without fuming.

My motive in writing this communication is to endeavour to prompt some of your experimental correspondents to give their attention to the matter, and, if successful, to be generous enough to make the means by which they have succeeded known.

As soon as we have a little better printing weather, I intend to try some experiments, and, should I succeed, I shall be delighted to publish the means. I am only afraid that my limited chemical knowledge may be a hindrance to me, but I shall try my best.—I am, sir, your obedient servant,
M.

January 28th, 1871.

PHOTOGRAPHY AND ITS RELATIONS TO THE STATE.

DEAR SIR,—By a misprint, the word *organization* has been substituted for *centralization* in the paragraph in my paper commencing "The French error of excessive centralization."

As both that and the succeeding paragraph relate wholly to errors of centralization, and not of organization, they are open in their turn to be charged with the logical error of inconsequence.—I am, dear sir,
S. THOMPSON.

10, Cathcart Road, S.W.

CLEANING OFF VARNISHED NEGATIVES.

DEAR SIR,—Perhaps the following, or some part of it, may be of use to a few of your readers, especially those of them who do small-sized pictures. It relates to the cleaning of varnished negatives, and preparing them for use again:—

In 1869, having no time on hand, any old negatives lying past me were destroyed; but this winter I bought a fish pan that holds about nine pints, which was filled with the plates set on edge round about, and touching each other as little as possible; these were covered with water, and about two ounces of black ash put into it; the pan was set over the fire at a convenient time, and allowed to boil for half an hour or so; was then set aside to cool; emptied; and filled and emptied again several times with water from the pump; the glass was then wiped with a coarse cloth, and left to drain; then rubbed up a little on both sides with a clean cloth, and put past. The white of an egg was put into a bottle with a few ounces of water and some pieces of broken

crookery; was well shaken; then put into a twenty-two ounce bottle filled with water, and filtered, after having been well shaken again, as advised by a correspondent in December last. Part of this was then poured into a bowl, and a broad brush was used to coat the plate with, which was then left on a plate-rack to dry. (The brush was used by me some time before I knew that another correspondent had been using one; but this, of course, is of no consequence). Any experience I have had since is all in favour of coating with albumen, and putting it on with the brush.

I have tried Tunicare for new glass, but could not get the acid put on without other matter being left along with it; and it was not convenient for me to lift the glass out of acidulated water immediately before applying it. W. C.

CARBON PRINTING V. SILVER PRINTING.

DEAR SIR,—Happily, in easement of the task now before me, the courteous letter of Mr. Cooper can be disposed of in the one remark, that his well-meant suggestion would prove more troublesome in its execution than satisfactory in the results realized. My friend "X. Y. Z" who quotes Sheridan Knowles, and selects a *nom de plume* from the unknown, must not, however, be so summarily dismissed.

The sophistry which imparts a sparkling, though false, glitter to the line of argument adopted by my friend, who prefers to shout under cover, is so thin and transparent that I think I do him justice in expressing my belief that he is ruled by a misconception of the subjects on which he so brilliantly comments, rather than a premeditated desire to bolster up a weak case with personalities and viciously conceived insinuations. Most certain is it that his remarks concerning the Heliotype process go to prove that he is not conversant with its principles or its working details. Although Edwards's Heliotype is somewhat analogous to lithography proper, it does not necessarily follow that the analogy extends through all its details. In point of fact, it does not so extend, as I am prepared to show. In the first place, a lithographic impression is produced by a rolling-press that scrapes the stone as the rollers revolve. Heliotype requires vertical pressure. An ordinary lithograph is engrained, transparency of details being produced by the breaking up of parts into irregular markings, which, I believe, is technically termed "grain." Now, in an Heliotype from nature, there is literally *no grain*; the tones glide as imperceptibly as those seen in a silver or Autotype print taken from the same negative. The present weakness in the Heliotype is not a lack of depth or vigour, but it consists of a want of transparency, without which there can be no richness. This failing, however, is not occasioned by a defect inherent to the process, but it arises from the defective practice of producing pictures by a misapplication of colours. That it is as I state I hope one day to prove: at present I have no leisure to devote to the experiment.

"X. Y. Z.'s" remarks on teapots and cruet-stands I regard as inapplicable to the subject under discussion, as it is an error too absurd to suppose that those influences which tarnish silver plate are as capable of destroying silver prints, as the chemical conditions the two present are by no means to be classed as analogous. Dozens of the readers of these lines could, if they choose, produce evidences of the lasting qualities of silver prints. Could silversmiths subscribe to similar experience with their wares? Fact of the matter is, the fading of a silver print is a *possibility*, not a *necessity*, and I have already shown that a silver print will not fade (if the past is admitted as a criterion) except decomposition is set up in some stage of its production. I deplore the ease with which destructibility can be introduced as deeply as any one can do; but I am persuaded that until some process giving equal brilliancy to silver can be brought forward, the general public, who look to present results, will choose silver prints in preference to the inferior appearances of any superseding process. In my admiration of Woodburytype, my absurdity is not so evident as the *unknown* asserts, as the

character of Woodburytype and Autotype is not "absolutely identical," the point of divergence being, in my opinion, one of notable importance. A Woodburytype picture is composed of gelatine and colouring pigments—nothing more; whilst an Autotype embodies in its structure gelatine, pigment, and chromic acid, the last being in chemical union with the first named, forming a combination which time has yet to pronounce permanent. Granting, however, the lasting quality, the chromic acid will always prove a barrier to the perfecting of the process. All who are conversant with the property of colours are aware of the difficulty of killing out a chromic yellow: with black it gives a dusky green; with red, from blackdust to an orange; with blue, a decided green; hence the causes why the products of Woodbury's invention outrival those of Autotype in brilliancy. Even were both in qualities equal, the rapidity of production of Woodburytype stands unsurpassed; therefore, taking rapidity of production and superiority of results as criterions, I am not so very absurd in my admiration of the process.

As "X. Y. Z." commences with a quotation, I shall dismiss him with an appeal to his better judgment to determine whether, in the event of his continuing his part in the contest, it would not be advisable for him to deal with facts rather than to run impulsively into personalities, which only tend to wound a sensitive nature, but constitute no more formidable weapon.

Now, sir, I turn towards yourself. You, at least, know how to deal with argument with a courteous bearing. I therefore may, with confidence, request of you a word or two of explanation.

You state, first, that no charge is made for permission to work the Autotype. Second, that an improver would be quite at liberty to use his improvements—I presume, without charge. But how do you reconcile these assertions with the advertisements of the Autotype Company, which warn, while they assert the superiority of the pigmented tissue they supply? Now, if to use the "dearer and inferior article" renders the user liable to legal proceedings, I cannot perceive how the improver of a tissue can be safe in using his improvement without paying in some way for the privilege.

[Surely it requires no argument to show that whilst it is illegal to make without permission the article which someone has invented and patented, it may be perfectly legal to invent a better. If the real or supposed improvement involve the use of the patented method as a basis, of course that must be paid for; but if the improvement be of a radical character, and dispense with the original patent altogether, the inventor is free as air to patent for his own benefit, or keep secret and use for his own benefit, or publish and give to the world.—Ed.]

Perhaps your reading of patent law forms the basement of your remarks. Most certainly it has enlightened my mind in reference to the Christian forbearance exercised by the patent holders, when the legal protective rights of Autotype are violated.

But I must not dwell on this matter, as there remain to be disposed of the remarks of industrious Mr. Johnson, to whom I should consider myself deeply indebted for the pains he has taken to prove that I have never shrunk from showing up the weak points of the process I am now defending. So high is his opinion of my honesty in this respect, that he foreshadows a period when I may be introduced as an authority that proves the instability of silver prints. But I am withheld from an expression of obligation by his suspicious omission of an explanation which should be added to prove honesty of purpose. My confession of weakness is always accompanied with an explanation of the course to follow to avoid such weak places. Besides, what Mr. Johnson admires in theory he would do well to imitate in practice. He is always harping upon the strong points of Autotype. Has the process no weak points? I could name and describe a few.

Mr. Johnson deserves, and I freely concede to him the credit due to him on account of the moral courage and laudable candour evidenced in his unreserved confession in reference to those, his clients, "who practise the carbon process habitually, who use the fact extensively, but quietly and most successfully, to attract clients, and disparage the silver prints of their neighbours, but who also, with equal perseverance, decry the process to enquiring friends." Equal upon such a miserably selfish and meanly conceived policy—unworthily the proceeding of men, insulting to the liberal antecedents of an art whose deepest foundation is grounded on a rock of unselfishness! I have not yet reached that stage of cynicism which would induce the belief that photographers are so steeped in the degradation of lying and hypocrisy as to hug in secret what they openly decry. Mr. Johnson believes in the possibility of my having found a "mare's nest." Is he certain that he is not the deceived? In my case my eyes were permitted to endorse the evidence received by my ears; but it might reasonably be suspected that Mr. Johnson's ears were the only recipients of the testimony of his cellar-groping clients; for those who openly decry would scarce trust him with secrets they desired to keep close from the outer world. The Autotype Company, I presume, do not advertise their wares from motives of philanthropy. They plainly desire an extension of a consuming connection. Is it at all reasonable, then, to suppose that those disparagers of a process would accord praises in the hearing of an active principal whose interests it would be to proclaim aloud such praises by mouth, pen, and press? If Mr. Johnson has not been deceived, his dubiously reticent clients are certainly much more foolish than even dishonest.

Concerning Mr. Johnson's challenge, I would honestly and at once accept the same, but can I depend on the absence of Mr. J.'s cellar friends from the list of triers? Surely

"Since man to man is so unjust,
How know I which man I may trust?"

If there exist those who practise habitually what they decry openly, what guarantees have I that the elasticity of the jury conscience might not extend to lauding openly what they decry in secret? Ah me! this is a wicked world. And the more I try to draw some scheme to obtain a free and fair trial, the greater becomes my bewilderment. Stay! Is it too long to wait? The next exhibition—they cannot pack the opinions of viewers there; for I fearlessly state my conviction that I could expect no impartial verdict from the photographic press. It would, doubtless, strive hard to be just, but a foregone conclusion is like unbridled prejudice—it is hard to combat it. The correctness of this statement is shown by the fact that the query embodied in the position has not yet been answered straightforwardly: "Can Autotype honestly assume the power of meeting all the requirements, which powers photographers are at no loss to find in silver printing?"—Yours truly, W. T. BOVEY.

[Regarding the challenge, Mr. Bovey overlooks the fact that Mr. Johnson stipulates for publicity in the form of a few friends selected by both sides; the facts reported upon—by the press, of course; and the results exhibited.—Ed.]

HELIOTYPE PRINTING.

SIR,—I greatly hesitate to make any remarks on the subject of heliotype printing, feeling that such remark cannot, of necessity, be considered impartial; but I may^s at least, correct some obvious misstatements which your correspondent "X. Y. Z." has made in relation thereto.

Your correspondent states that the heliotype process, in its mode of working, is strictly analogous to lithography. But, beyond the fact that lithography entirely, and heliotype partly, depend for their principle on the mutual repulsion of grease and water, the modes of working are altogether dissimilar. In lithography, a drawing composed solely of dots or lines is made on a stone, and the only effect of gradation that can be produced is by making these dots or

lines larger or smaller. There can be no difference in intensity, only in size, between the largest and the smallest. In heliotype, the image is produced by the action of light passing through a negative on to a sheet of gelatine. The surface of the stone is as coarse, compared with the gelatine, as is a newly macadamized road compared with the first-named surface. In the one case the image is produced by what degree of fineness of dot or line the hand may be able to attain; in the other, by the degree of fineness that light will produce through a negative on the surface of gelatine. It may be replied that it is only a question of degree. Obviously it is, and must be so in all printing methods, either in tin, or silver, or carbon. But the degree obtained in the heliotype is such that it is impossible to separate the gradation into dots or lines, even with a powerful magnifying glass.

The device of double inking affords another illustration of the total dissimilarity in the working of the two methods.

In the heliotype it is found that a stiff ink will only adhere to those parts where light has acted most strongly, and in order that it may adhere where the action of light has been less, it must be thinned down. This gives heliotype a very distinct advantage over lithography—and, indeed, over all existing methods of printing—where no such effect is obtainable. I have remarked that in heliotypic printing, the action is only *partly* that of the mutual repulsion of grease and water, for its mole of work is also *partly* that of copper-plate printing; there is a distinct amount of relief in the gelatine surface from which the impression is made, and, in the case of lines, a perceptible amount of relief is obtainable in the prints.

Your correspondent says of heliotype, that it cannot rise higher than the best lithography. Let him consult any lithographer, and he will find he is in error in this respect.

It would be out of place for me to remark on the comparisons of results which your correspondent has made. These must, after all, be purely matters of individual opinion, and I am content to refer to the published opinions of recognized authorities on this point.

It is at your pleasure to give your readers the opportunity of judging of the merits of heliotype for themselves.

Some time since I placed an illustration at your disposal for this purpose, the subject of it being an interior. You were of opinion that a figure piece would be better, for which you were good enough to say you would find the negative. To that opinion I deferred, and am awaiting instructions.*

I suspect the want of permanence is not the only objection, nor, indeed, the greatest, to the commercial application of silver printing. The necessity for mounting, the cost, the want of uniformity in the results, the limited range—above all, the time required for the execution of any extended number of copies, and the helplessness of the method, from its dependence on light—these are the obstacles which, more than want of permanence, have entirely barred its progress. Portraiture is said to be the crucial test of a process, but it can only be so as regards portraits. A publisher of reproductions or engravings, for instance, would not consider it a test for his work. Outside the domain of portraiture, there is an enormous field for a method which obviates the objections referred to, and the method will assuredly be preferred, *ceteris paribus*, which supplies a print in printing ink, to that which supplies one composed of colouring matter imprisoned in gelatine.

The want of uniformity in quality in silver or carbon printing is so serious that, in my opinion, 1,000 or 500 impressions by either of these methods would not, *as a whole*, be so good as a similar number of heliotypes from the same negative; this is putting on one side the advantages in point of permanence, time, mounting, range of power, and

* We preferred a figure subject as doing more justice to the process, and of more interest to our readers. We hope to issue it with an early number.—Ed.

cost that accrue to the heliotype, though it may be that, *at present*, selected prints by the first-named method might prove best of all. In this extended sense I agree with Mr. Bovey's remark.

Silver printing is a thing of itself. It stands entirely alone, and produces results unlike everything else. It has been in existence a score or so of years, and has had thousands of workers. It is, in fact, the established process. People, from being accustomed to it, like it, though it has but few points which find favour with artists. But what I object to, and what carbon printers have to fight against, is, the settled conviction that a silver print is to be esteemed the standard of excellence. No matter how much more artistic the results, no matter how great the range of a new method may be, no matter how permanent, or how quickly or cheaply manufactured, no matter what other advantages it possesses, the one point always is, can it produce pictures that shall be mistaken for silver prints from the same negative? If not, *Habet*, and down with the thumbs. If autotype or heliotype printing, even with only their present excellence, had been the established methods, and silver printing had now first been brought forward, what would have been the chance of its introduction?

There is, just now, a general cry about the depression that exists in photography. And yet there is a class of men springing up who find their account in being simply autotypers, Woodburytypers, heliotypers, carbon printers, &c. I venture to predict it will not be long before photographers suddenly awake to the fact that more work is being done by photography now than ever, but that it has unaccountably slipped into new channels.

In conclusion, your correspondent "X. Y. Z." remarks that, at the recent exhibition in Conduit Street, carbon printing was very imperfectly represented, whilst the heliotype process was exceedingly well represented. Nothing could serve my present purpose better. After an existence of six years, carbon printing was very imperfectly represented by the productions of five firms, Messrs. Sarony, Spence, Downey, Window, and Edwards and Kidd, the names of the first four being towers of photographic strength. Heliotype was, I am pleased to see, exceedingly well represented by the productions of one firm after an existence of a few months. I can afford to overlook my strongest argument, which applies with ten times the force you have applied it to carbon printing: no final comparison can as yet, with the least fairness, be made between the results produced by this and the older methods. Nevertheless, heliotype, the youngest born of the processes, and barely able to speak for itself, has made its voice heard in an unmistakable manner.—Faithfully yours, ERNEST EDWARDS.

Lincoln Terrace, Willesden Lane, January 6th, 1871.

DISSOLVING VIEWS WITH ONE LANTERN.

DEAR SIR,—If "Sylvester" will please to read the last sentence of his article of the 6th January, he will see that all of whom he was writing are included without exception in his sweeping denunciations against untruthfulness. Perceiving his mistake, he has hastened to rectify it. This is as it should be; but, as many persons are apt to do when they find they are in the wrong, and are, on that account, angry with themselves, he has pitched into the first person at hand, which happened to be me, just to gratify his spleen and let off the steam. Well, it does not hurt me, and it does not improve his position. If he is the "Sylvester" I have heard of, he has considerable scientific acquirements, but his nervous excitement has prevented his seeing that we were both working for the same ends, only from different standpoints. Seriously speaking, such sweeping denunciations should never be used; they betray an uncharitable mind, are often misjudged and unjust, do no good, engender mistrust of the motives of the writer, form no arguments upon the matter in dispute, and, worse still, prevent sensitive minds from offering their ideas and ex-

periments to the public. Ill-natured personal abuse and ridicule are still worse, as those who would feel wounded by it have not the power or the will to return it, therefore are not on fair terms with their adversary. No man has a right to say that a thing either has not or cannot be done because he has not seen it or cannot do it; for instance, my gas blowpipes, made by Field, of Birmingham, have a sliding action like a telescopic gas-burner, serving to adjust them to condensers of various diameters. Binocular lanterns having the lenses arranged one set above the other have long been in use; what, then, more easy than by rack work to raise or lower the light from one to the other of them? This is not dissolving, says "Sylvester;" so also say I; many so-called methods of dissolving are not, in fact.

The great optical error lies in this, that so far as the light is removed from the centre of illumination of the condensers, a dark patch covers a proportionate amount of the screen; and this I should consider fatal to the whole effect, and not to be remedied. Nevertheless, I should be far from vilifying the inventor, but would civilly ask him for further explanations. By the former course I might perhaps deprive myself of some useful information, and unnecessarily make an enemy.

As to my transparent error, if it be an error, it was intended to be somewhat transparent. I have always found, in a mixed audience, some turbulent spirit take advantage of the darkness to become offensive, and respectable females object to being placed in such a situation: the passing of a piece of deep blue glass over the lantern nozzle produces a night effect upon the picture. Should total darkness be required, the colour can be deepened to any extent towards the handle by oil paint. Black glass can be obtained, if preferred. Craps can be used in the manner recommended by "A Practical Man" some time since in the PHOTOGRAPHIC NEWS. I consider the best method is to have an instrument made in the shape of a musical tuning-fork, the space between the legs of which is of sufficient width to allow the lantern nozzle to pass between them. The craps is sewn on the by holes bored on their faces. I disapprove of all springs, hooks, or other attachments to the lanterns in any way, as they are likely to prove sources of danger and accident.

In conclusion, I beg to say that I consider an educational journal like the PHOTOGRAPHIC NEWS an unfit arena for personal abuse or party spirit. Each contributor should be encouraged to add his mite of instruction to the common stock; and should it prove stale or unprofitable, it should be received with charity. Our worthy Editor has the interests of his readers too much at heart to admit much such as this, but Jove sometimes nods, instances of which I frequently see in other journals. I have no doubt but that in the foregoing remarks will be found some amusing coincidences. I make no personal application of them to anyone, but merely "Noni soit qui mal y pense."—Yours truly,

106, High Street, Ilfracombe.

J. MARTIN.

Talk in the Studio.

VISITING CARD PHOTOGRAPHS.—Mr. F. A. Bridge, referring to our description of a visiting card portrait with turned down corner, sends us an example of a similar thing which he has been producing for the last four years. In this case, the corner of the card is cut off, and a triangular piece of an ordinary print pasted on instead of the medallion we described.

SENSITIVE CARBON TISSUE.—In a note speaking of the satisfactory working of carbon printing in the photographic department of the Royal Arsenal, Mr. Baden Pritchard states that they are now using carbon tissue which has been kept five weeks in a sensitive condition with scarcely any perceptible deterioration.

LONDON INTERNATIONAL EXHIBITION, 1871.—Photographers should remember that the 21st instant is the date for sending in their contributions to the exhibition. The buildings in

which this will be held are now finished, and ready to receive the exhibits. They will accommodate altogether 50,000 persons. The object of the commissioners in holding the exhibition may be summed up as follows:—They propose, in the first place, to make an international exhibition a permanent institution of the country, giving to industrial art the same opportunity that is afforded to fine art by the annual exhibitions of the Royal Academy. In the second place, they produce the area over which the exhibition shall spread itself, by reducing the various industries into groups, and, taking certain of these each year, bring the entire industry of the country under review every seven or eight years, fine art being a standing division of the programme. And, in the third place, to restrict the conditions under which exhibits have hitherto been received, by making all articles undergo a preliminary sifting, through appointed committees of selection, thus excluding all works that do not possess sufficient artistic merit to warrant their exhibition, and by the further exclusion of mere masses of natural products. The manufactures exhibited this year will be woollens and pottery, in addition to fine art of every description. H.R.H. the Prince of Wales is the President of Her Majesty's Commissioners for the Exhibition; Messrs. Spiers and Pond are to be the refreshment contractors; Messrs. Chaplin and Horne the carriers; and Her Majesty's Commissioners have entered into arrangements for the printing and publication of the official catalogues by Messrs. J. M. Johnson and Sons, of Castle Street, Holborn, London.

THE COLOURS OF AUTUMNAL FOLIAGE.—Mr. H. C. Sorby has a valuable paper on this subject in the January number of the *Quarterly Journal of Science*. The chemical substances which give rise to the varying tints of autumn he divides into five classes or genera:—1. *Chlorophyll*, or the green colouring matter, which is very rarely found pure even in fresh leaves. It is insoluble in water, but soluble in alcohol or bisulphide of carbon, and the spectrum has a well marked absorption-band in the red. 2. *Xanthophyll*, or the yellow colouring matter. This is insoluble in water, but soluble in alcohol and bisulphide of carbon. The spectrum shows absorption at the blue end. It is found in various fruits, flowers, and roots. 3. *Erythrophyll*, or the red colouring matter. There is strong absorption in the green part of the spectrum. The various kinds are usually soluble in water and dilute alcohol, but not in bisulphide of carbon. It is found in red flowers and leaves. 4. *Chrysophyll*, or the golden-yellow colours, soluble in water and dilute alcohol, but insoluble in bisulphide of carbon. 5. *Phaiophyll*, or the group of various browns: soluble in water, but not in bisulphide of carbon. These are mostly due to the oxidation of chrysophyll. Unfaded green leaves are coloured mainly by chlorophyll, but the tint is very much modified by xanthophyll, and by colours of the chrysophyll group. The various tints of autumnal foliage are produced by combinations of different members of the above groups, and Mr. Sorby gives the following scheme of their relative abundance:—During complete vitality and growth, we have different kinds of chlorophyll and chrysophyll producing more or less bright green. During low vitality and change, erythrophyll and xanthophyll make their appearance, producing more or less green-brown, red-scarlet, or bright orange-brown; while during death and decomposition, phaiophyll and humus (brown-black) usurp their places, and gradually cause a uniform dull brown colour.—*Academy*.

To Correspondents.

SILVER STAINS.—Stains caused by nitrate of silver on an absorbent body like plaster or cement will not be easy to remove, from the difficulty of perfectly washing the silver away when it has been made soluble. First apply tincture of iodine, and then follow with cyanide solution. Afterwards rinse well by means of a sponge, repeatedly applied with clean water, and then squeezed out.

JAMES HAYWARD.—The transferred collodion print you enclose is very much over-exposed and over-developed, and hence it is fogged. If you had stated the formulae and details of its production, we could have pointed out more specifically the remedy. Expose a shorter time; use a weaker developer with more acid; and develop a much shorter time. 2. Photography has, for some months during this winter, been almost at a standstill in London. We never remember a more unfavourable season for the practice of the art.

R. L.—A solution of Schlippe's salt will give a bright red tone to transparencies. You will find details in our volume for 1865, or in our YEAR-BOOK for 1866.

ARTHUR THOMPSON.—The prints should be kept from direct contact with zinc whilst washing. Let your washing trough be well varnished, not painted. Shellac varnish, or a varnish made of collodion and boiled linseed oil, will answer well. 2. The mere use of running water does not secure the most perfect washing. To secure certainty, it is desirable that two or three times during the washing the prints should be lifted out of the washing water singly, and allowed to drain thoroughly, and then put into clean water. This, combined with a few hours running water, will be found very efficient.

D. D. (Belgian Subscriber).—The quick-acting single stereoscopic lens is not so rapid as the No. 1 B of the same maker. The last mentioned is the best for all the purposes you name. The description of Mr. Blanchard's developing box appeared in the PHOTOGRAPHIC NEWS, September 25th, 1863, and another description of an improvement therein, July 16th, 1864; but as these numbers are out of print, we regret that we do not know of any mode of procuring them. Mr. C. E. Elliott manufactures the box for sale.

W. J. A. G.—For the length of your studio we do not recommend more than 28 feet, and for width 12 feet or 14 feet; we should prefer 12 to 14 feet. Too large a studio has many disadvantages. The pent-house, or lean-to, form is good, like that in your diagram No. 2. If the height be 14 feet at south wall, and 7 feet at the eaves, you will get a convenient angle for every purpose. Let about 6 feet be opaque at each end, both side and roof, and inside allow the glass to come within about 26 inches of the ground. By having a portion of the top flat, you would gain nothing, and would lose some light. In such a studio as that now contemplated, you will have very little difficulty in securing capital effects of lighting. By working cross-cornerwise of the room, quartering the sitters towards the light, you will have plenty of light on both sides of the face without any south side light. The blinds in such a room may be very easily arranged.

F. WHIGLEY.—The manufacture of papyroxylene by Dr. Liesegang's method involves more trouble for an amateur than the ordinary method of making pyroxylene with hot acids, and success in the first mentioned method depends upon experience. To all appearance, the sample you enclose is pretty good, and, in burning, seems to possess desirable qualities. Actual photographic test alone could determine with certainty, however. The paper is somewhat finer than that used by Dr. Liesegang. For amateur work we should recommend the use of hot acids. If you use equal proportions of nitric acid at 1-420, and sulphuric acid at 1-840, a temperature of from 140° to 150° Fahrenheit for cotton, and of about 130° for paper, will give good results.

II. Y. J.—The dimensions of your proposed studio are somewhat small, but if you cannot secure a larger room the proportions are pretty good. We should, however, prefer a little greater height at the ridge, or a few inches lower at the eaves, to secure a better pitch for the roof. The former would be better. 2. White is the best colour for blinds under ordinary circumstances. 3. A studio of these proportions would scarcely give scope for the use of M. Adam-Salomon's alcove background and mode of lighting, but a modification of the principle might be applied. You do not state the position of the studio; but if you can get 12 feet side light on the north side, a very small amount of glass will serve for the south. We regret that we have not time to give private replies to photographic queries.

W. II. J.—You have surely not made yourself clear in ordering a mirror. An ordinary piece of silver glass would, of course, involve double reflection, but a mirror like that Mr. Edwards describes, being silvered on the surface, only reflects from that surface. We have seen such silvered mirrors, but cannot say by whom made. Probably if you write to Mr. Edwards he will inform you where his was obtained; but we should think that any manufacturer of philosophical apparatus would undertake it.

G. P. W.—Ebonite once cracked is very difficult to repair. We should think that marine glue would answer the purpose best.

S. HOGGARD.—The letter was forwarded.

J. GIRAULT.—The paper is attached, in Mr. Edwards's combination printing-frame, by being stretched over a piece of wood, over the edges of which the paper is turned, and, being pressed into a close-fitting frame, the paper is thus held firm. In Col. Stuart Wortley's frame the paper is, we believe, held in a similar manner. Where opal or other glass is used for the print, the plate is held in its place by means of a screw, in manner similar to the negative.

M. F. L.—That the correspondence was so lengthy is matter for regret, but the subject was of sufficient interest for insertion. The publication of your letter would not tend to shorten it. We do not approve the imputation of interested motives. Carbon printing will make its way, we have no doubt; but it is unfair to impute motives to those who hold a contrary opinion.

OWEN CHESTER.—Drying gum-gallic, or any other dry plates, on a shelf near the ceiling of a room hot with the burning of gas, will cause serious risk of spoiling the plates, as the products of the combustion of gas collected in the hot air will be decidedly injurious.

J. G.—It is absolutely impossible to answer a question depending upon so many uncertain conditions. Dry plates vary very much in sensitiveness. Light varies enormously. A "well-lighted interior" expresses nothing definite to base a calculation upon. It may vary from five minutes to fifty minutes. Unless an interior be very well lighted indeed, and the day very fine, we should hesitate to take an interior with a dry plate. A wet plate is much more likely to be successful.

F. D.—Herr Grune's method of enamelling by substitution of metals was patented, but the patent has been suffered to expire. If the subject had not been of interest, the correspondence would not have been suffered to extend so far. It will not extend much further, we hope.

B. M. A.—We do not know with certainty the price of silver at the Mint. So far as we know, it is worth about 5s. or 5s. 6d. per ounce.

F. E.—Col. Stuart Wortley intends, we believe, to exhibit his printing-frame at the next meeting of the Photographic Society, and the exact degree of resemblance between it and that of Mr. Edwards will be seen by all present. We have not yet seen that of the Colonel, and cannot, therefore, offer an opinion of value as to the degree of similarity. The publication of any rough opinion on a subject upon which litigation is imminent would be in very bad taste.

J. C. SMITH.—With M. Adam-Salomon's alcove background, side light—and, in some degree, top light—from the south may be controlled, but we should prefer to avoid the south top light altogether. 2. We should, in all cases, in building a studio, have the principal side light facing the north, if possible.

D. WELCH.—The print is a very good one, and the effect of leaf in printing very pleasing. It was, in the early days of photography, practised more frequently than now. You will find some valuable hints on the subject in an article on p. 15 of our Twelfth Volume.

Mr. F. A. BRIDGE.—Very neat. Thanks. We earnestly expect that all the correspondences in our pages will please or interest all our readers. It is sufficient that the subject is one of importance to many photographers to render it our duty to permit its appearance.

THE REV. S.—There are many articles on the gum-gallic process of Mr. Gordon, each giving hints of some especial point. We send a NEWS containing a moderately full statement of the process, and can send you others with other details if you desire. The numbers containing details of Petschler and Mann's process are out of print.

PYRO.—Thanks. In our next.

LIVERPOOL AMATEUR PHOTOGRAPHIC SOCIETY.—President's Address received too late for insertion in the present number. In our next.

Several Letters and Articles are compelled to stand over until our next.

Several Correspondents in our next.

Photographs Registered.

Mr. SEED, Bristol.
Two Photographs of Mrs. S. V. Hare.

Mr. J. FERGUS (Larks).
Three Photographs of Rev. Dr. McCaan.

Mr. E. F. BUTLER, Deal.
Photograph of Oil Painting, "Wreck of the Reform Lugger."

Mr. A. BEATTIE, Preston.
Photograph of Rev. Charles Carter.
Photograph of Rev. W. L. Wingell.

Messrs. CATFORD BROTHERS, Ilfracombe.
Two Photographs of Madie. Veillard.

Mr. R. SYMONS, Tea.
Photograph entitled "A Birthday Wish."

Mr. E. T. FLETCHER, Rochdale.
Photograph of Mr. D. Bridge.
Photograph of Mr. Leach.

Mr. FRANKLIN, Deal.
Photograph of Oil Painting, "Loss of the Lugger Reform."

Mr. J. H. BURKE, Dublin.
Photograph, "A Little Bit of Scandal."

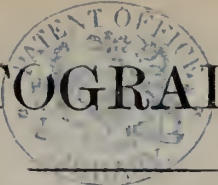
Messrs. DOWNEY, Newcastle.
Five Photographs of H. R. H. Princess Louise.
Three Photographs of Lord Lorne.

Messrs. BARKER and SMART, Leamington.
Photograph of Rev. J. Curwen.

Mr. HECTOR, Crediton.
Photograph of House at Nymett, Rowland.

Mr. W. DICKSON, GLASGOW.
Photograph of Sir John Lumsden, Magistrates, and Town Council of Glasgow, 1869.

THE PHOTOGRAPHIC NEWS.



Vol. XV. No. 650.—February 17, 1871.

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MEDALS AT THE INDIAN PHOTOGRAPHIC EXHIBITION.

AN exhibition of photographs, under the auspices of the Bengal Photographic Society, has recently been held in the Dalhousie Institute, Calcutta. From the report of the jury, with a copy of which we have been favoured by the secretary, we learn that the exhibition has been highly satisfactory; and our readers will be gratified to learn that several English photographers have taken high honours. In the class open to all comers, Messrs. Robinson and Cherrill take two prizes out of the five offered—a gold medal for the best series of landscapes, and a silver medal for a series of portraits of children. Captain Lyon, whose magnificent photographs of Indian scenery have been exhibited at two of the displays in Conduit Street, obtains the gold medal for the best single photograph. Mr. Netterville Briggs, successor of Mr. Robinson at Leamington, obtained a silver medal for portraits. The report runs as follows:—

We have the honour to report, for the information of the Committee of the Bengal Photographic Society, that after careful inspection of the photographs now exhibited in the Dalhousie Institute, we have adjudged the prizes as follows:—

Prize A.—Gold medal for best single photograph, &c., to Captain Lyon for his picture numbered 511.

Prize B.—Gold medal for six pictures by a member of the society, not a photographer by profession, to Captain Taylor.

Prize C.—Gold medal for series of landscapes, to Messrs. Robinson and Cherrill.

Prize D.—Silver medal for portraits, to Mr. Netterville Briggs.

Prize E.—Silver medal for series of pictures by a member of the society, not a photographer by profession, &c., to Captain Senior.

Prize F.—Bronze medal for second best series after E, to Captain Swiney.

Prize G.—Silver medal for series of Indian subjects, exclusive of antiquities, to Dr. Brown.

Prize H.—Silver medal for photographs of Indian antiquities, by a member of the society, to Mr. Ravenshaw.

Prize J.—Silver medal for photographs of young children, to Messrs. Robinson and Cherrill.

Prize K.—Silver medal for reproductions of works of art, to Mr. Phillips.

We desire to draw the attention of the Committee to the great merit of the series of photographs of Indian antiquities by Captain Lyon. As this gentleman is not a member of the society they are not, as a series, eligible for a prize; but we have (with some difficulty in the selection among so many excellent pictures) awarded the gold medal (prize A) to his No. 511. We also wish specially to mention the excellent specimens of reproduction by photo-zincography exhibited by Lieutenant Waterhouse.

We have selected for distribution amongst members of the society the photograph to which we have adjudged prize A

(No. 511 of Captain Lyon's series), and one by Captain Senior, called "Jhoola and Sanga over the River Alaknunda."

We have the honour to be, sir, your obedient servants,

(Sd). E. GAY.

" THOS. S. ISAAC.

" W. G. MURRAY, Capt.

PHOTO-ENAMELLING PROCESSES.

The beauty of photographs burnt-in on ceramic surfaces is beyond controversy, their durability beyond cavil; and there are various processes of producing them accessible to photographers without trammel. Notwithstanding these things, the introduction of this perfect form of photography for portraiture lags strangely. For at least ten or a dozen years beautiful results of this process have been seen from time to time; at first, chiefly those of M. Lafon de Camarsac; next, those of other continental artists; and, during the last few years, not inferior to any, those of Mr. A. L. Henderson in our own country. The apparent apathy or indifference of photographers is here, as in relation to other new processes, due, doubtless, to several causes. As in the case of carbon, successful photographers have not, or fancy they have not, time for experiment in acquiring skill in entirely new operations; and unsuccessful photographers feel that they cannot afford it. Besides, they have felt that it involved risk, and it was difficult or impossible to get tuition. We are about to call specific attention to two openings for the latter purpose.

We have before mentioned to our readers the fortunate facility for seeing the operations and obtaining lessons in enamelling at the establishment of Mr. Solomon, in Red Lion Square. Our attention has more than once been called to an injustice to which we were unintentionally accessory in reprinting a notice of the late exhibition from an evening journal, in which some depreciatory remarks were made in reference to the examples of ceramic photography. In our own notice, we stated that these examples were far inferior to many we had seen produced in Mr. Solomon's establishment. They were, in fact, a few specimens from imperfect negatives hastily sent at the eleventh hour, simply to secure a representation in that department, and by no means fair examples of the work M. Walter Paul, operator at Mr. Solomon's, usually produces by the processes taught. For those willing to acquire a practical knowledge of this charming branch of portraiture, and to work it out, by patient skill, to perfection, these lessons will be very valuable, and the charge is comparatively insignificant.

The next facility for acquiring the photo-ceramic art claims still wider ground and higher terms. We have repeatedly referred to the high perfection of Mr. Henderson's enamels

as unsurpassed by the excellence of any others we have seen. For some time, Mr. Henderson has undertaken the production of enamels, not only for his own *clientelle*, but for the trade. His health does not permit him, however, to attend to his work with comfort, and he proposes to teach a certain number of photographers his method upon terms which will be found detailed in our advertising columns. The sum at which Mr. Henderson values his process is one thousand pounds. He proposes to divide this into forty sums of twenty-five pounds each, teaching forty pupils, each of whom will be placed under bond to preserve the secret. The whole extra cost for plant to carry on the process Mr. Henderson estimates at ten shillings; and he regards his process as so simple that skill in its practice may be easily and certainly acquired; and, as the prices obtained are generally highly remunerative, the first investment will very quickly be recovered by the photographer. We need only add our conviction that photenamelling is one of the coming branches of portraiture which professional photographers cannot afford to ignore.

Foreign Miscellanea.

THE photographic manipulators, MM. Quide and Meicke, who left Berlin at the commencement of the war to make observations at Strasburg and Metz, were last heard of as having gone into central France to lend assistance with the active armies, and are, it is supposed, with the Crown Prince's headquarters in the neighbourhood of Paris.

The method employed by the postal authorities in France for reducing, and afterwards amplifying, despatches and correspondence to be sent by carrier pigeon, was that described in Moitessier's book on micro-photography.

Dr. Stolze has made some special experiments in connexion with the use of organic substances in developing solutions, and has come to the conclusion that a cane-sugar solution, added in minute proportions, gives very good results. Milk, sugar, gelatine, caramel or burnt sugar, and glycerol, were all tried, but cane-sugar was the most rapid in its action. If a large proportion of sugar is used—say one-fourth of the quantity of sulphate of iron—a thick, slimy compound is formed, which hinders very much the development of the image.

M. Wolter—who has, it appears, been much occupied with the Lichtdruck process—lately called the attention of the members of the Berlin Society to the poisonous character of bichromate of potash. He complains of having suffered much from sores and eruptions of the skin upon the hands and arms, produced by coming into actual contact with the bichromate. The best remedy for these sores M. Wolter believes to be paper-oil, the liquid obtained by burning paper slowly and incompletely. According to M. Kruger, the healing nature of this oil is due to the presence of creosote, and therefore, possibly, ordinary tar would be just as efficient.

Professor Krippendorf publishes the final articles of his series of papers on Simpsontype in *Heliog*, detailing the manufacture and employment of collodio-chloride paper very fully.

Caution should be exercised just now in the purchase of pictures of the war. Many sham productions of this kind are, it is said, got up in Germany for the purposes of foreign markets.

In *Licht* appears an interesting article on the influence of sulphuric acid in the preparation of pyroxyline; it is from the pen of M. R. F. Poppe.

MM. Römmler and Hoffman, of Dresden, have elaborated a Lichtdruck process, the productions of which are said to leave nothing to be desired.

Some coloured and uncoloured collodion films were at the last meeting of the Dresden Society submitted to the inspection of the members by M. Motileff. These pellicles

are said to be of a hard and horny nature, and not liable to tear, being, therefore, very suitable for the support of negative or positive films, as likewise for the gelatine matrix in the Woodburytype method. The inventor stated that the cost of these films depended upon the quantity of material necessary in their preparation, and promised further particulars as soon as the matter had been fully elaborated.

The establishment of M. Reutlinger at Paris has been carried on uninterruptedly during the siege, as many as eleven employes having been engaged therein during the time. Communication with the head of the firm was maintained by balloon post. Indeed, it would appear from the invaluable use made of photography as a means of facilitating correspondence with friends outside the walls, that Parisian operators have been busily employed during the four mouths of the besiegement.

M. Hallenbeck, in the *Archiv*, says that an addition of four drops of oil of cloves per ounce of collodion (30 grammes) renders the same very sensitive. An almost instantaneous collodion may be ensured by dissolving one drop of pure cod liver oil in eight grammes of ether, and adding this to fifteen ounces of collodion.

The constitution of the Vienna Photographic Society has undergone great change. The president, M. Martin, and secretary, M. Schrank (late editor of the *Correspondenz*) have resigned, and in their stead have been chosen Dr. Hornig as president, and M. Jenik as secretary. Among the committee are to be found the well-known names of Ludwig Angerer, Fritz Luckhardt, A. Melingo, Ludwig Schrank, Carl Krziwanek, C. Haack, A. Martin, &c.

In the *Journal der praktischen Chemie*, M. Böttger enumerates a series of experiments recently undertaken with some double iodides, which, on being warmed, undergo a change of colour.

Mr. Woodbury has recently written to the Berlin Society for the Advancement of Photography to correct some misunderstanding which seems to have prevailed in regard to the capabilities of the London Woodburytype establishment. In his letter, Mr. Woodbury states that instead of being able to produce but 200 prints daily from six presses, it is possible to turn out as many as 8,000 cabinet pictures per diem, or double that number of cartes-de-visite, there being as many as thirty printing presses now at work.

When a plate has been kept so long in the frame that it becomes dry before development, and its surface is covered with star-like crystals, it is a good plan, says the *Archiv*, to coat the margin of the film with shellac varnish, and then to immerse it in an unserviceable silver bath. In this way the crystals are soon dissolved away, especially if a little agitation of the liquid is caused, and the plate may then be operated upon in the usual manner.

According to the *Archiv*, the Victoria card has made way in the Rhine Provinces, and in Westphalia. Many photographers have been doing as much business in them as in cartes-de-visite.

A CHAT ABOUT THE VICTORIA CARD.

BY "PYRO."

MANY are the valuable hints given by the Editor, with a view to stimulate photographic enterprise; and his able advocacy of all matters possessing a prospective source of profit shows how mindful he is of the interests of his subscribers. Yet how rarely are these hints acted upon by those for whose especial benefit they are gratuitously given! This seeming indifference and reluctance on the part of professional men to break from their come-day go-day system is much to be regretted, and cannot fail to act prejudicially to their interests.

Anything which tends to give an impetus to business should heartily commend itself to the serious consideration of every man whose power of vision is not confined to the limit of his nose. Prompt action in the adoption of new ideas is the characteristic of our American and continental

brethren ; but, unfortunately, with us the reverse is the case. The future of photography will depend more and more upon the energy and skill displayed by its professors ; therefore it behoves us to exercise all possible ability, combined with tact and perseverance, in order to secure anything like commercial success.

The liberality of Mons. Salomon, Blanchard, Robinson, and others, in communicating their experience, has had due weight (in an artistic sense) with the intelligent portion of the photographic profession, and the growing desire to follow in the footsteps of these masters of the art has a cheery and healthy look for the future.

But while we are fully alive to the manipulatory excellence as displayed in the work of the present day, and which has undoubtedly been brought about by the masterly examples of the gentlemen referred to, we should not be unmindful of other sources, which might furnish still further facilities for progressive improvement. In the adoption of the Victoria Card we have all the promise of an artistic novelty and a commercial success. The extra marginal space gained in this new size of card would afford increased scope for the display of pictorial effect, and, in other respects, would be a decided improvement upon the present miserable cramped productions. The increasing demand for large bust pictures and three-quarter portraits imperatively calls for some more suitable size, and more especially is this want felt in those portraits of large heads, the scanty margin of which robs them of character, depth, and finish. I verily believe that this new style of picture would completely revolutionize the present state of things, and create a demand second only to the carte mania.

But in order to accomplish this very desirable change, it is essential that there be little or no deviation from the present rate of prices. Of course, my remark does not apply to the three-and-sixpenny gentlemen, but has reference only to prices consistent with good work. This I hold to be a *sine qua non* to success, for I have no hesitation in saying that the partial failure of the cabinet portrait in this country is solely attributable to the extra charge. The gay Parisian thinks little of his gold napoleon provided there is pleasure at the end of it, no matter what form that pleasure may assume ; and equally indifferent is the owner of the almighty dollar ; but your sober Briton invariably looks twice at his shilling before he parts company, hence the desirability of providing a novelty without making any alarming inroad upon his pocket. There are doubtless many difficulties and prejudices to overcome, but, once the thing is fairly set going, there need be no fear of a successful issue ; and, as the interest of the album manufacturer is identical with that of the photographer, it would manifestly be to the advantage of both to bring the matter prominently before the public. The former, by at once applying himself to the manufacture of a suitable and moderate-priced album, and thoroughly pushing it through the country ; and the latter, by the aid of advertisement, by the introduction of new and artistic show cards, and otherwise, by every available means in his power, giving publicity to the same. That photography requires some really attractive feature to rouse it from its present lethargic state is the humble but firm conviction of one of its votaries.

ON THE USE OF THE LIME LIGHT IN MICRO-PHOTOGRAPHY.]

BY CARL HAACK.*

The production of extensive enlargements in micro-photography is often a task beset with difficulties, from the fact that sunlight is usually required for the purpose ; for without the aid of the sun it is impossible almost to obtain sharpness, except in the middle of the image, so that the dimensions of the latter are confined to a small compass. Photographs of small size—of an inch or two in diameter—when the magnifying power is not very great, may, it is

true, be produced by means of diffused light ; but when the diameter of the illuminated field amounts to five inches or thereabouts, sufficient light cannot be obtained to yield a satisfactory result unless the sun is shining ; and as in winter it is rare that we have an opportunity of enjoying sunlight, it is well to be able to resort to artificial illumination as a welcome alternative.

With a good petroleum lamp, enlargements of a sketchy nature may be produced when the object enlarged is free from colour ; but any trace of the latter materially interferes with the result. In the lime light, however, we have a source of illumination twenty or thirty times as powerful as that of a petroleum lamp, and one, therefore, which should satisfy all our wants.

Besides the lime light, there are the magnesium and electric lights, which have been recommended for purposes of this nature. To the magnesium light there is the twofold objection of its expense (one hour's consumption costing about five florins), and the unsteadiness of the flame, the burning wire causing a trembling of the illuminated field upon the focussing glass, and even of the image itself under certain circumstances, and thus producing an indistinct picture. The electric light exhibits the same defect, from the fact that the two carbon points cannot be maintained in perfect repose during the employment of the lamp ; and there is, moreover, the circumstance of maintaining in order a large Bunsen battery of some twenty elements to be considered.

For enlargements up to seven hundred diameters, it is sufficient to employ a spirit-lamp with the lime light, in place of either hydrogen or coal-gas, so that one has only to trouble oneself about the oxygen. The latter is conveyed to the flame by means of a very fine tube, being blown upon the surface of the cylinder of lime or magnesia, and thus forming a small bright spot. This illumination thus afforded, by the use of Plossl's system F in combination with No. 2 eye-piece, and with a camera drawn out about one foot and a-half, will yield an enlargement of seven hundred diameters after an exposure of five minutes with a wet plate. If precautions are taken to prevent the desiccation of the plate, so that an exposure of twenty minutes may be given, an enlargement of 1,400 diameters may be secured with the camera pulled out to twice the above named distance. When hydrogen is used in combination with the oxygen, the intensity of the light is increased, and a shorter exposure is then required.

The above data are based upon the enlargement of colourless objects—as, for instance, diatomæ—those of a tinted nature necessitating longer exposure. To prevent the drying up of the plate, I find it the best plan to cover over the prepared film with a sheet of thin white plate glass of the same dimensions, upon the margins of which very thin strips of whalebone have been cemented, to prevent any contact with and injury to the collodion. In this way the evaporation of moisture is prevented, and the collodion plate may remain exposed for a full hour without deteriorating in any way. If, however, one operates in a cooler locality than that in which the plate was first prepared, it is often the case that a condensation takes place upon the protecting glass, thus rendering the image blurred and somewhat under-exposed. To remedy this, the glass should, in the first instance, be coated with a very thin and carefully filtered solution of gelatine or albumen, and allowed to dry, when it will be found that even by breathing upon the surface no deposit of moisture takes place to destroy or impair its transparency. Other methods for preserving the collodion film in a moist condition—as, for instance, the addition to the silver bath of such substances as nitrate of magnesia, glycerine, &c.—are, according to my experience, either injurious to the sensitiveness or clearness of the film. If an hour's exposure is not objected to, it is best to use a dry plate at once, which will be found to give a finer picture than a wet negative. For enlargements of from fifty to two hundred diameters

* *Photographische Correspondenz.*

an exposure of from half to two minutes suffices with a wet plate.

As only a very small illuminating source is necessary—of, however, the greatest possible intensity—one cubic foot of oxygen will suffice for the production of four to eight negatives if an economical arrangement is made, and the preliminary rough focussing of the image is conducted with the aid of a petroleum lamp. The preparation of a cubic foot of oxygen from chlorate of potash costs but about fivepence, and the manipulations necessary for the purpose are quickly and easily performed.

The jet of the gas should be so constructed that it may be approached to or receded from the spirit flames and lime cylinder, so that the stream of gas can be directed towards the hottest portion of the glowing material. Especially suitable for the purpose are the burners devised by Dr. Monckhoven for his enlarging apparatus, with which, if desired, the spirit lamp may be employed instead of a second gas. The artificial magnesia cylinders, too, which have been referred to in this journal, are more readily heated to a glowing whiteness and yield a brighter light than columns made from ordinary burnt lime, the occasional burning away and hollowing out of the former during combustion having no material influence upon the character of the light.

To render the light more intense, and also to lead the rays in a proper direction, it is necessary, as in the case of Monckhoven's enlarging apparatus, to employ a condenser of but small dimensions. This consists of two plano-convex lenses of short focus fitted together, the illuminating source being placed in the focus of one lens. From this the rays go in a parallel direction through the second one, which, again, projects at its focus on the further side a circle of light, and according to the lens employed this circle is thrown either through the object in the optical system, or allowed to coincide with the object itself.

The condenser should be perfectly achromatic, and, if possible, also aplanatic, and possess a focus of from one to two inches. If the dimensions of the same are large, more light is, of course, concentrated; but then, again, the length of focus being increased, the source of illumination must of necessity be placed at a greater distance. It must be remembered, too, that the intensity of the light diminishes by the square of the distance. Satisfactory results have I obtained by employing Plossl's No. 1 eyepiece as condenser after the lenses had been placed at a less distance—half an inch—from each other, the same data as above mentioned in regard to exposure being found suitable for this condenser.

According to the position of the lenses is the object illuminated in various ways, either with converging rays when the focus is behind, or with diverging rays when the focus is in front of the object. One may work also with parallel rays if behind the condenser a diverging lens is placed. The first mode of lighting up is that most suitable for the majority of instances, although it is quite impossible to draw up any general rules on the subject. It is necessary to study carefully the object, in the first instance, before a decision can be arrived at as to the method of illumination which reproduces the greatest detail. It may, however, always be considered certain that when weak lenses are employed the focus should fall into the system, while with powerful ones the focus must fall upon the object. In the latter case the greatest amount of light is obtained just where, on account of the light weakness of the lens, it is the most required.

If the condenser happens to be too close to the object, one obtains traces of light defraction upon the picture, which operates very injuriously; the eye is, however, soon accustomed by practice to find the proper place for the condenser when focussing the image upon the matt glass. The whole illuminating system must be so arranged that it may be easily removed from the axis of the microscope

when necessary, or made to send the rays in a slanting direction or from above in the case of opaque objects. If compelled to employ a mirror for the purpose of reflecting the light from its direct path, the surface of this reflector must only possess one surface—or, in other words, it must be a polished metal plate, or a glass silvered upon the surface. In the case of the latter, should the reflector be dulled or injured in use, its pristine brightness is easily restored by any of the well-known methods of re-silvering.

The focussing of the image is managed by pulling out the camera gently in the ordinary manner, and is effected upon a well oiled fine matt screen; in very fine objects a piece of plate glass should be used instead of ground glass, the image being viewed by means of a magnifier, and focussed upon the surface nearest the lens. If a very long camera is employed, as in the case of extensive enlargements, so that the operator cannot work the screw of the microscope himself, it is best to avail oneself of Moitessier's proposition to have a telescope, which, fitted through an opening in the camera near the lens, allows one to observe the image when falling upon a white sheet of paper, which serves as focussing screen; a sharp definition of the image is then secured by moving the back of the camera.

If it is desired to work with monotone light, in order to compensate for any difference of focus in the lenses, there may be easily fitted up, between the condenser and the object, a small bath with plane-parallel sides, filled with a blue solution. A solution of sulphate of copper and ammonia is best suited for this purpose, but as, in this mode of proceeding, a certain amount of light is always lost, it is best to ascertain the focal difference of each lens by previous experiment, and to bear it in mind, so that it may be corrected upon the focussing screen.

In all other details the apparatus for micro-photography does not differ far from that hitherto in use. Whether arranged horizontally or perpendicularly, for large or small pictures, artificial light may always be used; but as it is not my intention in these lines to describe in detail the different apparatus that can be employed, and which, by the way, are fully enumerated by Moitessier and Bennecke, I must refer the reader to the books of those gentlemen for any further information. My purpose, on the present occasion, is merely to call attention to the advantage of employing the lime light in manipulations of this kind, and thus to render the operator independent of the caprices of the weather.

THE SOLAR ECLIPSE IN SICILY.

BY DR. H. VOGEL.*

SHORTLY after passing over the lava, we came into a steep forest region, not such a forest as one sees in Germany, but consisting of stunted trees, mostly oak, sparsely scattered about. Our way now lay up a narrow gorge, having for its bed a narrow lava stream, of which there are many to be seen in this region. During our ascent the sky became overcast, a strong northerly wind arose, and heavy suspicious looking clouds drifted over the mountain. Affairs became worse as we progressed, and, suffering personally from an attack of rheumatism, my position was by no means a comfortable one. At last we reached a stony hut on the margin of the forest, a sort of rough hunting box, and here we took up our quarters. A barometrical reading showed our height to be 4,800 feet, and by reason of the boisterous nature of the wind, the badness of the weather, and the guide's statement that a hut situated higher up, called the Casa Inglese, was difficult of access, it was decided to remain altogether at the Casa Ferentina. But a very limited view was possible over the landscape; the Bay of Catania and the Lake of Lentini were visible, but the clouds narrowed the prospect very much. Night came on, and the provisions we had brought with us pro-

* Continued from p. 67.

vided a frugal supper. A capital fire was made up on the hearth, which warmed, in some degree, our stiffened limbs, and Professor Roscoe, by way of an agreeable surprise, provided us with some chocolate of his own making. Our party consisted of one American (General Abbott) and one Italian (M. Silvestri), a chemist of Catauia, to whom I am under some obligation for friendly assistance in the way of chemicals and apparatus from his laboratory, and aid in the organization of my arrangements; M. Silvestri was detailed to undertake physical observations. Then there was Professor Roscoe, with his assistant, Mr. Bowen, for spectroscopic work; Mr. Harris, for the polariscope; and Mr. Darwin, who was to sketch the corona. Thus every necessary preparation was made and arranged, there being, indeed, only one thing else to be controlled, and that was the weather, which appeared likely to set at nought all our endeavours. The wind became a storm at midnight, and whistled through the hut in so gruesome a manner as to make one believe that not only earthly, but also subterranean, powers were at work, for we were, in truth, sleeping literally upon a volcano. As we sought our couch of straw for the night, the rain poured down upon the roof, changing soon, however, into sleet and snow; the fire was maintained during the whole of the night, during which, however, we could sleep but little; and on the next morning we found the hut surrounded by a fall of fresh snow, while dense clouds impeded our view altogether. Professor Silvestri made a barometrical observation, and found the column had fallen 7.9 millimetres since the previous evening. Matters appeared critical, and in the meantime our guide arrived from below (he having returned to our starting point during the night) with the intelligence that fine weather prevailed at the foot of the mountain. Under these circumstances we discussed the advisability of descending at once and making our observations at Nicolosi. At eight o'clock, however, the sun suddenly burst through the clouds, the wind dispersed the mist, and we saw above us the snowy summit of Mount Etna. Hope inspired us, and we at once set up our instruments. I forthwith took a few photographs of ourselves and also of the landscape, and found the intensity of the light to be extremely great. One misfortune befel me: while developing a plate in the tent, the guide, notwithstanding my strict instructions to the contrary, left my American camera, and this, carried away by the wind and storm, fell into an old well-shaft. I was astonished, on my return, to find both guide and camera gone; the first I discovered chatting quietly with his companion, while the second I found, to my horror, broken into pieces at the bottom of the shaft. Fortunately, the freshly fallen snow had considerably broken the fall, and the damage was found to be repairable, for the excellent Busch lenses had not suffered in any way. We therefore made ourselves ready for action, and arranged our instruments suitably for the observations. I worked with two cameras, my idea being to prepare the plates ten minutes before the eclipse, and to expose during totality.

There came up, however, shortly before a quarter past twelve, a yellowish cloud of monster proportions, just as we were observing the first contact. The cloud came nearer and nearer, partially covering the sky, and we watched it with bated breath as it began slowly, but perceptibly, to increase in size. Presently the solar sickle could be seen only partially through rents in the clouds, and then the mist began to form an impenetrable homogeneous mass, while a storm of hail rattled down upon us; there was no alternative but to withdraw our delicate instruments from the fury of the tempest, and take them under cover; and in this situation it was that totality arrived. My plates were ready; five minutes before totality I exposed one portion of the plate in the direction of the sun, now covered with dense mist, giving an exposure of thirty seconds. Soon it became darker, and one minute before totality I repeated the experiment; then

came totality: first, a greyish blue glimmering, then a dark grey atmosphere, but yet light enough to enable one to distinguish the time on a watch, and the other observers standing in the snow some hundred paces off. I exposed my plate again during totality—viz., at three minutes after two—giving an exposure of sixty seconds. At the close, it became suddenly lighter around us, a peculiar rosy haze enveloping us, which soon changed into the ordinary light of a grey, misty day. The phenomenon which had brought us hundreds—and some even thousands—of miles to witness, which had cost great trouble and study, besides much time and money, had past away, and was, for us, irrevocably gone; our efforts and exertion had been, indeed, in vain. In a storm of rain and hail we packed up our instruments, and twenty minutes afterwards the clouds broke up and the sun came out as if to mock us for our pains.

I developed the plate I had exposed to the clouds. The first third thereof (exposed five minutes before totality) exhibited but a slight action of light; the next third (exposed one minute before totality) had been affected, but in a less degree; and the last third of the plate (exposed during totality) afforded no trace whatever of any chemical action. It is, nevertheless, probable that a chemical action does exist during totality, from the fact that the shadow of the moon covers only a portion of the blue sky, and there remains some portion on the further side of the eclipse margin which reflects active light rays. Against our own misfortune, however, we could bear up; but we feared that as the cloud passed off in a southerly direction to Catania and Augusta, the same would also upset the arrangements of our friends at those points; and so, indeed, it turned out.

Shortly before the end of the eclipse, General Abbott and three amateurs from Vicenza arrived at our hut, having been stationed higher up the mountain, without, however, enjoying better fortune. Hastily we packed up our apparatus, and turned our faces at dusk towards Nicolosi, flashes of lightning being visible every now and then in the unclouded landscape.

At Nicolosi we fell in with the American Professors Peters and Einbeck, who had seen even less than ourselves. Only the last phase of the eclipse had been visible to them, and Einbeck had been able to recognize Venus in the vicinity of the sun. After partaking together of a convivial meal we returned to Catania, where we found some other observers—Lockyer and the American photographers—who had only seen the last five seconds of the eclipse behind the clouds. Chapman had been able, by means of an ordinary, but very powerful, lens, to obtain a picture of the sun among the clouds during this short interval. From Fort Augusta the intelligence we received was hardly more satisfactory; and everywhere, indeed, were heard complaints of the weather; at Syracuse alone were the results at all good, and here five pictures were obtained during totality, among which were two of the corona.

Those most favourably situated were Professors Pierce and Watson, of America, who watched the corona from a country seat belonging to the Marquis of Guiliano, where they were able to observe its profile, structure, and spectrum. The polariscope observer found that the light of the corona is polarized, and by means of spectroscopic results—the details of which will be published hereafter—it was positively decided that the corona belongs to the sun itself, and is not due to the atmosphere of the earth. Watson saw it in the form nearly of a perfect circle, seven minutes in height.

Of the fortunes of the Italian photographers at Fort Augusta we have, as yet, learnt nothing. Large masses of protuberances were observed during the totality, and despite, therefore, the unfavourableness of the weather, the results obtained are really very important. Let us hope that the observers in Spain, Algiers, and Tunis were favoured with better fortune than ourselves.

THE COMING SEASON, AND WHAT SHALL WE DO IN IT?

BY E. DUNMORE.*

"Coming events cast their shadows before." So the season for increased activity among the photographers—or, I might say, as far as Londoners are concerned, an awakening from a state of torpor—will, it is to be hoped, shortly arrive, when a general overhauling of out-door apparatus, cameras, &c., will take place, new processes tried, or, at least, experiments on an extended scale made, and the shadows that are cast will be caught and boxed by hundreds of amateurs and professionals. We will now consider how these said shadows can be most advantageously collected.

With the exception of a more extended scale of dry-plate processes, photography remains much in the same state as for several years past. The same rules require observation, and the same sequence of manipulations is adopted. The most conspicuous alterations consist in the finished proofs, and not in the negatives themselves. Land and sky must, in all cases, receive separate treatment. In these utilitarian times the majority of photographers confine their attention to the smaller class of pictures in preference to the more artistic and imposing sizes; for there is no doubt that, at present, the smaller sizes pay best, any more than there is no doubt that large size is an important element in making a general and favourable impression on the picture-loving public. The commercial and artistic sides of the question in this particular certainly do not pull together kindly; if we can by any means make them do so the advantage to all will be apparent.

It is evident from the careful study of exhibited works that many of those photographers who seldom get beyond the 10 by 8 size, and never produce large pictures, are quite capable of doing so, if their attention were turned to it, as those who have really done so. We may safely say that it is not for lack of skill that large pictures are so few and far between. That the enlargement of small negatives can be very successfully achieved we know; but unless the original small negatives are expressly *arranged* and taken for this purpose, they only disappoint, and end in failure. An artistically grouped picture, with cleverly managed light and shade, on a small scale, is, nine times out of ten, poor, tame, and insipid when enlarged many diameters; grand masses of light and shade turn out patchy and spotty, and in the wrong places.

Some will ask—How shall we avoid it? Simply by cultivating our judgment, and paying *more* attention to nature herself, and less to the focussing screen. There must be, of course, more artistic talent brought into play to make a large successful picture than a small one, as a mistake is so much more conspicuous, and makes itself felt, where, in a small work, it would be overlooked. These are matters, however, easily remedied. I would recommend photographers to take one or two negatives in the coming season, especially for enlargement, when a happy combination of place and circumstance put such in their way as suitable subjects. The cost would be but trifling, and the satisfaction and beauty of the resulting picture amply compensate for the trouble. Two or three hundred clever pictures on whole-sheet paper (23 by 18) would form an exhibition the like of which the British public has never yet had the opportunity of admiring. Who can tell what such an exhibition would do for the interest of photographers, commercially and æsthetically? Every photographer who possesses even the most diminutive of apparatus has it in his power to aid in such a display, providing he has the requisite art culture.

As to the enlargement, I believe there are many firms who would undertake that part of the business where the photographer cannot do it himself. Enlarged paper negatives seem to be most suitable, as the resulting print is so much more under control. The production of such paper

negatives, probably, might become an industry of itself, extensive and remunerative.

We will now, without making any invidious comparisons, consider what are the most suitable lenses to use for ordinary outdoor work, and to what uses the different lenses are to be applied—what to do and what to avoid. We must first consider the class of subject and the effect desired. Much licence is allowable in this respect, and will vary, of course, with the ideas of the operator. If the subject be required to give the truest impression of itself, the old single landscape lens will, perhaps, be best, as I think a picture of this kind will convey a more truthful idea than a wider angle or shorter focus combination.

If an artistic study be required, a short focus wide angle lens is most suitable. More of a picture will result from its use, but a great depends on how it is used. Much more, in my opinion, depends on the operator than on the lenses. These remarks apply to landscape, not architectural subjects. Each has his own peculiarities as to the kind of picture he prefers—so much so, that little difficulty is found in attributing a picture to its author, if many from the same man have been before the public. Certain rules must be complied with, no matter what each artist's mannerism (not to use the word in its objectionable sense) may be. Never will short-focus lenses with wide angles be suitable for distant views, or long-focus ones for near views.

Opticians tell us that good lenses do not distort. Possibly not; but the public are not opticians, and are apt to be rather arbitrary in their opinions, and in matters of this kind public opinion will not knock under to scientific reasons. I allude especially to exaggeration of near objects when wide-angle lenses are used; therefore, in this respect, our course is more or less decided for us. With the variety of lenses at our command, we should never be at a loss in this respect, and use suitable lenses as painters use suitable brushes.

With regard to cameras, the two most important matters are rapidity and lightness. I cannot help thinking a thin metallic dark slide, containing a moistened felt pad, would be a great improvement on the wooden one; also, by having the carrier hinged, with its wire corners so adjusted that a thin piece of glass could be habitually kept before the sensitive film, and the back of the dark slide to be solid, and not removable. Both plans have been before suggested, and I can answer, from experience, that the plate of glass before the film is a great improvement, as it prevents dust and evaporation, and, I should suppose, immunity from those tantalizing shell-markings in hot weather.

As to tents, the most portable are not always the most pleasant to work in. Give me plenty of breathing room, even if the tent be rather bulky; for, if a hard day's work is to be done, much is saved in fatigue by a roomy tent. The ether and acid vapours in a small one in hot weather are trying in the extreme, and the day is finished with headache and exhaustion. I allude to wet-plate work, for, until some plan be found for quickly and easily developing dry plates that have an equal sensitiveness to wet, this process will still remain the process for professionals, as it is frequently an imperative necessity to know what sort of a picture you have taken at the time.

As to developers, most photographers have their own pet formulæ. Taking it double strength, and diluting when wanted, saves space, and is a satisfactory plan. In hot weather much should not be prepared at once, as it seems to lose energy. The use of methylated spirit, instead of rectified, frequently predisposes to dirty markings on the plate. Concentrated developer kept in gutta-percha bottles soon spoils in summer. There is nothing like glass, notwithstanding its breakable qualities. I am, perhaps, stringing together a lot of truisms, but it is just as well to give old but useful experience a fillip now and then.

Lastly, with regard to collodion bottles: a two-necked bottle—one neck containing a filtering medium, so that in no case is the collodion returned to the bottle without fil-

* Read at a meeting of the South London Photographic Society, Feb. 9.

tration—is a good plan to avoid comets, *et id genus omne*, and a little apparatus that can be easily made. If our apparatus makers would construct a half-pint bottle for this purpose I can venture to predict a good sale for it. Until they do we must make them ourselves in this way:—A wide-mouthed bottle of the requisite capacity, supplied with a good cork perforated with two holes, into which insert two tube bottles with their bottoms removed; the one for the filter must have a piece of fine cambric, once or twice doubled, tied carefully over the open end, and the bottle partly filled with cotton-wool. This strainer tube to be passed through the cork low into the collodion; the other tube, as it will be used to pour from, pushed just through the cork, that is all. The advantage of having the strainer continually in the collodion is to keep it always moist and in filtering order. With these precautions I do not see how it can very readily get wrong, and would be a decided improvement on the ordinary bottle.

Correspondence.

PHOTOGRAPHING IN COLOURS.

SIR,—I am an artist, not a photographer, though I have practised a little for amusement; and finding some photographers had an idea that printing in colours was possible, and some with not the slightest hope, I thought, as I had studied and practised my ideas for some time, I would explain a few of them, though I have not arrived at a favourable result as yet; but it is owing, I believe, to not having time to spare to experiment further; but I will endeavour to prove the improbability of its being accomplished mechanically. Take a flower in bud (I prefer buds, because the action of the sun's rays has not attracted the colouring matter to the surface wholly) of any colour, and procure a piece of the best absorbent paper, and place the bud upon it; then over it lay a sheet of thick glass, and place on the top as heavy a weight as it will bear for a short time; then remove the glass, &c., off the paper, and expose it to the rays of the sun for a time, and the colour of the bud, though not perceptible before, will gradually appear, and if the bud was variegated in colour, it will be repeated on the paper, though faint and confused; if a leaf of the bud alone were used, it would appear more definite. Take a quantity of buds of colours in tints as near one another as possible, and place them between two glass plates, the bottom one with grooves round the edges to allow the liquid to run in; drain it off in a very small phial, clean the plates, and do buds of another colour, till you have pressed separately from a yellow to a purple. Then procure a piece of paper, and, having a brush for each phial, brush half of its section with the various liquids; on the other half drop a few drops from each phial, and amalgamate them with a separate brush, and place the paper with a negative in the usual manner in a frame, and expose it to the sun's rays, and where the liquid was amalgamated the shadows will appear in time of a dull weak tone, and where it was sectioned the image will be variegated in colour, though faint. The idea may strike some, that if the colouring matter was applied to the negative glass prior to exposure in the camera, the coloured rays falling on the plate would attract the colouring matter that composed yellow or blue to parts of the plate that received that reflection through the lens; but if you, before putting the sensitized plate in the slide, drop separately, on various portions of the plate, the liquid out of each phial, and then mix in a separate phial a few drops from each, and drop that on another portion of the plate, and expose, &c., when the plate is dry you can trace, but very imperfectly, the various tints, and where the mixed liquid was put upon the plate it will appear a shade duller. Carbon process is the one, I believe, which is most likely to arrive at producing prints in colour; if you get some powder colours and some dissolved gelatine, and place a little of each colour in sepa-

rate saucers together with the gelatine, and grind them, then place a negative, and with the paper towards you, so that the light passes through the image and paints the paper, as if you were colouring a photo in flat tint, then expose for a time and wash the superfluous colour away, you will have a coloured image—far from perfection, but as near, I believe, as possible. If printing in colours were possible, the print would be tame and flat, and lack the brilliancy that is desired and expected from the hands of the artist. But if photographers would try experiments, and not wait for chemists to place within their reach some magic liquid, they would come to a decided conviction of its difficulties and improbability.—Yours respectfully, T. SLEIGH APPLETON.

49, Stretford Road, Manchester.

OWNERSHIP OF NEGATIVES.

SIR,—At various times letters have appeared in the PHOTOGRAPHIC NEWS respecting the ownership of the negative. A few days since I came across the letter written by Mr. Le Neve Foster, in May, 1869, referring to that subject. As the matter closely concerns portrait photographers, it may be useful to them if I endeavour to define their position with reference to the copyright of portrait negatives.

Copyright in a commissioned work is entirely a matter of contract, and all contracts must be made with precision, whether written or verbal. Mr. Foster says the photographer has a chattel interest in the negative, subject to certain restrictions, one of which is, "he may not use it to the prejudice of the copyright which the law has vested in another party, that party in the present case being the individual giving the commission. The lithographer's stone remains his property subject to similar restrictions." Now, with due respect to Mr. Foster, I must differ from him. The Copyright Act is directed against piracy. From a legal negative a piratical photograph cannot be printed, therefore a photographer printing copies from such a negative against the wish of the sitter cannot be prosecuted under the Copyright Act. No action for damages under the Engraving Copyright Acts will lie against a lithographer for printing copies against the will of his customer. If a photographer gibbets his sitter against his advertising door-post, he incurs no penalty under the Artistic Copyright Act. If Daguerreotypes and glass positives were now in fashion, the copyrights therein would, as a matter of course, vest in the sitters; but they are no longer produced. In the present day, if a sitter wishes to possess the copyright of his portrait, it is absolutely necessary that he contract in precise terms with the artist. He may say to the artist, "I wish you to take a photographic negative of me, for which I will pay you your price." The money must be paid, and then the copyright vests in the sitter, who may direct the photographer to print so many copies, and no more. If the price agreed upon exceed ten pounds, the contract must be in writing, otherwise it will be void under the statute of frauds. The photographer prints the number of copies agreed upon, and perhaps prints more; perhaps, Mr. Foster to the contrary notwithstanding, he gibbets his sitter on his advertising door-post. The sitter is aggrieved, but where is his remedy? The Artistic Copyright Act will not aid him, for there is no piracy. He might apply to the Court of Chancery for an injunction, or he might proceed by action at law, or by plaint in the County Court for breach of contract. These, I think, are his only remedies. If the photographer, however, were to make a negative from the original negative, or from a proof thereof, he would produce a piratical photograph, and bring himself within the operation of the Act.

Now I think it very rarely happens that sitters and photographers do make contracts in the manner I have supposed. What generally happens is this: the sitter contracts for so many copies of his portrait at a price, and, as copies are not originals, the question of copyright does not arise. The statute, no doubt, contemplates vesting the copyright

in the sitter, but the statute only refers to original works; it is, therefore, necessary that the sitter should expressly commission the execution of the negative; as, generally speaking, he only commissions copies, he acquires no copyright. In all cases, if copyright is to be created, the negatives must be made for a good or valuable consideration. It is clear that where the sitter contracts only for copies, he has no right to the negative, and acquires no copyright. In ordinary parlance, the word original has a use more extended than it has legally. When an artist paints two or more pictures of the same subject, we speak of them as original works; the law recognizes as original only that work which is first produced. We speak of photographs as being original when they are only copies of an original, viz., the negative. Certain works of art we call engravings, when they are copies or impressions from an engraved plate. The term copyright has also a wider general use than it has in law. "Copyright engravings" applied to impressions is a misnomer; they are not engravings, neither are they copyright. The engraving is a metal plate, and the copyright is an incorporeal right existing collaterally for twenty-eight years upon certain conditions. Many persons, magistrates and aldermen included, appear to have very hazy notions of the meaning of the term copyright. Some of your correspondents speak of large sums given for copyrights of engravings. We know very well what they mean, but, actually, the copyright of an engraving costs nothing; the expense of engraving a plate is the same, whether it be copyright or non-copyright; they allude to the price paid for the permission or right to engrave, which is quite another matter.

Prior to 1862, copyright in a painting or design did not exist. It is true, before a design was exhibited or published, the owner had a right, at common law, to prevent any person from copying it without his consent; but that is only a negative right or power to prevent copying, and not a positive sole right of reproduction. The owner might have copies made, but the moment he parted with them his power to prevent others from making copies would cease. Sir Thomas Lawrence was, I believe, the first British artist who received money for permission to engrave his works; from his time to 1862, it was a common practice for artists to sell to publishers permission to engrave their works, and this was called selling the copyright; but as, during that period, copyright in paintings, &c., did not exist, it could not be bought or sold. Publishers, although they had paid for permission to engrave certain works, obtained thereby no power to prevent other persons from making copies of those works if they could get access to them. This is illustrated in an action brought by a publisher against an engraver. The engraver was commissioned to make an engraving from a certain design. He engraved two plates from the design, one of which he handed to the publisher, the other he kept, and from it printed and published copies. The publisher brought an action for piracy, and was non-suited upon the ground that as both plates were made from the same design, the one could not be a piracy of the other. Copyright is defined by the statute 5 and 6 Vict., cap. 45, sect. 2, to be "the sole and exclusive right of printing or multiplying copies;" it therefore follows that unless a person possess the sole and exclusive right of reproduction, he does not possess copyright.

At the hearing of a case for infringement of copyright, I once heard an alderman remark that "there could be but one copyright in a design," which is quite true; but in his adjudication he recognized two copyrights—namely, copyright in the design of the original painting, and copyright in the design of a photograph taken from an engraving of the painting, thus stultifying his own words. If copyright in the design existed at all, it would be in the design of the painting, and nowhere else. As the law is at present construed, a photographer may maintain copyright in a photograph taken from a painting, because he is the author of the photograph; but he is not the author of the design, and

therefore has no power to prevent others from reproducing it, provided they do not use his photograph.—I am, sir, your obedient servant,
J. CUNNINGTON.

London, January 30th, 1871.

DISSOLVING VIEWS WITH ONE LANTERN.

SIR,—Would you allow the insertion of a few words, which shall be the *last*, in answer to Mr. Martin's letter? Mr. Martin, in last week's NEWS, by a wilful perversion of imagination, says: "That 'Silvester,' perceiving his mistake, has hastened to rectify it. This is as it should be," &c. Permit me to state that none of the observations made by me give the least foundation for such an assertion, and I now again reiterate what I before said.

Dissolving cannot be effected by alternately raising and lowering, by means of rackwork, the source of illumination; for, as soon as the light has left the first condenser in its passage to the other lantern, perfect darkness would result, and continue until the light reached the centre of the other optical system. This is the optical difficulty (not "optical error," as Mr. Martin styles it) which cannot be surmounted in a double lantern of the *perpendicular* arrangement. A contemporary periodical, alluding to this plan of dissolving, says:—"Such a method of dissolving must have been devised by one who was practically unacquainted with the lantern. He could not have used it successfully; and if he says otherwise, it clearly shows he has never tried it."

Regarding the sheer foolishness of such assertions as "my letting off the steam" and "pitching into the first person near me," which, unfortunately, happened to be Mr. Martin, such allusions could only emanate from the same source that recommended an attempt to "extract sunbeams from cucumbers," in order to obtain the honour of being the greatest benefactor to photography ever known.—Yours, &c.,
February 13th, 1871. SILVESTER.

PHOTO-MECHANICAL PRINTING.

DEAR SIR,—What have I done, that your correspondent "An Old Photographer" should be pleased to draw me into the controversies now pending on carbon printing, chemical and mechanical?

Any one reading the first paragraph on page 64 of your last number would imagine that the controversy in question was between myself and Mr. Edwards, when I have never had, nor never have, the least intention to enter on any controversy in the matter, being quite content to let my process stand on its own merits, good, bad, or indifferent.

The paragraph in question begins by your correspondent referring to the recent carbon discussions, and, after saying he is sick of it, he goes on to make a suggestion that Mr. Woodbury (*sic*) and Mr. Edwards should have a practical trial from the same negatives, to produce conviction. Now, what conclusion would any one reading the paragraph in question, and not having gone through the Johnson and Bovey, and Johnson Blair letters in a contemporary, come to? Why, that the whole carbon controversy was between Mr. Woodbury and Mr. Edwards. For Mr. Edwards I cannot speak, but for myself I may say that I know nothing whatever about the controversy, and do not wish to.

If any one wishes to acquaint himself as to the merits or demerits of my invention, let them visit the coming exhibition, where they will daily see my process worked in all its details.—I am, &c.,
WALTER B. WOODBURY.

CARBON V. SILVER.

SIR,—As the short and hurried note I sent you anent the carbon process was intended as a suggestion to yourself rather than for publication, I certainly shall not make any apology to Mr. Bovey for its want of courtesy.

His wilful blinking of the undoubted *facts* I stated with regard to the capability of the process to dodge defective negatives, and his poor attempt to pass them by as well-meant *suggestions*, the result of which would be more

troublesome than satisfactory, is so utterly beside the mark, that from any other person than one resolved to oppose the process at all hazards, I should have been surprised at it. As it is, I am content to leave him in the hot water in which he is at present, and trust that, like an over-exposed carbon print, he will emerge considerably improved.—Yours,
J. COOPER.

CARBON PRINTING V. SILVER PRINTING.

SIR,—Mr. Bovey appeals to me to deal with facts rather than phrases calculated to wound sensitive natures. It is to be regretted that he does not set an example; he, at least, never refrains from irritating epithets. I will, however, confine a few remarks I wish to make strictly to matters of fact.

In speaking of Mr. Edwards's heliotype process, I must again premise that I do not wish to use one deprecatory word. Within its *metier*, it is an admirable process, with, I hope, a great future before it. But I must repeat that Mr. Bovey evidently has a very imperfect knowledge of the process, or more probably, of the relation of the graphic arts generally, especially in connection with modes of printing. This is his misfortune; it is not a crime. The mode of pressure is really no essential element of any mode of printing. Of the three modes of pressure used in printing—vertical pressure for surface printing, scraping pressure for lithographic printing, and rolling pressure for copper-plate printing—each might be interchanged, and, I believe, is so occasionally. The mode commonly adopted for each is a matter of convenience, not of necessity. The kind of pressure giving best results is chosen. In the Alberttype class of processes, all kinds of pressure are used. Albert uses rolling pressure, Edwards vertical pressure, and in some, I believe, the ordinary lithographic press is employed. The mode of pressure does not constitute the *differentia*. In both the heliotype and the lithographic process the possibility of printing depends on the mutual repulsion of grease and water. This is the point in which the processes are alike, and in which they differ from surface printing, from copper-plate printing, from photographic printing, &c. From this fact the quality of the print must be similar in depth and richness. The lithograph differs from a copper-plate engraving in depth and richness, and in being more rotten in gradation, and in this the heliotype must be analogous to the lithograph. The necessity of using an intense ink to get force will interfere with transparency, and the necessity of using a transparent ink to get gradation will militate against depth.

On the question of the Woodbury prints Mr. Bovey is also seriously in error. A Woodbury print is composed of something more than gelatine and pigment, and a carbon print does not contain chromic acid. He is wrong on both points. All the chromic acid is removed from a carbon print in development and washing. The chrome salt which remains is a trace, nearly colourless, of sesquioxide of chromium in combination with the gelatine, rendering it insoluble. To test this, let Mr. Bovey produce a print with gelatine and bichromate, without any pigment at all, so that he may see what he is about. After washing in hot and cold water like a carbon print, he will find a faint greenish grey image, scarcely visible even in its deepest part; and this it is, and not chrome yellow, which remains in combination with the gelatine and pigment, the latter being so chosen as to quite neutralize it, a point which will be easily understood by artists in the habit of working with pigments. The Woodbury print is composed of gelatine, pigment, and a salt of aluminium, derived from the solution of alum used to render it insoluble. The one is rendered insoluble by a nearly colourless trace of a chrome salt, the other by an aluminium salt. Their identity is thus much nearer than Mr. Bovey has any notion of. Mr. Bovey is a good authority on the practice of silver printing; but no man is an authority on subjects with which he is not familiar.

To Mr. Edwards's courteous and intelligent letter I need only reply very briefly, as I agree with him in much. In so far as heliotype renders half-tone by gradation of flat tints, instead of a mechanical grain, it is superior to lithography. The capacity obtained by two inking operations is also of exceeding value; and if, as Mr. Edwards states, the intaglio character of the impression allows the depressions to be charged with ink, another point of importance would be gained. But, after all, it seems to me the very mode of inking the plate, in virtue of its lithographic analogy, must inevitably give it the lithographic

character; and everything I have yet seen produced by the heliotype, and all the varieties of the Lichtdruck process on the continent, have possessed this essentially lithographic character in the impressions.

In all that is said of the great value of the process for book illustration, for rapidity of production without reference to weather, for the possession of margin, and the absence of necessity for mounting, and a variety of other great advantages, I readily join in praise of heliotype. In its beauty and excellence as a photo-mechanical method I join in its praise not less readily. My exception was taken to the statement or implication that, for the purposes of the ordinary photographic portrait, heliotype was better suited than carbon, and gave more beautiful results.

With Mr. Edwards's remarks on the error of regarding silver printing as the standard of beauty or perfection I cordially agree. Notwithstanding certain beauties of gradation and richness of tone, most persons of cultured art taste regard an albuminized print as vulgar and inartistic, and, *pace* Mr. Bovey, would regard a good carbon print as a much higher class production, quite apart from the question of permanency. On the question of permanency in silver prints I have said nothing more, for, until Mr. Bovey or other photographers are prepared to issue silver prints with a guarantee of permanency, it is vain to defend the merely possible permanency of the results of the process.—Yours,
X. Y. Z.

[This controversy had better cease here. We have omitted the remarks in defence of a *nom de plume*, and on the supposition that Mr. Bovey declines the practical challenge, as unnecessary or offensive.—Ed.]

KEEPING SENSITIVE PAPER.

SIR,—In reply to "N.," I have much pleasure in offering to him the benefit of my experience.

Briefly: Atmospheric influences acting on free nitrate are the immediate causes of the discolouration of sensitive papers. If the paper, subsequent to sensitizing, is immersed in a weak aqueous gum solution, the thin coating of gum that is left after drying is capable of protecting the free nitrate for a considerable time.

Or, if preferred, the free nitrate might be converted into a chloride by immersing the sensitive paper in distilled water to which a few drops of hydrochloric acid have been added. Better still, alcohol (not methylated) might be used in lieu of water, as nitrate of silver is comparatively insoluble in the latter fluid.

There are other means of preserving sensitive papers which I should have pleasure to suggest to "N." on receipt of his address.—Yours truly,
W. T. BOVEY.

2, Charlton Villas, W.

ARITHMETICAL CURIOSITY.

DEAR SIR,—I know you cannot open your pages to all subjects; but having been a frequent contributor and one of your oldest readers, I cannot forego sending you a curious coincidence relative to dates which I discovered a few days since.

Starting with the hands of a clock at 0h 0m 0s, the minute hand during one hour passes over the several numbers 1, 2, 3,.....12; these being added together make the sum of 78, which, being multiplied by 24, the number of hours in the sidereal day, make the number 1872, or the date of next year. Of course this has never happened before in the Christian era, and never can happen again.—I am, sir, your obedient servant,
J. CARTER BROWNE, B.D.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

Address of the President.

At the recent annual meeting, the president addressed the members as follows:—

GENTLEMEN,—I must preface my remarks by thanking you for the honour you have done me in electing me to fill the presidential chair during the session on which we enter this evening, and by saying that my best efforts shall be given to advance the interests of our Society, and I trust that those efforts will meet with your kind approval. I may add that I trust to have the hearty co-operation of all members in rendering our monthly meetings interesting, and I hope that the year

before us may prove full of gratification to ourselves, and be one of progress for the art.

I believe I have to congratulate our members that our finances are in a satisfactory state, and in doing so would say that there are many amateur photographers in Liverpool and the neighbourhood whom we do not number amongst us, and whose names it is desirable that we should be able to add to the list of our members. Our pecuniary needs are not great, but I for one should like to see our numbers increased, and I our funds increased also. We do not require, perhaps, to prepare for a "rainy day," but there are many ways, I think, in which our Society might be benefitted if we accumulated some funds in the hands of our treasurer.

The year just closed has not been marked by any great advance in the art, though doubtless it has been one of steady progress. We have no great novelties to record, but the carbon and other processes have had the attention of some of the leading photographers, and have been perfected and brought into more general use.

As regards our own Society, I believe fewer papers have been read during the year than usual. It is perhaps only fair to state that other kindred societies have had to make the same complaint, and, therefore, we have not been singular in this respect. Considering, however, that we number amongst us some of the best and most practical amateurs, we cannot feel that we have not something wherewith to reproach ourselves in this matter. We are all working in various ways—probably no two of us in precisely the same groove—and we have each, I am sure, had under our notice subjects and ideas which would have been interesting to the general body if communicated to them. I will take leave to remind our members that, in a Society such as this, it is incumbent on each individual to do something for the good of the Society, and that no one of us can count himself a good and true member unless he can feel satisfied at the end of each year that he has done all he could during that year to add to the interest of our meetings. I would beg permission to be allowed to urge all to guard against that habit of thought which leads to the feeling that having paid the subscription for the year, and elected officers, it remains with the council, secretary, and president to provide for them an intellectual entertainment once a month, as well as tea and coffee.

Whilst in a consorial mood, you will perhaps allow me to say that I think we have not been quite wise in confining ourselves so exclusively to the collodio-bromide process. It is a most valuable process, and I do not wish for one moment to say anything otherwise than in praise of it; but I must express the opinion that we should not altogether give up the wet process for any dry process. We should, I think, work at both wet and dry processes, and not neglect the one for the other. Each is valuable to us at its proper time, and we cannot well do without either; but I put the question—Is it desirable that our members should confine themselves so exclusively to the practice of a dry process as they have done since the introduction of the collodio-bromide process?

I desire to draw the attention of our members to the good work being done in America by amateurs. I allude to the work of Dr. Woodward, of Washington, and Mr. Rutherford, of New York. The former has done more for microphotography than any other man, and the latter has taken pre-eminently the foremost place in making photography useful to astronomical science and research.

Dr. Woodward has certainly the advantage of holding a position as head of a government department, which has enabled him to spare neither time nor money in making successful the application of photography to microscopical science and investigation; but his work is essentially a labour of love, and he has the thanks of all interested in his particular line for all he has done, and for all the information he has so freely made public.

Mr. Rutherford has devoted himself to astro-photography, and freely spends his own money in the advancement of his art. His arrangements have hitherto been taken as a guide in the outfit of the different astronomical photographic expeditions, and his photographs of the moon and of the spectrum of the sun are said to be unique in the world. That of the spectrum of the sun shows more lines than the tables of Kirchhoff or Angstrom, and spectrum analysts are now engaged in experiments to determine what those new lines represent.

Mr. Rutherford has imposed upon himself the task of taking a photograph of the sun every day, and these successive pictures demonstrate most clearly the rotation of the sun. Spots

appearing on the eastern edge gradually cross the disc, disappear at the western edge, and in about twelve days appear again on the eastern edge.

Here is good work indeed, and in the labours of Dr. Woodward and Mr. Rutherford we see how valuable is the result of their steady painstaking. We have it plainly shown to us how much can be done by amateurs in work which professionals cannot undertake, by the steady pursuit of one object—by giving our work a definite purpose, and making all labour tend to the development of it.

It will occur to all of us that there is a great variety of work to be done by amateurs other than the taking of pretty views; and if we will lay down this rule for ourselves, that what we do shall have in it something useful and instructive as well as pleasing, we shall, I am sure, have the greatest pleasure in reviewing our work, and shall have the satisfaction of feeling that we are really promoting our art by rendering it in the fullest degree advantageous to others.

I would suggest that the building in which we are holding our meeting this evening is full of objects of interest of one kind or other, and that it would afford work for all of us for years to come. The ivories and the specimens of chinaware and glassware, from the earliest periods to the present time, would yield most interesting series. How valuable would be an ornithological series of photographs, not to mention more of the many subjects which our museum would yield us! We live in a town where every variety of naval architecture is, from time to time, seen; here, again, is a field of very interesting work. Engineering also affords us ample materials to work upon; and, as to architecture, it is a subject which can never be exhausted by us. A series of photographs of trees would yield us outdoor work, and would make an instructive portfolio. Photographs of a holiday trip are very interesting, an instance of which we had lately in the case of those shown us by the Rev. T. B. Banner, of many places visited by him last year, over which the desolating Franco-German war has since swept. How interesting might all our holiday trips become to us if we entered upon them with the purpose of adding to our portfolio photographs of the subject or subjects which we had set ourselves to illustrate! I think it must be admitted that we should do much more good by working with a definite purpose, than by possessing our cameras only as toys with which to amuse ourselves in our leisure hours.

We sometimes hear men say—"Oh! I have not done much this year; there are really so few pretty places within the reach of a few hours' journey!" One cannot help thinking, when this is said, that the person so expressing himself has a very small idea of the range of the art. We certainly ought not to look upon our art as a source of amusement only, but consider that it has much higher objects to fulfil.

I desire to take the present opportunity of offering some suggestions with the view of adding to the interest of our work and meetings.

I notice that, from time to time, we lose members, because they leave us for other countries, and the question naturally suggests itself—Why should these members be lost to us? Why should they not become honorary members? I think our Society would be benefitted if they continued to be associated with us. They might, I think, be entitled to receive a copy of the presentation print, and would, doubtless, from time to time, send us papers or communications of interest from the countries to which they had gone to reside, and our portfolios might be enriched with photographs taken by them in their adopted country. They might also, perhaps, compete in some of our sweepstakes, and for some of our prizes. If you agree with me in this, I would suggest such alterations or additions to our rules as will enable us to retain such members in future, even if we do not regain some already lost to us.

I beg also to suggest that we should have a fixed evening during each session when it shall be expected that every member will exhibit the work he has done during the year. I think the first meeting of each session would be a suitable evening for such an exhibition. It would be, I believe, instructive, and would act as an incentive to work during the year. And, in connection with this gathering, I should propose that each member give at least one photograph to be placed in a portfolio, which portfolio should be representative of the year's work. I would have a new portfolio every year, and would keep each year's photographs together, and separate from those produced in any other year. We should thus have a record of our yearly work, and these portfolios would indicate to us our progress.

Since I have been a member of this Society I have always felt wishful that an effort should be made to accumulate some funds, and that we should not be satisfied to collect what is barely sufficient for our present small expenditure.

I cannot but think it would be advantageous to have a room where our members could meet each other at any time and where plates might be prepared and developed, and where printing could be done. There are many periodicals published which might be taken in by us as a Society. Many members, I believe, could spare an hour in the daytime, and would have no objection to pay for a room where they could prepare and develop plates and print. It would probably be worth while to take the opinion of members on this subject at a subsequent meeting, and perhaps some of us would be prepared with a proposal which would elicit the general feeling.

Reverting again to the subject of papers for this session, I am glad to say that several members have already made promises, but we cannot look too much ahead; and, in order that we may not have to reproach ourselves in this respect another year, I hope that before we part this evening many more promises will be made. I have prepared a list of our meetings, and will pass this round, begging our members to enter their names for papers on some of the evenings. I must say I should like to see such a number promised as would render it necessary to take some of them as read, and print them for circulation. It is only what ought to be; and how would the interest of our meetings be increased if we had such a pressure of communications! We have an inexhaustible subject. We can never expect to arrive at perfection. We must always be going on perfecting our appliances, perfecting our processes, and accomplishing work previously unobtainable; and in all this there must necessarily arise a great deal which is of interest to the whole body of our members, and respecting which much would be gained by raising discussion, and obtaining the views, ideas, and suggestions of others. "Two heads are always better than one," and we may all learn something from each other. Let us not think that our processes and appliances are so good that we must have reached the goal of perfection.

Let us not rest on our oars, but, as we pass each turn of the stream of successful work accomplished, let us bend our shoulders to renewed exertions, determined to make all the progress possible whilst the day lasts us.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The usual monthly meeting of this Society was held in the City of London College on the evening of Thursday, Feb. 9th, Mr SEBASTIAN DAVIS in the chair.

The minutes of a previous meeting having been read and confirmed,

Mr. E. DUNMORE read a paper 'On the Coming Season, and what shall we do in it?' (see p. 78).

After a vote of thanks, a desultory discussion took place.

Mr. C. E. ELLIOTT agreed with Mr. Dunmore that there was a growing demand for larger pictures by the public, as, being engaged in commerce in relation to photography, he was familiar with the fact that small photographs, however good, were little in demand. Pictures large enough to frame would sell best.

Mr. PRICE said that the idea of producing small pictures with a view to enlarging was important. But the small pictures must be exceedingly perfect, not only in sharpness of definition, but in those pictorial qualities which satisfied the eye. He thought the use of lenses of very short focus always gave a sense of untruth and falso perspective. Lenses of less than ten or twelve inches focus should not be used, except where circumstances made it imperative, as lenses of that focus produced pictures which at once seemed natural and pleasing.

Mr. WHARTON SIMPSON said it was a well-understood rule in optics, that to get the most truthful effect the picture should be viewed as nearly as possible at the same distance from the eyes as the lens had been from the sensitive surface; and, as the average focus of the eye would be ten or twelve inches, lenses of that focus gave the satisfactory results of which Mr. Price had spoken.

A desultory conversation followed on the enlargement of side objects when wide-angle lenses were used, and on the angle generally desirable to be included.

The CHAIRMAN said that the degree of sharpness of definition, and the distance at which a picture was intended to be examined, were important elements in the naturalness of a picture. One intended for examination in the hand must be much

sharper than one to be examined a few feet off. He thought the recognized rule, that a picture should be comprehended within a rectangle which could be cut out of a circle of 60°, was a good one.

Mr. PRICE thought a picture should represent a scene as the eyes see it, and the two eyes saw more than 60°; and, although the whole might not be sharp, the imagination filled up detail, and gave an effect to the mind of a more extended picture. A twelve-inch picture, with a lens of twelve inches focus, generally gave a satisfactory effect of both angle and perspective.

Mr. SIMPSON said that such a picture would include 60° on the diagonal, but not much more than 53° or 54° on the baseline.

A desultory conversation followed, in which Mr. Taylor, Mr. Dunmore, Mr. Price, Mr. Foxlee, Mr. Simpson, and the Chairman took part.

Mr. TAYLOR referred to the ingenious tourist's camera patented by Mr. Cook, which Mr. Elliott had promised to bring for the inspection of members next meeting. He also asked Mr. Price how he had found his clever camera work.

Mr. PRICE had taken about one hundred negatives, and was completely satisfied. He had used different lenses, having a fixed focus for each, and he found the definition perfect, bearing magnifying under a quarter object-glass. He also referred to the admirable action of perchloride of iron for cleaning and reducing negatives when used as recommended by Mr. Hughes.

A general conversation followed on enlargements, the use of curved plates, tissue negatives, &c., in which Mr. Foxlee, Mr. Dunmore, Mr. Price, the Chairman, and others took part.

Mr. PRICE promised to bring some of his negatives to next meeting, and give some details of the lenses and the conditions employed.

The proceedings then terminated.

THE PHOTOGRAPHIC SOCIETY OF LONDON.

The annual meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, February the 14th, Mr. J. GLAISHER, F.R.S., in the chair.

After the minutes of a previous meeting had been read and confirmed, Lord Lindsay was proposed and elected a member of the Society.

The CHAIRMAN called attention to some photographs of scenes in connection with the war, kindly sent by the Stereoscopic Company for the inspection of members, to some photographs by Sir Aubrey Paul, Bart., and to some examples of Manchester goods in the shape of cotton handkerchiefs in which photo-lithographic designs were printed.

The TREASURER then read a most satisfactory report, showing that the Society was in a very improving position. We shall refer to this subject in detail in our next.

The CHAIRMAN congratulated the Society on the improved aspect of their finances, and hoped at the next annual meeting to be able to announce that the Society was quite out of debt. He had felt deeply the position of the Society when he accepted the position of president, but he knew that with such a council they could not long remain in a position so unsatisfactory. He thanked all members for assistance, especially country members, and was glad to be able to promise that the Society would soon be in a position to do something more and better for its members than it had done heretofore. The £100 or £500 debt, under which they had struggled, gone, their prosperity would improve in every way.

The CHAIRMAN then read the report of the Council, which will appear in our next.

On the motion of Mr. Brooks, seconded by Mr. Bedford, the report of the treasurer and council were received and adopted.

The CHAIRMAN said that in the absence of Mr. Rejlander the consideration of the subject of splitting films would be postponed. This being an annual meeting, any member was at liberty to bring forward any questions he might wish considered. At the ordinary meetings he was bound in some degree to play the tyrant, and keep the proceedings to the matters set down. As no one seemed to have anything to propose, he should call on their secretary, who had kindly undertaken to fill the gap caused by the absence of Mr. Rejlander.

Mr. SPILLER gave an account of his experiments in the detection of fabrics, and the organic chloride formed by dissolving silk in hydrochloric acid, which gave a more sensitive chloride of silver than that usually obtained. He showed a series of elegant experiments and examples of fabrics treated, in illustration of the process.

The CHAIRMAN, in proposing a vote of thanks, commented on the value, as well as the ingenuity of the process, especially in superseding microscopic examinations by simple chemical tests. After the vote of thanks had been carried by acclamation.

Mr. THOMAS, at the invitation of the chairman, mentioned that the photographs exhibited by Sir Aubrey Paul, who was a professional photographer, had been taken in bad weather, some of them, interiors, having had as much as one and three-quarters of an hour exposure. A point of interest was the use of the ferridcyanide of potassium and persulphate of uranium for intensifying, used in successive solutions, with very careful washing between. Another point worth mentioning in his experience was getting good prints on paper which had been kept six months, the paper having been prepared on the bath of nitrates of silver and soda, with sugar added.

Mr. HUGHES referred to his experience as to negatives intensified with the ferridcyanide solution growing harder under the influence of light. They were beautifully delicate, and full of modelling at first, but gradually became hard and worthless during printing.

Mr. THOMAS said he believed that this was also Sir Aubrey's experience, but that an especially valuable power was thus in the hand of the photographer for reproductions in black-and-white, an example of which was shown.

After some conversation, the proceedings terminated.

Talk in the Studio.

OPERATORS' SPECIMENS.—The complaints of retention of specimens sent by operators desiring engagements, to employers advertising for assistants, still continues. We have suggested very efficient remedies, which are evidently not applied; but although the operator who fails to take the simple precautions we have suggested subjects himself to the risks often pointed out, it is not the less unjust of employers, where they are thus negligent in sending back specimens. Mr. J. Harris tells us of a case in which, having sent his specimens to a photographer in town, and failed to get them returned, he called to obtain them, and was curtly informed that the employer in question "did not return cards," and sent away without his specimens. If this were so, it was certainly unfair, if not dishonest. However, we can only refer to our former suggestions on the subject.

PORTRAIT NOVELTIES.—Mr. S. H. Jeffrycs sends us an example of card portraiture which is suggestive of various forms of novelty which ingenious portraitists may introduce to those of their customers desiring variation from the routine style of portraiture. This is a vignette portrait on what appears to be a scroll of white paper resting on a black ground. An ordinary vignette is apparently first produced, and then a mask representing the form of a half-rolled-up scroll of paper, being placed over the portrait, the edges are suffered to become black in the sun. After the print is finished, a few touches with a pencil and a little purple brown colour complete the effect of the scroll. Various designs of this kind are, of course, possible. Mr. Jeffrycs has styled this kind of portrait "the Effectograph."

ART WORKMAN'S EXHIBITION AT MANCHESTER.—A correspondent says:—"Perhaps photographers would like to know that their beautiful art was neither slighted nor contemned at the Art Workman's Exhibition just closed. I have just learnt that a silver medal has been awarded to A. F. Lafosse, Esq., of this city, for his excellent photograph at that Exhibition."

To Correspondents.

J. W. S. (Dewsbury).—We have much pleasure in aiding all classes of photographers with any advice in our power, our interest not being confined to either amateur or professional photographers. Do not hesitate, therefore, to write whenever you are "in a fix." Your desire to be able to take a first-rate photograph is a very proper ambition. Let us know in what points you fail, and we will endeavour to advise you as to the means of improvement.

H. HARDING.—Thanks for the correction. If the name occurs again we will see to its rectification. Thanks for the print and for the kind offer of use of negative. We had, however, selected a figure from nature.

F. GUY.—We presume that the Autotype Company print for the trade from photographers' own negatives. See their advertisement for address.

W. S. PARRY.—The letters have been forwarded.

AT A FIX.—As we are not in communication with the gentlemen whose formulae we quote, we cannot interpret their meaning with any certainty on doubtful points. The acetic acid chiefly in use in America is generally distinguished as No. 8, and is about equivalent to the acid generally known as Beaufoy's acetic acid. Glacial acetic acid is about three times the strength of this acid. A "small quantity" is a very arbitrary term, and must always be understood in relation to the subject. If we were making a developer by Mr. O'Neil's formula we should consider two ounces of acetic acid No. 8, or a third of that quantity of glacial acetic acid, a small quantity to add to the two ounces of iron dissolved in two quarts of water. 2. Alcohol plays no part in development; it is merely used to make the developer flow easily over the plate, and should never be used when it can be done without. We have not used it for many years. 3. Iodide of silver is made by adding a soluble iodide—such as iodide of potassium—to a solution of nitrate of silver, iodide of silver being precipitated. It is not necessary to add it to a nitrate bath in a direct form. Add from one to two grains of iodide of potassium to a pint of nitrate solution; this will form iodide of silver, which will be at once redissolved. 4. We have no special reason to think that the formula for developer giving twelve grains of protosulphate of iron to an ounce of water is a mistake. Some operators prefer a somewhat weak developer, in order that it may act slowly and gradually.

D. D. (Belgian subscriber).—We did not clearly understand your question, as the maker in question has several historical lenses without sufficiently distinctive terminology. Between the two lenses you name there is not much difference in rapidity; but as the one of longer focus (No. 1b) can be used with a larger aperture and still cover sufficiently, for rapid work it is, on the whole, preferable. If used with exactly the same relative aperture, the shorter focus (the four-and-a-half-inch) would be the more rapid. 2. In our experience, B is most rapid. 3. Two or three methods of oxidizing the last traces of hyposulphite of soda, and converting it into sulphate of soda, have been proposed. The use of peroxide of hydrogen has been tried, and doubtless answers the purpose, but it has never been extensively carried out. One part of oxygenated water, or peroxide of hydrogen, to ten parts of water will answer. A cheaper plan is to use a dilute solution of hypochlorite of soda, which answers a similar purpose. Theoretically the plan is good, and practically we have no reason to doubt it; but it has not been carried to sufficient extent, within our knowledge, to enable us to speak positively on the subject.

THE REV. S.—We will send you some numbers containing hints. Taking it altogether, the gum-gallic process is, we think, decidedly the best dry process in the balance of good qualities. Next, and perhaps simpler, is the coffee process, which yields admirable results. The use of a preliminary coating for gum-gallic plates is not an imperative condition; but, according to Mr. Gordon, the best authority on the subject, it is a very important condition. The backing with non-actinic colour is not imperative; for many subjects it is unnecessary, and with iron development less necessary than with alkaline development. Its use is to prevent halation or reflection from the back of the plate, which, when subjects containing strong contrasts are taken, is sometimes troublesome with plates which are not very opaque, such as those by the tannin process and the gum-gallic. 2. Tannin plates cannot be developed satisfactorily with iron. The tannin decomposes the iron solution at once, making black ink. The coffee process is as simple as and more efficient than the tannin.

J. BRYANT.—Many thanks.

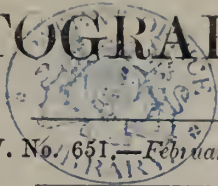
BARRINGTON.—The cracks on the negative films which you have forwarded are of a kind which are only too common and too perplexing. These are of the kind we have generally described as vernicular; and if you have read all that we have written on the subject, we have, unfortunately, nothing to add. The cracks are clearly caused by contraction of the resins forming the film of varnish, and rigidity in the collodion film preventing it yielding, so as to contract in the same ratio as the varnish. In the negatives sent, the appearance is very suggestive of the fault belonging to the varnish. We can only suggest trying a fresh sample, or adopting the recent suggestion in our pages to add a little castor oil to the varnish. This, we think, is likely to be very efficient. A varnish made of gum-dammar dissolved in benzole will not be likely to crack, but it is not very hard. The varnish on the negatives sent is not hard, and still cracks. Rubbing fine lamp black into the cracks will make the negatives print without showing the cracks.

L. J. M.—As your letter is based on an assumption that Mr. Bovey shirks the trial, in which we think you are in error, and as it is unfairly personal, we regret that we cannot insert it. Good-humoured raillery is one thing, and bitter personal sarcasm another. The latter always stings, but rarely effects any other good end. Remember the Laureate's line to the effect that "mockery is the fume of little souls."

G. R. GILL.—Thanks. In our next.

JOSEPH STORES, BENE-VELIS, G. A. NICHOLSON, and several other Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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A CURIOUS CAUSE OF DISTORTION IN PORTRAITS.

A SHORT time ago a very curious cause of inaccuracy or distortion in photographic portraits, and, indeed, in all photographic prints, was brought under our attention by our esteemed American correspondent, the details of which deserve more than a passing mention in his letter. He sent us two copies of a very charming cabinet portrait of a lady, by Mr. Baker, of Buffalo. It consists of the head and bust in an oval medallion, the head being about an inch and a-half long in the picture. The photography is very perfect, possessing exquisite delicacy and fine modelling, with perfect richness and brilliancy. The face is pleasant and intelligent, the features well cut, the eyes fine, the hair picturesque in arrangement, and the lace drapery is worn with graceful negligence. On examining the two portraits, a puzzled sensation takes possession of the observer: both pictures are apparently alike; they are posed alike, lighted precisely alike, and have the same character and contrast of light and shade; they are printed about the same depth, and touched to nearly the same colour; and yet there is a marked difference in the result. One portrait is infinitely more pleasing than the other. In one the face seems slightly more crisply cut, and has an exceedingly refined and spiritual air; the other, although pleasing, is decidedly heavier and more common-place in effect. Whilst we ourselves were puzzling over this discrepancy, a lady who had entered our study, and taken up the portraits, asked, with an exclamation of surprise, how it was possible that two photographic portraits, both so perfect as pictures, and so much alike, should so differ in refinement of feature and expression. And yet both these portraits are from one negative, which has not been touched or manipulated in any way between the printing of these two impressions; both printed the same day on pieces of paper cut from the same sheet; and both are fine silver prints with similar qualities of depth, tone, and brilliancy. The sole difference between the two consists in the different ratios of contraction of the paper under different circumstances.

The result of this difference in the degrees of contraction is singular, and by no means satisfactory to contemplate. On measurement, we find a very sensible difference in the proportions of the two faces. One is fully a twentieth part of an inch less in width than the other, the narrowest—that is, the one which has suffered the greatest amount of contraction in the width of the print—being, in this instance, the more pleasing of the two.

Mr. Baker explains that this difference in contraction results from the different modes of mounting employed. One print, he states, was mounted in the usual way, damp; the other was pasted, laid aside, and dried; then

the card was damped, the dried pasted surface laid on it, and passed under the roller. That which was coated with paste and mounted at once in the usual way suffered the least amount of contraction, whilst that which was coated with paste, and laid aside to dry, being mounted subsequently on the damped card, suffered the greater amount of contraction. In the individual instance under attention, the print which has contracted most, and, by its contraction, given increased crispness, at the same time making the face narrower, gives the most pleasing and refined likeness; but with many types precisely the opposite effect might be produced.

In many cases, however, the most truthful rendering of a subject would be preferable to the most pleasing, and hence the reader will inquire which of the prints approximates most to the truth in this case. We learn from Mr. Baker that here the print with the less amount of lateral contraction is that nearest to truth. In writing he remarks:—"You will immediately think that, as paper expands when damp, the dry mounted one must be the correct size. Not so, again; and comparative measurement with the negative shows that either head coincides with the impression on glass; indeed, the dry mounted print has contracted much more than the other has expanded. The print mounted in the customary way is the nearest right (assuming the negative to be truth)." This is a little puzzling. Let us glance for a moment at the action and reaction taking place. When the dry paper is first placed on the nitrate bath, it expands in proportion to the water absorbed, and contracts again when it has parted with that water and become dry, the excess of silver acquired not being sufficient to make any sensible difference in its bulk. It is printed when dry, and although it swells again when wet in the processes of toning, fixing, and washing, when dry it again contracts, and presumably possesses the same proportions as when it was printed in contact with the negative, so that the print should be an exact transcript of the negative. If it be pasted, and suffered to dry before mounting, the fair assumption would be that it still retains its original proportions, which would not be appreciably modified by being attached by pressure to a damp mount. When mounted in the ordinary manner, being moistened with paste, and swollen in consequence, and then mounted in contact with a comparatively unyielding piece of cardboard, contraction is to some extent checked, and it might naturally be concluded that the print would not acquire the exact proportions it had when printed. Mr. Baker finds, however, paradoxically enough, that although neither of the prints is precisely identical in proportion with the negative, yet that mounted in the usual manner, most likely to have been somewhat incorrect, is really the nearest to the truth, as represented in the negative.

But another very important fact remains to be taken into account in connection with this subject of expansion and contraction. If the contraction were equiform, each dimension diminishing in the same ratio, no distortion of the image could result; the size might be varied, but not the proportions. Unfortunately, this is not so, paper, like all textile fabrics, tending to contraction, after being wet, considerably more in one dimension than in another. This fact has before been pointed out to photographers, but is less known generally than it should be. Mr. Baker finds that the contraction in the narrow direction of the sheet is nearly three times as great as in the direction of the length. Whether both the prints were on pieces of paper cut in the same direction of the sheet is not stated; but as Mr. Baker, fully alive to all the facts, attributes the difference to the mounting only, we presume that they were. Here, then, is a startling source of error, which must be, more or less, that of all photographs on paper.

Mr. Baker observes:—"This is an important, constantly present, and, it seems to me, unavoidable cause of photographic distortion. Let both of these heads be magnified to life size, in length, from the outer right-hand corner of the mouth to the inner corner of the right eye, $2\frac{1}{4}$ inches, and the divergence in width would become comparatively enormous. Let now the head be carefully traced by the hand, following the solar camera image of the negative, and a third scale of dimensions is produced. Print from the negative, in a solar camera, with the length of the paper placed across the width of the face; then another print, with paper placed with its length parallel to the length of the face, and you have a fourth and fifth scale; under all conceivable conditions this cause of distortion remains."

Mr. Baker very justly adds:—"So, then, photography, usually conceived of as being perfectly literal and true, is found in many ways to be inexact; and here, as in other studies, the conviction is forced upon us that man has not absolute truth, only adumbrations thereof. In several instances this property of the paper has proved quite vexatious to me, when absolutely correct copies were wanted for mathematical purposes. A plan that was to be just 11 inches long, and was so on the negative, came out about $11\frac{1}{2}$ inches on the mounted proof. A medallion which was to be copied to a certain oval, the pattern of which was furnished, was carefully prepared on the negative, but the oval on the finished print was swelled in the width out of all proportion; so much so, that the maker of the marble would not believe it possible that the negative had been properly treated, until it was shown him, and he laid the pattern on it himself."

The photographer has generally been in the habit of regarding imperfections in his lenses as the only source of distortion or error in proportion possible in his delineations, and a lens convicted of destroying the proportion of a face, or of any design, to the extent of at least one-twentieth of one of its dimensions, would seriously peril the reputation of its maker. But here is a source of error apparently inevitable. The photographer may take heart of grace, however, when he remembers that not alone photographs, but every form of picture on paper, is subject, in greater or less degree, to the same conditions, if it have to be mounted, and that hence the defect is not one peculiar to photography, but simply incident to delineations on paper, whenever that paper is subject to the process of dampening and drying, after it has received its design, and perhaps in no case is the liability to this distortion greater than in the tracings of the engineer, where mathematical accuracy is often of vital importance. Mr. Baker adds:—"Yet we may comfort ourselves, that in the case of portraiture it must be a wonderfully accurate eye that could detect the variations as compared with the living model, and even then it would be a decided hypercriticism to find fault with drawing; that is, if necessarily somewhat at fault, yet far more accurate than handwork."

It should be remembered, however, that in the examples upon which these remarks have been based, the variation is sufficiently palpable to excite attention, and to make all the difference to which we have referred in the delicacy and refinement of effect. One of the best uses to which a knowledge of this peculiarity in paper could be put would be careful consideration of the peculiarities of a face, and whether its appearance would be improved by contraction in width or length. The effect of a broad, coarse face might be ameliorated and refined by a slight contraction in width; a long, lean, haggard face, by being slightly diminished in length. The range of artistic power in making the best of his subject may be enlarged by a consideration of these facts, and cutting the paper for a portrait the lengthwise or breadthwise of the sheet. If this were always judiciously done, a defect and shortcoming might be converted into a new power, frequently giving a more pleasing quality to photographic portraiture.

MODIFIED PRINTING FORMULAS.

BY E. AND H. T. ANTHONY.

IN consequence of the improved modes of working discovered and introduced by ourselves, the process of printing and toning albuminized paper has been greatly facilitated and cheapened.

The old mode of working was as follows:—

A solution of nitrate of silver was made, 50 grains to the ounce of water; this was neutralized by the addition of a little ammonia, the precipitate allowed to settle, and the clear solution decanted. The paper was floated one minute, hung up to dry, and fumed fifteen to twenty minutes with ammonia.

After printing, the prints were thoroughly washed, and toned in an alkaline gold bath.

The new mode is as follows:—

The silver solution is prepared with ammonia as formerly, but is made only 35 grains to the ounce of water. After the clear solution is poured off, it is saturated with powdered alum. The paper is floated one minute, and dried. It can now be used either with or without fuming with ammonia. If the ammonia be used, five minutes' exposure to the vapour is long enough; if the ammonia be not used, the acid wash before toning may be omitted.

After printing, the prints are soaked ten or fifteen minutes in a solution of pure acetic acid No. 8—say one drachm to a quart and a half of water. They are subsequently rinsed in two changes of water, and are then ready for the toning bath. Prints treated in the above manner require very little gold for toning.

It is very easy to make a toning bath if the chloride of gold solution be first neutralized by means of an insoluble alkali. To do this, make a solution of 15 grains of Anthony's chloride of gold in one ounce of water; put in 10 grains of carbonate of baryta, and allow the mixture to stand two or three days, with occasional shaking. The carbonate of baryta destroys the acidity of the gold without being dissolved in the water. All that is necessary to do now is, to add some of your neutralized gold to water, put in a little salt (say 30 grains to a quart of water), and a very little of any of the alkaline salts used in toning.

According to the depth of the toning will be the resulting colour of the print: a lightly toned print being a pleasant brown, while those very deeply toned become purplish blue.

By washing the prints in water first, and subsequently soaking them in a very weak solution of salt, with very light toning, a chestnut brown can be obtained.

Fix in fresh hypo solution—one of hypo to eight of water—and wash three hours in running water, occasionally drawing off all the water, and allowing the prints to drain well.—*Photographic Bulletin.*

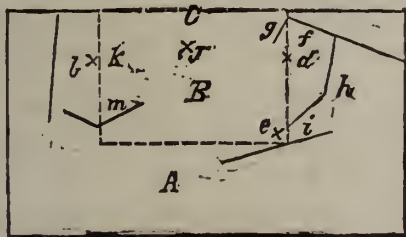
AMERICAN CORRESPONDENCE.

REMBRANDT PICTURES, AND HOW TO PRODUCE THEM.

Rembrandt Pictures, and How to Produce Them.—You have had a great deal to say about our American "shadow" pictures, and have republished a great deal that has been said here about them. With us they are generally called Rembrandt pictures, not so much because they are presumed to be like the works of that famous Dutchman, but simply to give them a "taking" name. For the same reason we dub our new size Victoria cartes, not because they are like the cartes made by your good Queen, or her princely amateur son; neither because it is supposed that your excellent Sovereign prefers to have her portraits for Eugenie and others taken of that particular size, but simply to give them an attractive name, one that will be remembered easily, and create enquiry for them.

Let us, then, call the pictures in question Rembrandts. How wild, indeed, would Rembrandt be could he see what wild lighting is practised by some of our good people here in trying to secure striking effects! But there is a good way of making very attractive and excellent pictures a little different from the ordinary run, and a few remarks on their production may not be out of place.

In this country the majority of the *ateliers* have a north top exposure—i.e. the top light inclines to the north—and an east and west or an east or west side light. Here, then, is the method of making Rembrandts in such a studio:—



A is the operating room, B the skylight, C side light, *a* sitter, *e* camera, *f* background. For Rembrandts the background should not be too dark; many make a mistake in using a very dark one. An amber tint, or something a shade lighter, does well. *g* a semi-opaque screen, hinged to, or placed against, the end of the background. This is for the purpose of making that side of the ground darker. It accomplishes, in some measure, what is produced by a cone or curved background. If you want something expensive, you can buy some one of the several patterns that are in the market; or there is a good description of how to make an "alcove ground," with a diagram, in a late number of the PHOTOGRAPHIC NEWS. But I want to give you something that you can use or find in any gallery. If it is desirable to have the ground lighter on that side, leave the screen away; but it is rather more artistic to give the ground a darker shade on the side nearest the light. *h* is a screen with a joint in the middle, or two separate screens, covered with white muslin, to use as reflectors; *i* is a screen with one side a light colour, and the other a sort of neutral tint. These are the arrangements for Rembrandts, showing the left side of the face; and, when you want the right side, make the same arrangements on the other side of the skylight. For ordinary sittings the camera is at *j*, the sitter at *k*, background *l*, and side-screens *m*; and *vice versa* for the other side of the face. Under a differently constructed skylight you might be obliged to make some variation from this arrangement, but, with a little care and judgment, it can be applied under any light. They are a picture not easy to make well, but one can soon learn. If one has acquired the faculty of seeing the light on the face of the subject, instead of trusting to the focusing glass to tell him when it is right, then the work is comparatively easy. Let me give you a couple of examples, and then I will close on this subject:—

Enter a lady with a fine profile—the latter you see at once, even before you can tell what the lady looks like. In the first place find which side she is to sit, and arrange the light accordingly. Bring the background up near the side light, and place the screen so as to shade a portion of the background nearest the light. Place the sitter well forward, so as not to be back of the light, and carry the screen round on the shadow side, so as to give a good diffusion of light. Don't get the reflecting-screen too near to cut off too much of the shadow. The camera should stand pointing well towards the light. Let the body be turned a very little from the front, and then the head inclined gracefully to the right till the profile is presented to the camera. That brings the front of the face against the shaded part of the background, so that we get the highest lights of the face against the darkest part of the ground. Now the next point to be considered is, the regulating of the light. Draw down the thin curtains on the top light till the direct light comes only from the lower side; now soften the side light till we get the effect we want. You see, by cutting off the direct light from above, and letting the principal rays come from the side light, the side of the face next the camera is entirely in shadow, while the other is brilliantly illuminated.

The next subject is a gentleman. His face will look best with about a three-quarter view. This requires very careful management of the light. A view that just catches the line of the nose is favourable, if it does well for the general outline of the head and face. If more of a side view is necessary, care must be taken not to have the cheek and nose illuminated the same, or they will run together, and the shape of that very important feature the nose will not be defined. Turning the subject a little more to the right, so that the strongest illumination will be partly from behind, will throw the front of the cheek a little in shadow, while the nose, catching the full light, will be well defined. A dark complexion will not bear so much shadow as a light one. Care must be taken in this view to get no reflections in the eyes from the screens. It is well to have the screen behind the camera darker on one side—a gray or dark blue, that will give a neutral tint—so that it can be turned when desired. There is a satisfaction in doing this kind of work when you have subjects suitable for it. But it is surprising how quickly people have caught the idea that a Rembrandt will make the plainest face brilliant and beautiful. I believe they are better posted on the characteristics of Rembrandt's style than we have given them credit for.

The unfortunate ones that "never had a good picture" are all out after the new style. The old, gray, and wrinkled want to try something that will, perchance, restore to them the force and vigour of former years, and smooth the furrows that time has wrought on their brows. The young lady, who has been a young lady for many years, and has never passed a certain age, whose mirror has grown old, and is not as true as it used to be, comes to try a Rembrandt, hoping to have the hollows in her cheeks filled up, and the winning grace and beauty she has so long sighed for restored by its magic touch. When skillfully and carefully made, they are certainly very pretty, and no doubt are an old thing to some of your readers.—Yours truly,

EDWARD L. WILSON.

Philadelphia, February 1st, 1871.

ON A CONVENIENT WAY OF PREPARING COLLODIO-CHLORIDE.

BY P. LIESEGANG, PH.D., A.M.

To prepare a good sample of collodio-chloride is not at all difficult, after the large number of good formulæ which have been published; and I should not burden the photographic community with another one if I had not had a long experience with it, having prepared a few hundred of pounds of collodio-chloride in this way.

I find that the shortest way is to dissolve the chloride in plain collodion, to add the nitrate in such pieces as it is

bought, to shake the mixture well for a time, and then to add the acid. Not a trace of water is thus introduced into the collodion, no difficulty in dissolving the nitrate in strong alcohol. The best plain collodion for this process is one in which equal parts of soluble cotton and papyroxylene have been dissolved. I use the following proportions:—

Alcohol, absolute	...	...	1 fl. oz.
Ether O 725	...	...	1 "
Papyroxylene	...	...	9 grains
Soluble cotton	...	...	9 "

This collodion is cleared in the usual way, by filtering, if it must be used at once, or, better, by keeping and decanting it.

The sensitive collodion I compose of—

Collodion, as above	...	...	1 oz. fl.
Chloride of lithium	...	...	1 grain
Nitrate of silver	...	...	8 grains
Citric or tartaric acid	...	...	2 "

I dissolve the chloride of lithium in clear collodion, then add the nitrate of silver. We have here very convenient bottles at hand for preparing the collodio-chloride, those in which the Moselle is sold; they are of a yellowish-brown, just clear enough to allow the eye to follow the formation of the sensitive salt, and yet obstructing all chemical action of the light. The collodion is shaken until it has become milk-white; next day it is poured in another bottle, leaving the undissolved pieces of nitrate behind. These are now powdered in a mortar, and well mixed with the collodion.

The two grains of acid are then dissolved in the collodion, which is now ready for use, or will keep for months.

If the collodion is to be used for reproducing negatives or printing lantern transparencies, a few drops of a solution of shellac in liquor Ozonii (alcohol saturated with ammonia gas) are mixed with it just before use, as the mixture will not decompose on keeping. The deepest black can be obtained thus without pyro developing.

Also, by coating twice with the above collodion (without shellac), very deep tones are obtained.

Where good chloride of lithium is not to be had, I recommend the following formula:—

Plain collodion	...	...	1 fl. oz.
Chloride of cadmium	...	...	2 grains
Nitrate of silver	...	...	8 "
Citric acid	...	...	3 "

To prepare in the same way as indicated above.

PAPER NEGATIVE PROCESS.

BY WM. BLAIR.

FURTHER experience enables to make one or two additions to the remarks I formerly published on this process.

After a variety of trials with india-rubber paper, I found that I succeeded best with some very old prepared paper that I had had lying past for some years, but that with paper newly prepared it was difficult to avoid stains, especially with silver development, if the sensitized sheet was kept over a few days. This might all be avoided, no doubt, by thoroughly pure solvents being used for the rubber varnish, and evaporating completely before using, and adopting the additional precaution of coating with albumen. Rubber solution has often been used as a coating for glass, and there is no reason why, if properly prepared, it should not answer on paper. Still, I have to admit that the materials recently obtained by me, and used in these trials, did not fulfil expectations, and this has induced me, in the meantime, to fall back upon waxed paper.

I am not sure, indeed, but that waxed paper may turn out to be the superior article for this process after all. Wax is a cleanly neutral body, and has been proved long ago to be very useful in the silver process-s. I have tried some collodion negatives on waxed paper by the process

referred to, and find that they develop quite clean, and are easily separated from the waxed sheet.

I take a piece of waxed paper of convenient size; flatten it down on a sheet of glass, spread dilute albumen over it with a bent glass rod, pour off, and hang up to dry spontaneously. When dry, flatten again, and pour the collodion on the albuminized side. The albumen prevents the collodion from attacking and dissolving the wax. A thin coating of gelatine may serve the same purpose. I would recommend the use of collodio-bromide for these paper processes, but otherwise the film can be sensitized by floating on a bath as formerly mentioned. When well washed, and the preservative applied, the sheet should again be hung up (in the dark) to dry spontaneously. Any attempt to hasten the drying by heat would be apt to start the collodion from the wax. All artificial heat should be avoided till the finished and gelatinized negative is to be lifted from the paper, and even then I find it can be taken away without any extra application of heat.

As, in this process, the collodion has a comparatively weak hold of the paper, I think it will be found a safe precaution to run a small edging of rubber solution round the border of the paper before sensitizing. This border may, perhaps, be better cut away after the negative is finished and the gelatine dry, so as to get the waxed paper more conveniently separated. A sheet of waxed paper, unless cut down into very small slips for small negatives, may be used oftener than once for this process.

After the picture is developed and fixed, and while still wet, the warm gelatine should be poured on to as great a depth as it will conveniently carry without running over. When set, it is hung to dry in a good current of air, if such can be had.

The film negative obtained in this way has much the appearance of a negative on ground glass. The slight roughness of the surface of the paper seems to communicate to the gelatine that appearance, but the dead surface thus communicated answers very well for working on with the pencil, if that should be considered necessary or desirable.

I have met with one difficulty in this process which it is right I should mention. During these short winter days I have only developed after dark with a screened lamp, and on applying the fixing solution I find great difficulty in knowing when the yellow iodide and bromide are sufficiently cleared away. With a glass negative there is not much difficulty here, but with these films resting on white paper the disappearance of the yellow colour is not so easily observed, and I have often found, on afterwards examining the films in daylight, that they had been imperfectly fixed. This is a difficulty, of course, that will only occur in developing and fixing by night light, and may be got over by experience and a correct knowledge of the strength of the solution used.

Bridgend, Perth, February, 1871.

EXPERIMENTS WITH WASHED CHLORIDE OF SILVER PAPER.

BY C. ENGELMANN.*

AFTER some experience, I have found it best to wash the sensitized paper, in the first place, in two baths of distilled water, and subsequently in good spring water; or, if none of good quality is at hand, with distilled water, to which a minute quantity of bicarbonate of potash or common salt has been added.

In this way a paper is obtained in which all free nitrate of silver has been completely removed, and which, therefore, may be preserved in good condition for a considerable period. When exposed to full daylight, it assumes a light brown tone, and cannot be used for printing purposes without the aid of ammonia fuming. If exposed, during the operation of printing, to the action of ammonia, the

* *Helios.*

latter acts upon the chloride, and pictures are then produced hardly to be distinguished from those printed in the ordinary manner, the printing being conducted very rapidly. The ammonia reaches the paper through the medium of the printing pads, which are placed in a box together with a saucer containing strong spirits of ammonia. Over the vessel is placed a false bottom of perforated cardboard, and upon this the pads are allowed to remain for twenty-four hours before employment in the frame. The ammonia used should be as strong as possible, especially if the albuminized paper has been sensitized upon a weak silver bath.

A most peculiar fact is here apparent. One would surely believe that the concentration of the silver bath would be of but little importance, inasmuch as not more nor less chloride of silver can be formed in the paper than there is salt contained therein; and yet this strength of the bath does influence the result very materially. At any rate, with a concentrated solution, a finer and more easily decomposed chloride is formed, than when a liquid of less strength is employed; and, in fact, a proof of this is found in ordinary working, when, in using a bath until almost exhausted, we reach a point when a dusty kind of chloride is formed, so difficultly decomposed by light that we condemn such paper as altogether useless. It can scarcely be said that free nitrate of silver is here absent, and, if the paper is again floated upon a second and stronger solution, no improvement in its printing qualities is to be observed.

On the other hand, a more sensitive paper is obtained than that yielded by a weak bath, if the sheet is, in the first instance, floated upon a strong solution, and afterwards placed in a dilute silver liquid, where it is, to a certain extent, again washed.

The fuming of the paper itself with ammonia without having recourse to the pad will not answer, inasmuch as the sheets do not of themselves absorb a sufficient quantity of the compound; on the other hand, too much ammonia need not be feared.

As regards the advantages of employing this paper, the principal one lies in the fact of the superior keeping qualities of the sensitized material, some paper which I have prepared in February being still good in the month of May. This preservative quality is an important one, for it is then possible to rely upon a large batch of prints in early morning; while in bad weather, when little printing can be done, one is not left with a large batch of sensitive paper on hand, which will rapidly deteriorate. This advantage alone, then, leads one to hope for the perfect elaboration of the process.

The results I obtained on a small scale were such as to decide me in adopting the method upon a large scale for ordinary photographic printing, although for vignettes it was scarcely suitable, owing to a yellow or reddish halo which formed round pictures of this description. But, alas! after four weeks' work, I was compelled to return to my old way of proceeding, for I found, practically, that for large printing operations it was unsatisfactory. Mistakes amongst the work people were frequent, the pads being sometimes used twice over, or the replenishing of the ammonia in the box forgotten; in short, without everything was done personally, it was impossible to make matters go on smoothly, for, as we know, one can never get assistants to feel the same interest in the matter as oneself. Should, from one cause or another, the pad be too thinly saturated with ammonia, the prints may possibly assume the same vigorous character as when sufficient ammonia is present; but they always lose much of their brilliancy when placed in the hyposulphite fixing bath. The silver solution employed by me was prepared in the proportion of one to twelve, as I found that one of less strength did not give satisfactory results.

The method would be more reliable if the ammonia were not volatile, or if it were actually in chemical combination with the chloride of silver.

THE INTERNATIONAL EXHIBITION OF 1871.

BY THEOPHILUS THIDDLEMIDTCH.

No. 1.—How I Took My Pictures.

MANY months ago there appeared in one of the daily papers, and in a very obscure corner thereof, an advertisement in very small type, which set forth, to those who wished for such information—or, rather, to those who had the luck to find it—that Her Most Gracious Majesty's Royal Commissioners "would accept a few photographs for their exhibition." It was very kind of the Commission to say they would allow a few photographs to be exhibited, and it was still more considerate of them to announce the fact in a public advertisement. While it would have been simply impossible for these favours to have been surpassed, they were fully equalled by a most generous desire *not to make the thing too common*, so that the little advertisement I have referred to was confined to one paper, and to one insertion.

It would be an interesting subject for a Royal Commission to enquire into and report upon the number and nature of the answers which this advertisement received. For my own part, I wrote next day a laconic note, saying that it was "my intention" to exhibit a collection of photographs, and asking for a space of about a hundred square feet. In about three weeks I received an answer "done" in the most official manner, and stating that my letter had been duly received.

Months now passed by, and nothing more was heard of the exhibition; when, in December, thinking that the frames I intended for exhibition should be prepared, I wrote again to the "Royal Commission," to ask if they intended to allot a space equal to the magnitude of my desire.

To this letter I received an answer to the effect that I should have no space at all allotted to me, but that I might send them any pictures I liked, to choose from, and they would, perhaps, hang a few!

This seemed to me to be only an "official" way of explaining that indifferent muffs would be kept out, and that thereby a much larger space would really be allotted to those who were ready with plenty of good pictures, and I therefore set to work to get up some forty or more of the best pictures in my collection.

In about a month I received another letter from the "Commission," containing several different sorts of labels, and a request that I would write and ask for as many as I required. I modestly said to myself, "Of course, they cannot think of refusing, so I will send for a good batch." I accordingly wrote for fifty of each.

In a week I received, by way of answer to my application, a letter containing twelve labels, and a memorandum stating that, as it was very improbable that the "Committee of Selection" would put more than three or four of my pictures into the exhibition, I might satisfy myself to send only the best of what I had prepared. I read this as a challenge—I read this letter as an insult. It must have been an insult to suppose that a photographer of my standing could only do *four* pictures fit to look at! What could I do? Should I write and say I would not exhibit at all? I had a mind to, but I thought I would first try the effect of one of *my* letters; so I wrote that, "so far as I was concerned personally, I didn't care a pin for their exhibition; that they might all go to—; that I exhibited for the public, and not for myself; that I felt it was a duty incumbent upon me to teach the *nations* by an example or two from *my* studio; that the public expected it; that the Editor of the PHOTOGRAPHIC NEWS expected it; that England expected it!"

This fetched them. By return of post an enormous parcel of papers, forms, and labels were delivered to me; and, as I exultingly carried them to my studio, I could not help feeling, mingled with my pride, a touch of sorrow at the vast expense I had incurred upon the Commission in printing and stationery.

I pass over weeks. The fatal day arrived. I refer to a "fatal day," because, by an advertisement which had been inserted at the last moment, in a great many papers, the 21st February, 1871, was fixed as the only day for sending in—or, rather, taking in—the few photographs which were to be exhibited.

I presented myself at the doors of that wonderful "oval circus," as the cabman called it—irreverent cabman!—and was most politely assisted at once by about half-a-dozen intelligent fellows, who seemed as if they enjoyed the job quite as much as sponging guns or "position drill." I was forthwith ushered upstairs into the presence of two or three secretaries, who were looking over other exhibits, and doing to others as they did to me. "Take off those labels," said the first secretary, advancing to me; "you have made them out wrong." "What could have made you fasten the labels on the backs of the pictures?" said the second secretary. "They are too ugly to go on the front," I said. Whereat he laughed, and was very civil all the rest of the morning, for I must tell you that these gentlemen made me write out the whole of my labels again, notwithstanding that I had made them out with the greatest care, according to their printed direction. In fact, one of them (you may have seen it, a great ugly square thing with printing on it in red), I had done in a style which would, I am sure, have been a credit to any catalogue. I was not, it is true, at all clear about the "class number," but then, that was a matter more exclusively official than my attainments could arrive at. The "nature and title of the subject," and, in most cases, the date of production and price, I could fill in with pride, if not with accuracy. "My name" is well known, but the "date and place of my birth!"—Sir, this is a sacred particular, which I should not have felt justified in revealing, had it not been for the inestimable advantage of the information to my own and future ages. Fortunately, from a very accurate record kept by my father, I was able to indicate, not only the town, street, house, but even the room, in which the momentous event took place. The time was recorded with astronomical precision. I cannot say I was equally clear in stating the "school of art at which I studied." But when it came to describing the honours which I had obtained, it almost takes my breath away. I had a separate list printed, and pinned it on to each. I omitted to fill in the column for "any other information," not knowing if it referred to measles or my twin-brother.

Sir, you, and you only, who know me well, can judge of the indignation with which I saw my labels torn up, and my separate list of honours destroyed as unworthy a place in the catalogue of so vast and magnificent an exhibition.

It took me three hours to write out the lists and labels again, and during all the time I was so occupied, not one came into the room but had to make some alteration, or to do the same as I had, and write their papers all over again.

There promises to be an exceedingly fine collection of photographs at the exhibition, as there was one frame delivered in the three hours of my attendance.

PHOTOGRAPHS OF GAOL-BIRDS.*

THE recent refusal of certain prisoners committed for trial at Liverpool to submit to the operations of the gaol photographer suggests some important considerations in reference to the working of the Habitual Criminals Act, and its powers in relation to the identification of persons charged with crime. Prison portraiture is not altogether a novelty. When Mr. Pickwick entered the Fleet, the first ceremony through which he passed consisted in "sitting for his portrait," the warders being, as he was informed by the stout turnkey, "capital hands at likenesses, taking 'em in no time, and always exact." The substitution of photography

* From the *Morning Advertiser*.

for the more embarrassing process of personal scrutiny by half a dozen turnkeys would scarcely appear to be a hardship, unless some more occult reason than appears on the surface exists for objection to the record of the camera. Oliver Wendell Holmes, in one of his delightful essays, affects to discover in photography an explanation of the classic fable, which relates the slaying of Marsyas by Apollo, after the young shepherd had been beaten in a musical contest with the god of music. Mr. Holmes suggests that as the god of song is also the god of light, the slaying consisted in fastening his victim to a tree—symbol of a modern photographer's instrument of torture—and taking a sun portrait of him, the thin film or skin of light and shade projected direct from his body to the sensitive tablet having been by uninstructed persons interpreted as the *cutis* of the defeated minstrel. If the photographed prisoner takes this view, and feels a sense of loss, of virtue gone out of him, during the moments in which the Cyclopean eye of the camera is fixed upon him, it is not surprising that he objects to the process; or, what is still more probable, if he be conscious that the evidence against him may be strengthened tenfold by his identification leading to the record of former convictions, his personal objection may be easily understood. The ground upon which this objection is endorsed, and "torture by photography" denounced by sham humanitarians, is not so clear. In order fairly to estimate the value of the system, a glance at its history may not be uninteresting.

The idea of preserving a photographic record of the prisoners under his charge, with a view to subsequent identification, is due to Mr. J. A. Gardiner, governor of Bristol gaol. About fifteen years ago he addressed a letter to the governors of Her Majesty's gaols generally, pointing out the importance of such a record. "It is well known to all," he said, "who have been concerned in criminal administration, that the most cunning, the most skilled, and the most daring offenders are migratory in their habits; that they do not locate themselves in any particular town or district, but extend their ravages to wherever there is the most open field for crime;" the best planned robberies, he adds, being rarely conducted by the resident thieves in any district. As an issue of this migratory tendency, it was found that convicts were constantly returning to prison for short terms in fresh districts; expert professional thieves, experienced and hardened criminals, being enabled to pass off lightly as first offenders only just trembling on the verge of crime. In the exact ratio in which criminals were brought within fresh judicial districts, and under fresh official inspection, the chances of identification became diminished; written descriptions rarely being sufficiently special or characteristic to fix identity with any certainty. Hence Mr. Gardiner was induced to try photography, and to recommend its general adoption. The success which attended the partial application of the system induced a Select Committee of the House of Lords, on whose report the Prison Act of 1865 was framed, to recommend its universal adoption in Her Majesty's prisons, regarding it as "inexpensive, effective, and wholly free from objection." The system was only partially applied, however, until twelve months ago, when, by order of the Home Secretary, its application became more general. The plan pursued is simple and efficient. As soon as the prisoner arrives in gaol he is photographed, and copies of his portrait, attached to a schedule describing his age, height, complexion, hair, eyes, nose, whiskers, and specific marks, together with such details of his place of birth, education, trade, religion, and place of residence as he chooses to communicate, are sent to the governors of other gaols, stating that the prisoner is in custody for trial, and requesting that if he be recognized as having been in custody before, details of his convictions may be furnished. In many gaols all prisoners are photographed but the general application of the system is only made imperative in relation to the classes specially noted in the Habitual Criminals Act, the aim being to secure a record, with means

of identification, of all professional thieves or persons in the habitual practice of crime.

This system—which, in the excellence of its aim, is beyond question, and the success of which, even in partial application, has, according to the evidence of the governors of various gaols, far transcended expectation—is in danger from a somewhat singular cause. A few of the prisoners object to be photographed; and at Liverpool, where two prisoners committed for trial have recently refused to sit before the prison camera, the visiting justices have resolved to communicate with the Home Secretary to suggest that the photographic portraiture of prisoners shall in all cases be compulsory, and refusal to submit to it followed by punishment. There is little hope of aid for the justices, we fear, from a Home Secretary who has shown his country so many instances of weakness and vacillation, and who suffered his ridiculous cab law to be ignored with contempt because cab proprietors and cab drivers very naturally objected to its preposterous conditions. Fortunately for the appeal of the visiting justices, Mr. Bruce is, in this instance, called upon to exceed his powers, and the opportunity for the arbitrary disregard of an Act of Parliament may afford him some temptation. The section of the Habitual Criminals Act which provides for the preservation of a record of criminals, with means of identifying them, specifically refers to persons "convicted of crime." Such persons are also, according to the statute, to be subject to the regulations which may from time to time be prescribed by one of Her Majesty's Secretaries of State. But, so far as compulsory photography is concerned, persons merely charged with crime, and awaiting their trial, are not amenable to either force or punishment. But this fact need not impede the carrying out of a valuable system. In its partial application neither force nor punishment has been necessary. In the instances where consent has been refused, contumacy has been met by contrivance, and the portrait has been secured, at times without the knowledge of the sitter, without imperilling the liberty of the subject. If the preservation of a minute written description of a person charged with crime be legitimate, the less elaborate, but more accurate, record of the camera—which, if it nothing extenuate, will set down nought in malice—needs neither the authority of the Home Secretary nor an Act of Parliament to justify its preservation.

A system which aids in placing on record an accurate register of all professional law-breakers, and in doing so preserves a distinction between the unfortunate and the vicious, between the confirmed criminal and the fledgling goal-bird, needs no platitudes on the sacredness of society, nor on the powers of science in tracking crime, to recommend it. The aim of the law should be less to punish crime than to prevent the manufacture of criminals. One of the most important recommendations of the recent valuable report of the rev. chaplain of Newgate enforces the careful classification of prisoners, in order to avoid dealing with the novice as with the expert. He urges that we should not continue to make habitual criminals by "indiscriminately" associating the old and hardened offenders with the new, and thus bring down men comparatively pure to the depraved notions of those whose lives have been one catalogue of crime." These are wise words; and a means of distinguishing between the offender who has been driven or seduced into his first violation of the law, and the wretch who, by ill-fate or choice, has adopted a life of crime, becomes imperative, in giving these words effect. The use of the most adequate means of identification is simple justice to a man charged with crime. That his identification will be attempted is quite certain, and that it should be dependent upon the memory of a policeman, whose very instinct urges him to secure conviction, is a positive hardship. At the last Middlesex Sessions, six police sergeants and four constables swore to a special previous conviction of a prisoner who was able to prove to the satisfaction of a jury that he was in the West Indies at the time

of the alleged conviction. The evidence of a photograph, if not proof positive, would at least have been of more value than the memory of these intelligent members of the force.

In its actual working, the system has been found most satisfactory. In one prison the average number of prisoners has been reduced from one hundred and sixty to one hundred; and this, according to the testimony of the governor of the gaol, is mainly due to the operation of the system of identification by photography. To the habitual and confirmed criminal alone, the preservation of such a pictured record can give cause of uneasiness. His career of crime may, by evidence of multiplied convictions, be cut short by one long imprisonment, instead of being permitted to consist in repeated outrages on society, and repeated brief punishments; the community suffering, in such case, the double evil of many outrages and much cost in the frequent repetition of trial and conviction. To the innocent such a record of identity can bring only safety; the system, like the law itself, being "for the punishment only of evil-doers, and for the praise of them that do well."

Correspondence.

IS THE PAPER A CAUSE OF FADING ?

DEAR SIR,—While so much is being said and written about the fading of silver prints, and everything connected with the production of silver prints has undergone the strictest investigation, the silver bath, the albumen, the toning bath, the hypo, the washing, the mounting, and mounting boards, enamelling &c., have each been the subjects of discussion upon which permanency has more or less been promised; but there is yet one subject which has received but little attention, that is the *paper*. I have for some time thought that the cause of fading lies as much, if not more, in the paper than in the silver; but, no doubt, the chemical combination with the paper does the mischief.

Now, if silver prints must fade, why not the negatives? Silver is the foundation of both, and hypo is generally the fixing agent of both, yet we do not hear of the fading of negatives. I have negatives and positives on glass of sixteen years' standing as permanent as when first produced, and during that period have produced some thousands of negatives, among which I have never yet detected a faded or even a cracked film. Sometimes the fading of prints has been ascribed to the albuminized paper, yet we are using a preliminary coating of albumen for our negatives. At present I do not see our negatives fade any the more for that.

Now, it seems to me, that the great want is a paper prepared impervious to moisture. *Is this an impossibility?* Cannot some of our scientific friends suggest the means of manufacturing such an article? For if it is possible to prepare such a paper, I cannot believe that there would exist a necessity for the fading of silver prepared prints, any more than there is for the fading of silver prepared negatives or positives on glass.

In conclusion, if what I have written is worthy of notice, use it; if not, destroy it, as I am not anxious to rush into print; still, I cannot help feeling that every photographer would be interested in such a prepared paper.—Yours truly,

JOSEPH STOKES

28, Grey Friars' Road, St. Peter's, Ipswich, Feb. 14, 1871.

CLEANING VARNISHED NEGATIVES.

DEAR SIR,—If you think the following worth a place in your valuable journal, it is at your service.

Having tried many methods of cleaning varnished glasses, I may venture to say that the one I now use is at once the cheapest, simplest, and most effective that could possibly be devised, and answers perfectly. It is as follows:—

Have ready on the hob a kettle of boiling water, into which throw a handful of common washing soda. Provide a large, flat, shallow porcelain tray, into which put as many of your glasses as will cover the bottom of it, varnished side uppermost; then pour your boiling soda water on to them, and imme-

diately commence rubbing the varnished surface with the end of a piece of stick made broad and flat on purpose, holding them down with another similar piece. By this means the varnish can be pushed off the glass with the greatest ease, and without sealding the fingers. The soda water should be returned to the kettle again, to be in readiness for the next batch of plates, as it is important that the water should be boiling when it is put on to them. The same soda water will do a very large number of plates. After removing the varnish, the plates should be passed through a dilute solution of hydrochloric acid to remove every trace of the soda, then well rinsed, and dried with a clean cloth; and may be coated with albumen or tunicare, and will be found to work as well, or even better, than new plates.

BENE-VELIS.

REDUCING OVER-PRINTED PROOFS.

DEAR SIR,—Having over-printed some photographs, I toned and fixed them; I then put them into a weak solution of cyanide of potassium. Much to my delight, they became gradually light, and did not change colour as they will do when left long in hypo soda. I should like to know if any of your readers have tried the like experiment.—I remain, dear sir, yours truly,

G. A. NICHOLSON.

1. *Green Street, Grosvenor Square, W.*

[If the cyanide solution be used very dilute, it will answer well. The danger is, that if in any degree too strong, the prints rapidly reduce too much, and in an irregular, granulated fashion.—Ed.]

CARBON V. SILVER.

SIR,—For the information of those who believe me capable of shirking Mr. Johnson's challenge, kindly make it known that I accept the same, subject to the following conditions:—

1. All prints to be printed from the same negatives.
2. The number of negatives to be not less than six; half to be selected by myself, the other half by Mr. Johnson.
3. "Dodges" to be allowed in the printing of the pictures.
4. Two referees to be chosen, one my selection, the other Mr. Johnson's. No one having any connection with carbon interests to be selected.
5. The decision of the referees to be published in the photographic journals. Should the referees be unable to decide, the matter to remain an open question for the decision of individual opinion at the next photographic exhibition held in London.

Although "X. Y. Z." has laid himself open, most temptingly, to correction, in deference to your expressed wishes, I forbear. I cannot, however, "strike my flag" without putting the query, What have I done to create such a whirlwind of indignation, such a sea of "hot water?" I will tell you what I *have* done, under difficulties from which most men would have shrunk. I have contributed to the pages of the News for a period of nine years; during that lengthened period, the results of my studies, experiments, and practical experiences have been freely given to aid photographic progress, whilst I have lost no opportunity of upholding the dignity of the art. I admit that I have sometimes hit hard at false theories and empirical suggestions. I have, nevertheless, stood up in defence of those who are sometimes mercilessly lashed without just causes, or an opportunity of defending themselves.

The question has sometimes been put, What can a mere printer know about pictures or art? I will explain. Some years since I was fortunate enough to have been taught the alphabet, and nature having kindly presented me with a pair of eyes, I have made good use of both. And I have the satisfaction of knowing that *my selections* always hold a first rank in the estimation of accredited art critics. Enough of this; I have to deal with the rise and progress of the recent contest.

In the performance of what I conceived to be my duty, I had occasion to describe certain tests which verified preconceived ideas respecting the causes of the fading of silver prints, and to show the necessity of adopting every available precaution to avoid such causes. I stated that the end of silver printing is *not yet*, strengthening the remark by some reference to the present state of carbon printing, which I described as having been "tried, and found wanting." This assertion was made on the authority of a lengthened investigation I made personally. I entertained no prejudice against Autotypy. I am not enamoured of silver printing; on the contrary, I regard the process as one of present expediency; by no means do I look on it as

one of permanent adoption. This view of the matter, however provides no rest-and-be-thankful kind of excuse for standing still. What would be thought of a farmer who, in view of a future lease which would give him permission to plough up his grass lands, gave his fields over to nature to produce the best crops she could without assistance, whilst the old covenant was running out?

Now, sir, having briefly stated the cause, I now proceed to review the effect. You, sir, criticised my remarks on carbon printing at some length, and in such a way that I felt in honour bound to respond, although I entered on the task with much reluctance. Had the discussion been confined to our two selves (yourself and me) it would have ended as it began, amicably; but the entrance of a troop of sharpshooters into the arena directly changed the character of the controversy. I was assailed with shafts of ridicule, my arguments were ironically distorted, private pressure was brought to bear against my deterioration to resist to the last word. My chief witness was shut out of court unheard; in short, every species of intoleration which my imagination had hitherto associated only with packed meetings and bucolic feudalism were brought to bear against my unlucky self. I am compelled to stop short to exclaim, most assuredly, sir, you have good reason to ejaculate, "Save me from my friends"! one among whom has done his best to prove the degeneration of photographic morality; another has led your readers into a supposition that you stand in need of prompters; a third and fourth have rushed in with utterances too terrible for "setting up." Surely, with these facts I can well afford to stop the contest. Most certainly I require no further argument to prove my case, for a system that cannot hold its own in sober discussion is, of a certainty, doomed to die out. A process which cannot bear even the pressure of inferences reasonably drawn is, at its best, a rotten affair indeed.

In conclusion. Can it be that I have over-estimated the wishes of photographers to continue learning and progressing? Is the art so hemmed in by selfishness and egotism that free discussion must be regarded as an institution crumbling to ruins? If such be realities, the sooner all earnest working men quit the field the better. The last, however, among the retiring ones will be,—Yours truly,

W. T. BOVEY.

PS.—I have "hauled down the flag" of defiance.

[Although we expressed a wish in our last that the controversy should end at that point, each of the disputants having been heard fairly and fully, as an indulgence to an old contributor, we allow him the last word; and our readers will form their own opinions as to how far carbon holds its own in the discussion. In justice to Mr. Bovey, we ought to explain his allusion to his "principal witness" having been "shut out unheard." In one of his letters he quoted the recently expressed opinion of the French correspondent of a contemporary photographic journal, who was advocating the use of glass or enamel plates for carbon printing as superior to paper. As, although the remarks quoted were unfavourable to carbon prints on paper, the gentleman in question has at times been one of the most enthusiastic advocates of carbon, and in the letter in question was advocating carbon prints on enamelled plates as likely, if introduced, to beat paper portraits out of the field, we did not feel it fair or in good taste to drag his name into the controversy by the quotation of isolated remarks which might subject him to adverse criticism in pages to which he was not in the habit of communicating. The opinions expressed of this gentleman formed the principal evidence referred to, and was thus shut out. Those interested sufficiently in the matter can read the opinions in question in our contemporary of February 3rd.—Ed.]

THE OWNERSHIP OF THE NEGATIVE.

SIR,—Concurring in the view expressed by your correspondent, Mr. J. Cunningham, as to there being no doubt whatever of a portrait negative (taken in the usual way) being the copyright of the photographer, and not of the sitter, permit me to adduce two somewhat analogous instances in support of his argument afforded by my own experience of other professions.

Previous to adopting photography, I practised as a land surveyor, and afterwards, for several years, was actively engaged on the English and colonial press in the capacity of reporter.

Surveyors always consider the notes in their field-book to be their own property, furnishing, in the usual course, a plan of

the property to their employer or client, and (in my own recollection) an assistant employed by a surveyor in California was, by a law court of that state, confirmed in his right to refuse to deliver up his field-book of an uncompleted survey, being obliged, however, to furnish a plan upon seals of the portion he had executed for salary received.

Reporters likewise consider their note-books to be their own property, and all that the employer can legally demand is a fair transcript of memoranda therein contained.

In the above instances, the surveyor's field-book, and the reporter's note-book, may fairly be considered as negatives from which it is the author's sole and exclusive right to produce the ultimate results, towards which they serve as the indispensable means.

Availing myself of this opportunity, I would ask again whether any means exist for protecting from imitation an original design for engraving mounts for cartes-de-visite and other photographs? Having conceived an idea which I confidently believe would, by general adoption, give a considerable impetus to the demand for portraits, I am anxious to make it known, and only hesitate because I am told at Stationers' Hall that registration will protect simply the particular engraving from imitation, without affording any security against the principle being copied, with slight variation, by any one desirous of evading the moderate royalty which I propose asking.

In conclusion, will you excuse my suggesting that the gentleman whose condescension you editorially give such prominence to in your last number would be wise in relieving his customers from the publicity of the fact of his graciously "feeling inclined to yield" to their wishes?—the fact that he asks £25 as an equivalent in a great measure reducing the weight of obligation under which he places them.—I am, yours obediently,

A COLONIST.

Clifton, February 20th, 1871.

COPYRIGHT IN PHOTOGRAPHS.

SIR,—I am sorry that "An Old Photographer" proposes to postpone pointing out some of my errors until I have "quite done." If I do not try your patience, the time is still distant when I can write *finis*, for the subject upon which I am writing is by no means exhausted. I am also sorry he thinks the correspondence has been spun out to a wearying extent. If such be the case, I alone am to blame, as my opponents have long since withdrawn from the contest. I can only say that endeavour has been made to write as tersely as the subject permitted, and I feel sure that you will readily concede opportunity for "An Old Photographer" to correct my "manifest errors." To him, perhaps, the law of art copyright is a matter of indifference, but to many of your subscribers I know it is otherwise by communications which reach me respecting it.

In a recent review of the latest work on copyright, there occurs this passage, which is worth repeating:—"There are very few men indeed who are not to some extent interested in the law of copyright; while there are scarcely any who know much about it. Yet, as it forms the only protection that artists, authors, sculptors, engravers, photographers, designers, and numerous other persons, can rely upon, it is not too much to say that they ought to study it and to learn it thoroughly, in order that they may not only define their own rights, but avoid danger and trouble by respecting those of other persons."

Apropos to my letter on "Ownership of Negatives" in your last number, a case was settled on the 18th instant which illustrates the ignorance existing amongst photographers with reference to their rights:—

Mr. J. J. Elliott, of the firm of Messrs. Elliott and Fry, Baker Street, summoned Teresa Conroy to appear on the 3rd instant, at Wandsworth Police Court, to meet his complaint of selling two copies of a photograph of Mr. John Bright, M.P., the copyright of which was vested in complainant. At the hearing, complainant was represented by Mr. George Lewis, junr., well known in connection with copyright prosecutions; the defendant was without legal assistance. As I am informed, when it became necessary to produce the original negative of Mr. Bright, or an impression therefrom, for comparison with the alleged piracies, they were not forthcoming, complainant having forgotten to bring them. The magistrate then adjourned further hearing until the 11th instant, for their production. The matter was brought under my notice, and, at the request of defendant, Mr. J. J. Merriman (of the firm of Merriman, Powell, and Co.) appeared on her behalf. I

wrote to Mr. Bright, requesting to be informed whether the prosecution were sanctioned by him. To that letter I received the following reply:—

"Rochdale, February 8th, 1871.

"SIR,—My father desires me to write and tell you that he is sorry he cannot write to you himself, as at present he is obliged, on account of his health, to abstain from letter-writing as much as possible. He is exceedingly sorry to hear the story you relate in your letter. He has had nothing whatever to do with it; and if his consent had been necessary to proceed with the prosecution, he certainly should never have given it, as he condemns the whole proceedings. He hopes, however, that some means will be found to help the poor woman out of her difficulty.—I am, yours truly,

(Signed) MARY H. BRIGHT.

At the hearing on February 11th it was contended by Mr. Merriman that the copyright (if any) was vested in Mr. Bright, the negative having been produced by his permission, and that there was no evidence to prove he had assigned his right to the complainant. The negative was produced, and also the certificate of registration, which described the photograph as being a vignette, three-quarter face. Here was a discrepancy, for the negative was not a vignette; it also stated that a photograph was annexed. The magistrate held that he was entitled to have the best evidence that could be produced, and adjourned the further hearing until the 18th instant, for the production, from Stationers' Hall, of the memorandum of registration with photograph annexed.

On the 18th instant defendant, with Mr. Merriman, appeared, when they were informed that a letter had been received from Mr. Lewis, abandoning the prosecution. To this Mr. Merriman demurred, and claimed the decision of the court. The magistrate thereupon dismissed the summonses, and adjudged the complainant to pay forty shillings costs to defendant.

Now, all this annoyance and expense to both parties would have been avoided if Messrs. Elliott and Fry had studied the first section of the Copyright Act, and had taken care that their transactions had been conducted in accordance therewith.

When distinguished persons give sittings to photographers, for the purpose of publication, they do so, I presume, to afford the public the opportunity of obtaining their portraits. They have no wish to retain the copyrights themselves, and still less desire to create an exclusive monopoly for the benefit of the photographer. Her Most Gracious Majesty, I think, would be sorry to hear that any of her subjects had been fined or imprisoned for making copies of her portrait. I can understand when a modern "Aspasia," whose "charming copyright photograph" delights "Justitia," visits Baker Street for the purpose of having her portrait taken, she may do so with a double view of benefitting herself by its sale, and, at the same time, advertising her charms by a means denied in olden time to her predecessors Phryne and Lais.

That a knowledge of the law of copyright should be acquired by producers and sellers of photographs is a proposition which cannot be denied. Recently a firm in the city applied to me for advice with reference to certain legal proceedings they were threatened with for infringement of the copyright of a photograph relating to a certain royal personage. Upon enquiry, I found that copyright had never been acquired, and, further, that the photograph in question being libellous, there was no property existing in it at common law.—I am, sir, your obedient servant,

London, February 20th, 1871.

J. CUNNINGTON.

COPYRIGHT.

SIR,—I am too old a hand to complain of criticism on anything I may happen to have written; that is the penalty writers must submit to. I do not complain that Mr. Cunnington differs from me in his views of copyright and piracy; he has a perfect right to do so; and, on personal grounds, I should not claim space in your Journal to notice them; but, seeing that large commercial and pecuniary interests are at stake, I think I should be wanting in my duty to my brother photographers if I did not raise my voice, warning them not to rush hastily into a course of action on the faith of Mr. Cunnington's law, but first to seek the opinion of some qualified legal adviser. I earnestly entreat them to pause, or they may find, too late, that they are landed in an awkward position.

It must be remembered that Mr. Cunnington is not a professional lawyer; and, without claiming any infallibility for my own knowledge, I venture to think that many of your correspondent's notions of copyright law, and methods of interpreting

a statute, would simply provoke a smile if urged before any tribunal of lawyers, and it is by such a tribunal any case must be determined.

I have no intention of entering into a controversy with Mr. Cunington. I have neither the inclination nor the time for it, nor would any good result.—I am, sir, your obedient servant,
P. LE NEVE FOSTER.

DISSOLVING VIEWS WITH ONE LANTERN.

DEAR SIR,—Allow me to ask "Silvester" how otherwise such an attack as his could be answered except as joke for joke, or, in his own words, sheer nonsense in reply to sheer nonsense? There is scriptural precept for this mode of proceeding. I leave his persistence in uncharitableness to the estimation of your readers, as also his attempt to pervert the jocular idea of the cucumbers into a serious recommendation of the experiment, instead of, as was intended, a laughable hit at those who would attempt either impossible or unprofitable ones. I also wish to inform "Silvester" that the idea is not mine; had he been better read in standard literature, he would have known it. His remarks respecting the passage of the light from one system of lenses to the other are, in the main, correct, but, as he has done more than once, he has over-shot his mark: perfect darkness will not continue until the light has reached the centre of the other optical system, but only relatively so as to its distance from such centre.—Yours respectfully,
J. MARTIN.

106, High Street, Ilfracombe.

PERSONAL INSTRUCTION FOR PHOTOGRAPHERS.

DEAR SIR,—My apology for troubling you is, that I think I can call attention to a universal want that I have not seen expressed, but which, I believe, widely exists amongst professional photographers everywhere. I mean the difficulty or impossibility of obtaining skilful personal tuition.

I am an example. I have, I believe, as good a studio, apparatus, and fittings, as any in Brighton, and that is saying no little; but, unfortunately, I am a dunce. I can work away in one direction well enough, but have neither time (for the mill must be kept going) nor ability to find out how to make the most of the means at my disposal, at the same time am very anxious to get good results, so as not only to compete with my neighbours, but also to keep pace with the times. Not only that, but in any walk a man may undertake I hold it his duty and interest to cultivate himself by all the means in his power.

Now, sir, it would be a good thing if some gentleman of established reputation and undoubted skill would make it his business to call round on all those who desire it, and, for a certain and liberal fee, just set them straight and tell them where they are wrong. I believe he would be received with open arms and hearty welcome, and the improvement to portraiture at large would be very desirable, not only to the profession, but would be appreciated by the public. Do you know anyone who would come to me for a week?—I am, sir, yours respectfully,
H. S.

Brighton, February 16th, 1871.

[It is very probable that such instruction can be obtained for a proper consideration. But gentlemen of established reputation could scarcely be expected to call round in the manner suggested. Photographers requiring such instruction must be prepared to pay a high rate for it, as there are but few photographers of ability and reputation who have not specific business, which would be neglected whilst they were giving lessons.—ED.]

ARITHMETICAL CURIOSITY.

SIR,—There is really nothing remarkable in what your correspondent points out, in last week's News, as an "Arithmetical Curiosity." The hand of the clock going over the face once points in succession to numbers which, when added together, amount to the constant sum of 78. Now, as the number of years of our Lord are indefinite, and may run to any number whatever without limit; and as, at every interval of 78 years, there will be a number divisible by 78, it is clear that when 24 of such intervals have elapsed, the year will be 1872. Why your correspondent assumes the hand to pass over the face only once in the 24 hours I do not know, except that it is convenient to produce the number 1872, which he desires. Let him take what is the fact—viz., that the hand goes twice over the face in 24 hours—and then he will have twice 78, or 156, as his factor, and the year will then be 3774, and not 1872.

The fact is, that any assumption may be made as a basis; and, as the number of years is indefinite to choose from, there is no difficulty in finding one which will be any multiple of the assumed basis that may be fixed upon.

By-the-bye, your correspondent speaks of a "sidereal" day. This is, no doubt, a slip. He means evidently a "solar" day as the former is, as we all know, a little short of 24 hours.—I am, sir, your obedient servant,
ARITHMOS.

THE COMPLETION OF TIME.

SIR,—A correspondent has noted in your paper that the hours of the clock added together and multiplied by the twenty-four hours of the day gives the number 1872.

I do not know whether his idea is that next year, 1872, will be, as it were, "the completion of time," and that the saying of the angel in the Revelation will be then fulfilled, that "time shall be no more." But it is somewhat remarkable that if he takes the Jewish mode of calculating time, and, in like manner, adds the figures together, and, in addition, includes the various elements or representatives of time, he will obtain the figure 4,004, or the exact age of the existence of the world under the old dispensation. Thus the hours from sunrise to sunset would give 63 which, being doubled, equal 126 and multiplied by 24 " " 3,024 to which add the different components of time, i. e. :—

One year	365 days
Months in year	12
Days in month	31
Days in fortnight	14
Days in week	7
Minutes in hour	60
One day more for leap year	1

Gives 490
which being doubled, equal 980

4,004
WILLIAM JUPE.

Your obedient servant,
336, Kingsland Road, February 21st.

PHOTOGRAPHIC MEDAL AT ART WORKMAN'S EXHIBITION.

DEAR SIR,—Permit me to correct an error in your issue of last week which your correspondent has made relative to an Art Workman's Exhibition held in Manchester. The one which he evidently means, and to which I contributed, was held at the Agricultural Hall, Islington, London, and the silver medal was awarded to me for a series of untouched photo studies and carte-de-visite portraits, and not for a single photograph.—I am, yours truly,
AUGUSTUS LAFOSSÉ.

Rock Mount, Higher Broughton, Manchester, Feb. 20th, 1871.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.
Report of the Council.

THE proceedings of the past year, although destitute of any important original discovery, may, nevertheless, be regarded as affording indications of progress in many branches of photography, and may be said to furnish evidence of a wide-spread diffusion of art-knowledge, which has been productive of improved results both in portraiture and landscape, and did not fail to exert a marked influence on the quality of the works contributed to the Society's last annual exhibition.

The year's proceedings commenced with the paper read by Mr. Samuel Highley at the last Anniversary Meeting, and entitled "The Magic Lantern in Relation to Photography," which was illustrated by an extensive array of apparatus. At the March meeting, Mr. W. J. Stillman brought forward a new "Theory of Photographic Development," according to which the sensitive film is supposed to be in a normal state of continual vibration, and to receive its impression by virtue of the actinic wave impinging upon it, producing a sort of inertia which immediately effects the disunion of the elements composing the body thus submitted to the action of the chemical rays. The author, in the course of his remarks, hinted at the possibility of the transference of the undeveloped impression on a dry film to another film placed in con-

tact with it without the agency of light; and also stated his conviction of the futility of all attempts to produce photographs in natural colours, an opinion which Mr. R. W. Thomas afterwards took occasion to examine from an independent point of view, and arrived at the same conclusions.

Another paper, read on the same evening, was descriptive of Mr. R. H. Courtenay's Photo-Printing and Heliographic processes, some features of which appeared to be similar in principle to Herr Pretsch's method of working, or that formerly known by the name of the Photo-galvanographic Process. A suggestion to this effect brought on a lively discussion, which was revived at the meetings of May and June, when a large series of Paul Pretsch's works were exhibited. The prize pictures of the Amateur Photographic Association were placed on view at the March meeting.

In April Dr. Mann gave a description of Mr. Browning's Stereograms of the Planet Mars, and showed four sets of pictures centered on different parts of the body of the planet. At the same meeting, Dr. Anthony gave an interesting paper entitled "The Photographic Atelier in 1870." In this communication a novel arrangement of studio and operating-rooms was proposed, which economized to the utmost the space available for the working of the camera. The suggestion was, in some particulars, approved; but a disadvantage presented itself in the circumstance that such a form of studio would only permit of photographic operations being conducted under one invariable system of lighting, and the production of pairs of portraits might be attended with difficulty.

The May meeting was occupied with a description of Mr. Burgess's mode of producing his Carbon-eburneum Prints, specimens of which were exhibited. Mr. J. W. Swan had a paper on "The Chemistry of the Carbon Process," which has been reproduced in many of the foreign journals; and Mr. England favoured the Society with some "Remarks on the Dry-plate Processes," and showed comparative results of his working a modified gum-gallic process against collodio-albumen, coffee, and highly sensitive plates prepared with acetate of morphia. When employing the gum-gallic process, Mr. England uses a more dilute preservative, which, it is said, gives increased sensitiveness with less chance of blurring; whilst for developer he much prefers the use of alkaline pyro, instead of the gelatine-iron solution originally recommended. Mr. Gordon, however, preferred the original formulæ, which gave the keeping qualities, the lack of which Mr. England had experienced. This branch of practical photography received further elucidation at the November exhibition, where Mr. Gordon showed prints from negatives taken by five different dry processes against the ordinary wet plate. The gum-gallic method was followed in the production of the pictures shown by Mr. Grant and Mr. Whiting, and favourable specimens of collodio-albumen work were seen in the pictures of Messrs. Giberne and W. D. Sanderson, coffee, and tannin with malt, being likewise represented.

Photo-mechanical printing formed the subject at the June meeting, Mr. C. F. Jessen giving an account of the Lichtdruck process, as practised by Messrs. Ohm and Grossmann, of Berlin. Specimen prints were shown, including a variety of subjects, and the largest plate measured 15 by 12 inches. The results of a somewhat similar process called Heliotype, and worked by Messrs. Edwards and Kidd, were shown at the exhibition, where, besides, there was a magnificent display of Woodburytypes of the old order, and a single specimen of a new photo-cu-graving process, which Mr. Woodbury has kindly promised to bring before the Society when perfected.

Carbon printing has progressed during the year, as evidenced by the results shown by Messrs. Sarony and Co., Spencer, Downey, Window, and by the government departments. A noteworthy circumstance in this connexion is the fact that the Scarborough firm first named have succeeded in producing for Messrs. Agnew a reproduction (in carbon) which extends to the extraordinary dimensions of 45 by 21 inches.

Photo-crayons of fine quality were shown at the exhibition by Mr. R. H. Preston, of Penzance, and by Messrs. Vandye and Brown, of Liverpool; but it does not appear that much progress has been made in their direction during the past year. The same remark is applicable to the art of photo-enamelling, which was represented last November by one foreign and three English exhibitors. Enlargements have improved in quality, several good examples being shown in the exhibition, and a couple of subjects of exceptionally high merit were forwarded as the work of an American confrere, Mr. Albert Moore, of Philadelphia. A special application of photography to the delineation of insects, diatoms, and other microscopic objects on an enlarged scale, has been very successfully carried out during the year by Mr. Thomas Higgin, president of the Liverpool Amateur Society, with the assistance

of Messrs. Robinson and Thompson. A series of these micro-photographs constituted an important feature of the exhibition, and were greatly admired. The progress of art photography was admirably illustrated at the exhibition in the sea-views and landscapes of Messrs. Robinson and Cherrill, the combination prints of Mr. F. C. Earl and Mr. Hubbard, the portrait studies and cloud effects of Colonel Stuart Wortley, the portraits of Valentine Blanchard, R. Sliugsby, Rejlander, Brookes, Wane, and a host of others.

At the December meeting two papers were read. In one of them Mr. H. B. Pritchard described his mode of employing the collodio-chloride process for the reproduction of faded prints, accompanying his remarks by the display of a series of highly-illustrative specimens. Mr. Daniel Spill gave an account of a material to which he applies the name of Xylonite, as being manufactured from gun-cotton or xyloidine and certain oils or hydro-carbon solvents. From the variety of articles exhibited, the wide applicability of this subject could be inferred, and Mr. Spill showed two kinds of adiacinic material suitable to photographic tents and windows. It will be in the recollection of the members that the last meeting (January) was entirely occupied with the full description of Mr. Henry Cooper's mode of working the collodio-bromide process, which, in his hands, seems to have given very satisfactory results, and may possibly be further improved by the addition of chlorides, as suggested by the author.

Photography has of late been brought into requisition, and made to play an important part in the operations of war on the continent; thus the Topographical Depot at Berlin has regularly furnished route-maps on a reduced scale for the guidance of the German commanders in foreign territory; and besieged Paris itself has for several months partly depended for its communication with the provinces on a system of pigeon post, in which despatches and intelligence were carried in the form of minute photographs, afterwards requiring the aid of a microscope to be deciphered. At home the help of photography has been invoked in connexion with criminal law, and for the identification of offenders. It has likewise fulfilled important functions in recording the phenomena of the recent solar eclipse, Lord Lindsay and Mr. Young at Cadiz, and Mr. Brothers at Syracuse, having, it is reported, been successful in securing good photographs of the corona.

The resolution passed at the last anniversary meeting restricting the issue of the Journal to eight months in the year, and limiting its scope strictly to the purposes of an official record, has had the effect of very considerably reducing the expenditure upon the Journal without interrupting in any way the direct communication of the Society with its members. A new contract was entered into with the publishers, and the cost of editing reduced, so that this item in the balance sheet now shows a reduction of about one-half upon the corresponding outlays of previous years. The financial success of the exhibition is also a matter of congratulation; for although the Society might be inclined to consent to a moderate pecuniary loss in consideration of the benefits conferred, it is encouraging to find that the public are willing to pay (on one day in the week at least) for admission to view the best collection of photographs of the year, and that the amount so realized, supplemented by the profits on the sale of catalogues, was nearly sufficient to cover all the charges incurred in connection with the exhibition. The galleries remained open for upwards of three weeks, and were well attended throughout this period, great interest being manifested in the works of art therein displayed.

Thirty-five new members have been elected during the year, which, allowing for losses by death and retirement, raises the number of last year (240) to as many as 263 present members. Amongst those who resign their connection with the Society, the council regret the loss of two well-known names, Mr. J. Durham and Mr. B. B. Turner, who have interested themselves in the proceedings of the Society since its first formation. The council have greater cause of regret in the circumstance that we have lost by death three distinguished members of the Society. They are the ex-president, Sir Frederick Pollock; the senior vice-president, Rev. J. B. Reade, F.R.S.; and Mr. Thomas Ross, Optician. To this report are appended obituary notices of the deceased members.

(To be continued.)

Talk in the Studio.

THE WOODBURYTYPE PROCESS IN PARIS.—We are happy to learn that the establishment at Asnières, built by MM. Goupil and Co. to carry out the photo-relief printing process, reported to have been destroyed, is found to be uninjured, and

will, in a few days, be again in full work. Mr. Smith, the superintendent and manager, has been engaged in the defence of Paris, having in charge the electric light, the apparatus used at Asnières for producing light for photographic printing having been requisitioned for purposes in connection with the defence. Although in a post of danger, as many as 400 shells in one day falling within 200 yards of the position of the electric lamp, Mr. Smith was not injured, and only lost eighteen pounds in weight through short rations.

LICHTDRUCK.—The photo-collographic processes, which have received on the continent the generic name of Lichtdruck, continue to progress. We have just been favoured by Dr. Liesegang with some admirable photo-micrographs printed by Pastor Thalén, who has worked out one of these processes.

INDIAN CEMENT.—The basis of this cement always consists of "gluten," made from wheat flour, by washing a quantity of the best wheat flour in a running stream; as long as any "farina" remains the water will run off white from the muslin cloth in which the flour is contained. When the water runs colourless, take out the coagulated mass and beat it into a viscid dough, in a clean Wedgwood mortar, or between two clean pieces of hard wood; it will soon become like birdlime. For most purposes this gluten, called "nusliestoh," or "sitting down," is mixed with about a quarter of its weight of coarse sugar or treacle, and the same quantum of newly-burnt quicklime in fine powder. Coarse furniture, fine cabinet work, chinaware, glass or metal, or wooden mountings, horn and ivory to each other and to wood, stone to metal, have all been repeatedly joined by—E. O. S.—*English Mechanic*.

COPYRIGHT CASE.—A few days ago, at Wandsworth Police Court, Mrs. Conroy, of Battersea, appeared for the third time to answer a summons for selling copies of a photograph, or the negative of a photograph, of Mr. John Bright, M.P. The complainant was Mr. Elliott, a photographer, who claimed to be the owner of the photograph, and he alleged that the copies were sold without his consent. On the case being mentioned, Mr. Merriman, who defended, was informed that the summonses had been withdrawn. Mr. Merriman expressed surprise, and said he had not received any intimation of that. He had appeared at some personal inconvenience, and therefore he asked for costs. Mr. Dayman then made an order upon the complainant to pay 40s. cost to the defendant.

"ANTI-PHOTOGRAPH DEMONSTRATION."—*Punch* says:—"A meeting of the Government Intimidation Society was held last night at the Donkey's Head, to concert measures for expressing the indignation of the People at the tyranny practised on convicts in prisons at Liverpool and elsewhere, in compelling them to sit for their photographs. The chair was occupied by Mr. Slackjaw, who announced himself as a representative of the Working Man. He was not a thief, but advocated equalization of property, and sympathised with his fellows. Prison authorities had no right to photograph a man who had not been sentenced to undergo that process, which was a gross indignity. The People must assemble in their thousands, and tell their tyrannical Rulers that they would not stand it. Mr. Ruffles, an habitual criminal, said that he had his self been photographed in gaol. But he had done the beggars. He had shammed conversion, pretendin' to be a penitent thief, and pulled a mug accordingly whilst he was took. He didn't much fear he'd be knowed if he was lagged again. He was a man of few words, and so, to conclude, would move a resolution that this here meetin' take immedate steps to 'old a demonstration in Trafalgar Square, with a view to overawe the 'Ome Office, and demand perfection of coves in quod from bein' photographed agin their will. The resolution, having been seconded by another thief, was then put from the Chair, and carried by acclamation. Although the photographic grievances may seem exclusively a thieves' question, the demonstration against it, about to come off in Trafalgar Square, is not expected to differ, as to those who will take part therein, from other customary displays of menace in respectability."

To Correspondents.

F. ASHTEAD.—Honey plates should be washed with distilled water before development, and then developed with pyrogallie acid with a very small trace of citric acid and nitrate of silver added. To gain intensity, more silver and acid may be added after the image is out. 2. The use of a preliminary coating of india-rubber on the plates will not injure the nitrate bath.

HERPESUS.—Much depends on circumstances and individual skill in working different processes. As a rule, we should prefer the collodion transfer process for enlargements, as involving the least variation from ordinary operations, as the least trouble, and, being the most sensitive process, best suited for the uncertain light in our climate. The next process, nearly equally simple, is the production of an enlarged negative from a transparency, and printing in the ordinary way. The solar camera is excellent when well managed, but, except where it is in constant use, it is troublesome for use in the hands of ordinary portraitists. Development printing with the use of Mr. Solomon's magnesium lamp is simple and convenient to those familiar with development printing operations. 2. There are two or three causes for your failure in producing satisfactory collodion prints, the chief of which is probably short exposure and over-development—the latter especially. Plenty of exposure, plenty of acid in the developer, and rigid protection of the plate from light, must give you a clear image unless the chemicals are out of order. Toning with gold removes the rusty opaque effect of the shadows which is sometimes present, and it also aids in removing traces of foggy deposit from the lights, especially if, after toning, the plate be placed for a few moments in the hypo fixing bath.

G. T.—Although the offensive smell of the sample of paper you enclose would suggest doubts of its fitness for use, yet, as a matter of experience, we should have no hesitation in using it. Some of the finest prints we have seen, and which we have found to be most permanent, were produced on paper which had a villainous smell, as, indeed, the paper of the same maker generally had.

WAITING FOR FRIDAY.—You will find full details of M. Adam-Salomon's new system of lighting in our last volume, and also in our YEAR-BOOK recently published. 2. It is very difficult to remove stains from absorbent substances like wood. Iron stains on oak will produce something like the stains of writing ink. Oxalic acid will best remove them. 3. Your question, "What is the best way to make a good negative bath?" is somewhat too vague and comprehensive for a complete answer in this column; but we may state, in general terms, dissolve thirty-five grains of pure nitrate of silver in each ounce of pure distilled water, and to each pint add two grains of iodide of potassium. If everything be pure, such a bath will work well at once. If it fail, add a few grains of carbonate of soda. Sun the solution for a few hours, filter, and then try the bath, which should work well. 4. Fibrine of blood is a tough gelatine substance, obtained by washing coagulated blood, to remove all that is soluble, in cold water. The residue is fibrine. 5. Such a piece of wood, if free from warping, and of suitable surface, will answer. 6. Paint it grey.

ARTHUR THOMPSON.—Shellac varnish is made by dissolving shellac for troughs in wood naphtha or methylated spirit, at the rate of a drachm or more to each ounce. 2. Either glass or porcelain will serve if properly annealed. There are porcelain dishes expressly suited to this kind of work. Neither will injure the bath.

A. H. L.—We are uncertain. Try Mr. How, of Foster Lane.

G. LEAFANG.—The imperfections in your transferred print spring from various causes. The negative does not appear to be a suitable one for work of this kind; it is too hard and dense. The exposure has also been somewhat short, and the development somewhat long. The rusty portions of the deep shadows are due to the toning operation not having been carried on long enough to penetrate through the densest part of the deposit. The spots where the film has been torn are due, probably, to the use of a plate not quite perfectly cleaned. 2. For small pictures the enamel transfer paper, kept by most dealers, is best. For large pictures, coat plain paper with gelatine, as you have done—not albuminized paper, nor the back of albuminized paper. 3. Yes; we believe so. 4. We have often published instructions for transferring, but perhaps you will find hints on that point of most value to you in an article on page 373 of our volume for 1869.

E. ALLEN.—We regret that we have no facilities for writing intimations of the kind to which you refer. 2. We do not know of any special builder of photographic studios. The want exists, but has not been met.

M. MARQUAND.—Thanks. In our next.

J. J. BLACKMAN.—Except for special purposes, and to meet special necessities, a simple 15-grain solution of iron with 15 minims of acetic acid answers as well as any developer we know. Or add 15 grains of sugar-candy, and use half the proportion of acid.

W. W.—Both gloves and finger-stalls are pure india-rubber.

ISAAC WILDE.—Thanks. In our next.

N. N.—The *Photographisches Correspondenz* is published in Vienna.

R. L.—On page 83 of our YEAR-BOOK for 1866 you will find the article describing the use of Schlippe's salt for producing scarlet negatives. The same method is, of course, applicable to the toning of transparencies.

Several Articles in type, and several letters, are, from the pressure on our space, unavoidably compelled to stand over until our next. Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 652.—March 3, 1871.

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THE PHOTOGRAPHIC SOCIETY OF LONDON— ITS NEW PROSPECTS.

THE treasurer's report at the last meeting of the Photographic Society of London was one upon which all interested, not merely in the Society, but in the progress of photography, can, with propriety, be congratulated. We need not pause here to enlarge upon the importance to the progress of the art which is involved in the existence of a healthy active representative society. It is not alone to its ordinary meetings, and the papers and discussions, we should look for the action of such a society, but to its vast collateral influence. Its exhibitions alone are of incalculable service to the art and to its votaries. Its journal has been in times past—when the art was insufficiently advanced to afford scope for private enterprise in journalism—of enormous service to the art; and in a variety of other modes photography and photographers have been served by the Society. It might have been of more service, and it may still be. Some of the most expensive of its past efforts in early days were well-meant, but ill-judged; and for some years past its crippled financial position has limited its power to serve its members and the art. That crippled position is at an end. The Society is not only practically out of debt, but possesses the prospect of an income sufficiently in excess of its routine expenses to permit the anticipation of various projects of a pleasant character.

As photographers know, for a number of years the expenses of its Journal were swamping the Society, and even after the council had resolved to cease its issue as a journal of general photographic literature, simply issuing a monthly record of the transactions of the Society during the session, and so get rid of a large source of current expense, the old debt still hung like a mill-stone round the neck of the council, not simply hampering their action, but actually forbidding the contemplation of any steps involving the outlay of money. By the gradual operation of the system of strict economy to which the council bound themselves, the debt was materially reduced, and although a residue of the old debt of the Journal, of nearly £200, was due when the last balance-sheet was made out, we believe that at this moment the Society is practically out of debt. Its balance-sheet showed it to be more than solvent, but a portion of the assets were still in supposition. Since that balance-sheet was prepared, a number of gentlemen on the council have shown their confidence in the stability of the Society, and their immediate desire to see it free from the incubus of debt, by compounding for life membership, on the original terms imposed in the youthful days of the Society, namely,

the payment of a sum of ten guineas, several intimating their readiness to resume the payment of the annual guinea at any time when the position of the Society might render it desirable.

Thus out of debt, and with the prospect of funds accruing from the regular income of the Society considerably in excess of its routine expenses, members will naturally look forward to special boons to be received. In the admirably clear resumé of the position of the Society given by the treasurer at the last meeting, he stated that the income of the Society from subscriptions was £208 per annum; the income from the Journal, in round numbers, £50 per annum; and the income from the November exhibition, £28; making a total income of £358. Against this the expenses are, for rent and general purposes of the Society, £55 per annum; for printing the Journal, £60 per annum; salary of editor of the Journal, £50; expenses of the exhibition, £38; making a total of £203, and leaving a balance of £155 per annum to be expended for the advancement of the art and the benefit of the members.

This position and this prospect are to us sources of unmitigated satisfaction. We have always felt and expressed complete confidence in the Society, in the value of its influence, and in its power of recuperation from the crippled position into which a variety of untoward circumstances and some early mismanagement had plunged it. But after exultation, members will naturally ask: What next? To what purposes will the surplus income be applied? To this, at present, no definite answer can be given; but all concerned may easily feel assured that a council to whose energy and prudence they owe such a satisfactory position will not misuse the surplus they have been endeavouring to create. We may, however, offer two or three suggestions as to the probable and desirable action of a society with finances at its disposal.

One of the most valuable aids to progress is the maintenance of an annual exhibition; and as the Society has established and upheld one during the last few years of its financial struggle, it cannot be doubted that the exhibition will be maintained in future. Possibly some increased efficiency might be given if in future the exhibition could be kept open longer, and advertised more extensively. With funds in hand this might be done without risk, and it is by no means improbable that the increased income from the exhibition might fully cover the additional expense. As also connected with the exhibition, it is possible that the establishment of a series of annual prizes might be found of value in stimulating excellence, and giving the increased interest to the exhibition which generally attends competition. The wisdom of offering such prizes has, we know, been doubted. We do not enter into the discussion here, but simply remark

that we believe that the majority of those likely to compete, and within the ranks of those likely to take prizes, are in favour of such prizes. The Society has already dies for medals, and and the annual cost of the bronze or silver, and labour in striking the medals, cannot be great. Another use for medals would consist in carrying out an old resolution of the Society, namely, that the communication of papers to the Society of unusual excellence, and the announcement through the Society of discoveries and inventions, should be rewarded by a medal to be called by the President's Medal. This admirable resolution has remained in abeyance simply for want of funds; its revival and carrying out would clearly tend to the advancement of the art, by encouraging the communication of valuable matter to the Society.

But, perhaps, the most generally useful, and certainly most popular, method of applying some portion of the available funds of the Society will consist in the periodical distribution of presentation prints. To such a distribution members have an undoubted claim, not only because it is a natural and legitimate step, but because the present energetic president has, with a perfect apprehension of its desirability, repeatedly placed hopes before the members of future boons of this kind when the finances would permit the Society to venture upon such a step. Some such prints have already been distributed to members, but these have been chiefly due to the generosity of individual members. In future, more definitely organized steps can be taken in the matter; and here we may throw out a hint for the consideration of those concerned. It appears to us that presentation prints from a representative society should have a higher value than that derived from their excellence as pretty photographs. The prints themselves should have a representative character. Why should not the members receive through the agency of the Society an example of every novelty of any special value or importance which is introduced into the art? Country members of the Society at present receive but little in return for their annual subscription, save the satisfaction of assisting to maintain a representative society for the art they love. By the organization of such a system of presentation prints as that which we suggest, they would acquire a valuable *quid pro quo*, which would in all probability be so highly esteemed, that the Society might easily double or treble its number of members. We should suggest that examples, in succession, of the various carbon processes, of the various photo-mechanical processes, of the various new chemical printing processes, which come before the public from time to time, be selected as presentation prints. These might always be good or interesting as pictures, besides illustrating a process. They might also illustrate styles, or sizes, or special pictorial effects. Such a scheme, although comprehensive, need not be costly. In many instances the inventor or projector of a new method would willingly meet the Society on very moderate terms, the honour and publicity being an important element in the recompense. By the expenditure of a comparatively small proportion of the annual surplus, we are satisfied that a scheme of presentation prints might be established which would far more than compensate every member for the amount of his annual subscription, besides all the other advantages of the Society.

A variety of other useful purposes exist to which the Society might with propriety devote funds at its disposal. The establishment of a library of scientific and artistic works, for instance, might be found serviceable to some of its members, as also the establishment of a photographic museum, in which examples of everything illustrating the art and its appliances might be preserved. It is unnecessary, however, to consider remote contingencies. At present we have simply to congratulate members on their deliverance from the thralldom of debt, and the prospect of some very early and definite advantages arising from their emancipation.

OBITUARY.

WE have deep regret in announcing another gap in the ranks of eminent photographers. Mr. William White Rouch, of the Strand, died on the 18th inst., at Mentone, where, for several years passed, he has been in the habit of spending the winter, to avoid the severe cold of our own climate, so unsuited to the pulmonary affection from which Mr. Rouch suffered. Although only thirty-nine at his death, Mr. Rouch's name has been, as our readers know, for very many years associated with photography, first in connection with the firm of Burfield and Rouch, and subsequently as the senior partner of W. W. Rouch and Co., the firm having been for many years especially associated with the manufacture of Mr. Hardwich's collodion, under that gentleman's special sanction. It was not simply, however, as associated with the manufacture and preparation of photographic chemicals and apparatus that Mr. Rouch's name was connected with photography; he was himself a photographer of singular ability and taste, his landscapes being rarely exceeded for fine judgment in selection, choice of light, and unusual delicacy of treatment. Many photographers will remember his pictures exhibited in 1862 and subsequent years as possessing these qualities, and in the Conduit Street Exhibition of 1869 his views in the neighbourhood of Mentone were admirably illustrative of the fine taste and skill which characterized his work. His interest in landscape photography led to many improvements in photographic tents and out-door appliances devised as the result of personal experience.

Photographers will be glad to learn that the decease of Mr. W. W. Rouch will not cause any interruption in the business of the firm. His brother, Mr. S. W. Rouch, who for fifteen years has been associated with the business, and upon whom for years past, owing to the delicate health of his brother, the commercial management of the establishment has worthily devolved, will still continue in charge of the business, in the transactions of which no change will take place.

GUM COFFEE PROCESS.

OUR readers know that one of the dry processes producing the most sensitive plates is the gum coffee process of M. de Constant, a detailed account of whose operations we shall issue very shortly. We shall shortly have something to say on the very admirable examples with which M. de Constant has favoured us. In the meantime we append some details by Mr. Robert Day, of Bournemouth, who has been trying gum and coffee, and reports in the *Journal* of the Society.

No. 1.—Pure ground coffee 2 drachms
Boiling water 4 ounces.

When cold, filter the infusion into a bottle.

No. 2.—Gum arabic 1 drachm
Sugar candy 20 grains
Water... .. 4 ounces.

Dissolve and filter for use.

Mix together equal parts of Nos. 1 and 2 just before using. First of all clean the plates thoroughly, and then draw a camel's-hair pencil, moistened with diluted albumen (white of egg one part and water three or four parts) round the edges of the plates, letting the pencil form a margin on the plate of about three-sixteenths of an inch all round; when dry the plates are ready to receive the collodion. Sensitize until all greasy markings have disappeared, and wash well under a tap, finishing with a little distilled water; then apply the gum and coffee mixture, allowing it to flow over the plate and run off into the sink; pour some more over the plate, which may be returned to the stock-bottle; then set aside in a dark place to dry, when it will be ready for use.

To Develop the Plate.—First flood it with water for a few seconds, until the film is saturated; then pour on a two-

grain solution of pyrogallic acid; keep this on until the image is well brought out, then add a few drops of a solution made as follows:—

Citric acid	20 grains
Nitrate of silver	20 "
Water	1 ounce.

This will have the effect of making the image burst out in full vigour: keep pouring the solution on and off till the required degree of intensity is obtained.

The above constitutes the sum and substance of my first attempt in the way of dry-plate work; and having been quite an invalid ever since, I have been prevented from trying further experiments. I shall be glad to know that the method answers in other and more experienced hands, and hope that some dry-plate worker may be induced to give it a trial and report the results.

WASHED ALBUMINIZED PAPER.

THE employment of washed sensitive paper is a subject of very material importance to the photographic printer who has not yet embarked on the adventurous enterprise of carbon printing. Hitherto, all who have used this method of working seem to have succeeded so well in their efforts as to be mightily pleased with it in all its bearings, and have recommended its adoption, both on the score of simplicity and of moderate cost. In Germany many advocates have come forward, and in this country Colonel Stuart Wortley and several other photographers of eminence have been warm in its praise. This being the case, it is with some surprise that our readers will read M. Engelmann's experiences of the method, which are stated to have been obtained in actual practice on a large scale. M. Engelmann does not deny the superiority of printing in this way on several points, and believes, indeed, the method to be a useful one for amateurs, and in studios where but little work is executed; but the requirements to be attended to are, to his mind, too numerous and complicated for everyday working.

While, therefore, M. Engelmann thoroughly believes in the value of employing washed sensitive paper, and concurs in the opinion already frequently expressed of the great advantage afforded by the suppression of the daily operation of sensitizing, he nevertheless abandons the method because he finds his assistants do not practically, for want of attention to details, secure good results at all times. When it is remembered that, after all, the necessary manipulations consist simply in allowing the pads to remain in the fuming-box for a specified time, and in maintaining an adequate supply of ammonia in the saucers or dishes, we are certainly at a loss to discover the difficulty which exists in carrying out the operation as it should be; and we should truly rejoice if all requirements in photography were as easy of fulfilment as these.

Under these circumstances, therefore, he can hardly justify M. Engelmann's condemnation of the method, more especially as we ourselves have also had practical experience of printing with washed paper. If the fuming-box is well arranged, and sufficiently spacious to allow of some kind of sorting of the pads, as also of the entrance of two or three ammonia saucers, no difficulty should arise in working. All the pads should be placed in the box over night, and returned after being once used, a second treatment with ammonia vapour of an hour or two being sufficient to render the pad suitable for further use. With this arrangement, and by the aid of a few spare pads, it is possible to produce good uniform results, and the replenishment of the ammonia liquid every now and then is certainly no very great hardship.

The advantage of doing away with the tedious operation of sensitizing, except at rare intervals, is one not to be despised; and, moreover, the circumstance of thus being

always provided with a supply of sensitive material should be duly considered. The vigour and tone of the finished pictures are likewise fully equal, if not superior, to those produced in the ordinary manner, provided that care be taken to over-print well in the first instance, as the tint is much reduced in toning.

Dr. Vogel, in a communication we publish in another column, also points out the advantages of printing in this manner. He proposes, however, instead of the fuming operation, to introduce into the printing-frame a little powdered carbonate of ammonia. This is rubbed upon a thick piece of cloth or felt, which is placed upon the albuminized paper, being divided from the latter by means of a sheet of filter-paper; and a pad treated in this manner will, according to Dr. Vogel, serve for a whole batch of prints. Seeing that no danger is likely to arise to the negative from the fact of its being separated from the ammoniacal pad by two thicknesses of paper, we think this modification a very good one, and well worthy of trial by silver printers.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

TUITION AND ADVICE FOR PHOTOGRAPHERS.—CARBON, SILVER, AND PHOTO-MECHANICAL PRINTING PROCESSES.—MEDALS FOR PHOTOGRAPHERS.—THE VICTORIA CARD.—PHOTOGRAPHY AT THE FORTHCOMING INTERNATIONAL EXHIBITION.—THE PHOTOGRAPHIC SOCIETY OF LONDON.

I WAS interested in reading, in a recent issue of the PHOTOGRAPHIC NEWS, the letter of a gentleman expressing what I believe to be a want very commonly felt amongst professional as well as amateur photographers. I mean the need for some trustworthy instruction. It may be said, naturally enough, that men should acquire a perfect knowledge of any trade or business before commencing its professional practice; but that is just the difficulty. In my last "Echoes," referring to the apprenticeship system as proposed in America, I remarked that the majority of photographers "pick up" their knowledge of their business. Many of them would be glad to obtain instruction before they commence the professional career to which they have resolved to devote themselves; many of them would be glad of such instruction after having commenced business and discovered their deficiencies. But I fear the want will be found very difficult to meet. To make the instruction valuable, it should be given by men of recognized ability and known reputation; and these are usually so fully and profitably engaged, that their services must of necessity be costly, if attainable at all. To suppose that men of such position would call round upon photographers and offer their services is simply preposterous. The smallest honorarium which could be offered to a man of recognized skill and reputation would be (say) five guineas a day; and, whilst this sum would rarely pay him for neglecting regular business duties, it would be a rate of payment which few of those most needing instruction could, with convenience, pay for as many days' instruction as they would require. Doubtless there are many in the profession who would be glad to give lessons at a cheaper rate, but, as a rule, these would not be of the class whose instruction would be in demand. If a trustworthy consulting photographer were accessible, from whom tuition or advice might be obtained, it would often be a boon to the public; but it is more doubtful as to how far it might suit the purpose of any gentleman of skill to accept the position. The advice of the Editor of this Journal is, as its readers know, given freely upon almost every conceivable subject connected with photography, but it would be a boon often to be able to ask a personal opinion upon individual cases—upon the precise details, for instance, of constructing and arranging a glass-house in a given position; upon possibilities of modifying lighting arrangements; upon the condition of some bath or other solution which may be obstinately troublesome, and of which

a sample might be sent for examination. If, when requiring specific information demanding much more time and attention than he can ask of the Editor, the photographer could send his guineas and queries, knowing that, as he pays for the time and ability, he will get value in return from an experienced adviser, the facility for this, as well as regular personal instruction, would be a boon of great value.

I have no intention of opening the closed controversy of carbon *versus* silver printing. But I may, perhaps, be permitted to make an explanation to Mr. Woodbury, who asks what he has done that I should wish to draw him into the controversy? I cannot but think that Mr. Woodbury puts an odd construction on my remarks, when he suggests that they imply that a controversy exists between him and Mr. Edwards. The controversy as first initiated stood thus: Mr. Bovey affirmed that carbon printing was a failure, that it would never supersede silver printing, but that the photo mechanical printing process of Mr. Woodbury and Mr. Edwards, being superior to carbon printing, might eventually supersede silver printing. On the other side, the inferiority of carbon was denied, and as a practical trial of carbon and silver was about to be made to decide one element of the controversy, I suggested that photorelief prints and heliotypes should be produced from the same negatives, since these processes had been referred to as superior to carbon, and more likely to supplant silver printing. Surely there was nothing unreasonable in this; and surely, unless Mr. Woodbury is disposed to repudiate his champion, he should not reject the opportunity of a practical comparative test of the capability of his beautiful process.

The recent intimation of the award of Indian medals to English photographers was not only a gratifying announcement in itself, but it was suggestive, besides, of the enquiry: When is the London Society about to resume the distribution of medals to those who excel at its exhibitions? The last two exhibitions have contained examples of photography such as, I believe, have never been displayed before at any photographic exhibition in this country; but the exhibitors of this unusual excellence have no record of acknowledgment of their triumph. Medals used to be awarded at the London exhibitions; and although we know that the Society has been retrenching, would it not be easy to get up a special medal fund? I fancy that this would be found an easy task, and is one certainly worth consideration.

How is it that photographers in this country have not taken up the Victoria card—I mean, of course, taken up the idea of producing and pushing it? In America I am told that it is a success. In Continental Europe it has been taken up heartily, and will become a success. Is there a single English photographer who has produced a single example? I know a thousand objections can be alleged against it. "A size between the card and cabinet is unnecessary." "It is inconvenient, and involves trouble, and some slight modification of apparatus." "There are no albums for the size." "The public do not want it," and so on *ad infinitum*. When card portraits were introduced, similar arguments were advanced against them. When cabinet portraits were introduced, precisely the same arguments were advanced. It was not until other countries had made the styles successful, and the public, bringing examples from abroad, demanded them, that the photographers of this most conservative land would stir in the matter. In a business like that of the photographer, demand should not precede supply, but supply should suggest and create demand. *Verbum sap.*

Will photography be satisfactorily represented at the forthcoming International Exhibition? It may well be feared that it will not, from the little consideration shown by the Commissioners for photography and photographers. The announcements and information have been

of the most scanty description: even until now photographers remain without any information as to the gentlemen whose *fiat* will decide whether their contributions shall be exhibited or not. According to the graphic account of your correspondent, Mr. Theophilus Middlemitch—I believe I know the estimable old gentleman, and can sympathize with him deeply in the shock inflicted upon his methodical and deliberate habits—photographers do not receive more consideration inside the building than they do out. But, despite all this, I believe there will be a very excellent, although limited, display of English photography in the first of this series of exhibitions.

The chief matter of interest at the societies is the exceedingly satisfactory report and balance-sheet of the Society of London. The system of retrenchment inaugurated some years ago by the late esteemed secretary surrendering his salary and acting as honorary secretary, and which has been carried out yearly with increasing vigilance by the president and council, has brought things to a satisfactory issue. I understand that the Society will very soon be quite out of debt, and will then have a surplus income with which to achieve many good things. Let us hope that it will not waste, say, a hundred pounds, upon foolish collodion committees to test the product of a single maker, and declare it the best without examining any other, as it once did; and that it will not be driven to waste, say, another hundred pounds, on defending its property in the title to its Journal, as it once was; and, in short, that, with the experience of the past, it will not repeat its errors, but will occupy the proud position it should do, of elevator and bulwark, as well as representative society, of the art and its votaries.

AMERICAN CORRESPONDENCE.

DEFEAT OF ANOTHER IMPORTANT PATENT.—A FEW DODGES.

Defeat of Another Important Patent.—What is uppermost in the mind must come first, so I must tell you of another triumph in behalf of the photographers of the United States; namely, the total defeat of the owners of the so-called "Sliding Plate-holder Patent."

In 1855, Albert S. Southwaith, of Boston, obtained a patent for sliding the plate-holder over the field of the lens, so that pictures could be multiplied upon one plate without removing it from the camera. Not content with the profits which his own special contrivance might bring him, if honestly pushed, he joined one Simon Wing, also of Boston, in partnership with him, and they twain proceeded to collect royalty from every fellow-photographer who used any sort of a sliding plate-holder, or any other method of producing more than one picture upon a plate with one lens. Many photographers, frightened at this presumption, at once recognized the claims of their Yankee confreres, and paid up. Not so, however, with all. In their peregrinations they came upon Mr. C. C. Schoonmaker, of Troy, U.S. They made their demands upon him, but did not find him so ready a victim. Possessed of some genius in his own right, he had, years before their patent, contrived a means of doing just what they had obtained a patent for, which fact he brought to the notice of his Boston friends. They were not satisfied, however, and commenced a suit against Mr. Schoonmaker, to collect the royalty they demanded, namely \$500. With most persistent pluck and bravery, Mr. S. proceeded to collect testimony in behalf of his side of the case, and produced evidence so overwhelming—collected both at home, in England, and in France—proving that the complainants were not the original inventors of what they claimed, that his Honour Judge Nelson decided, in the U.S. Circuit Court, in New York, that the claims of the patentees were "invalid and inoperative."

Not content with this, the chapfallen twain appealed from Judge Nelson's decision, and the case was carried to

the Supreme Court at Washington for trial. It there hung fire, awaiting its turn for a hearing, until late last month, when it was argued; and on Feb. 6, 1871, the happy announcement was made that the Supreme Bench confirmed the decision of Judge Nelson. At the announcement of the decision, telegraphic congratulations flew like wildfire from one to the other of the photographers all over the country, for nearly every one of them uses some arrangement or other that would be considered an "infringement" if the decision had been otherwise. As it is, another photographic patent has been overturned and completely laid out, and many thousands of dollars each year saved the fraternity. It is on this account that we rejoice as we have not rejoiced since the defeat of that companion imposition, the famous Bromide Patent. English photographers, who are under the protection of a sensible patent law, can hardly appreciate the feeling of joy this decision gives the American photographer, but I record the defeat in order that they may be glad that no such exactions are made upon them to hamper and to rob them.

A Few Dodges.—How much the usefulness of photographic journals would be enhanced if the practical every-day workers would communicate from time to time such little notes concerning their practice as I am about to give you below. If they would, their editors would not have room to give to discussions pertaining to impracticable matters concerning a few only, and much more good would be accomplished. I never spend a half hour with such a photographer without obtaining some little idea, unknown to me and useful to others.

Now here is an example of what I would like to see a more general voluntary thing on the part of the best practitioners in our art. Mr. Robert Benecke, one of our most efficient photographers in St. Louis, in response to just such a call as the above, sends me a dozen of his "little dodges," which are so useful that I give them for the benefit of your readers. Although some may be familiar with all of them, I will guarantee that they are all new to others. Mr. Benecke says:—

"I give you some of my 'dodges,' which I have been using practically (not fictitiously) in my gallery, and which I found of real benefit to me. I will give them to you just as they enter my mind, and only wish that some of your numerous readers may be benefitted by adopting them in their practice.

"1. When going out viewing, I have found a funnel made of glass or gutta-percha a very unhandy thing to take along. I am using now a piece of good stiff writing-paper, which I twist into the shape of a funnel, and keep so by the aid of a little sealing-wax or gum-shellac. I use them but once, and throw them, when home, into the basket with other silvered paper scraps.

"2. Common printers' ink I find excellent for painting over the sky, &c., in a negative. It never will crack off, but it takes several days to get dry.

"3. When printing large copies it will happen very often that the paper will not be in contact with the negative, but will give us, in spite of the hardest pressure or tufts of cotton you may place behind it, a mezzotint effect in some small places. To have the paper as flat as if it never had been touched by chemicals, I have two frames made of thin board, both of the same size, and a little larger than the negative, and made of pieces about one inch wide—just imagine the wooden frame around a schoolboy's slate. On one of them I have glued a narrow strip of buckskin. Now, when the paper is a little damp yet, lay it between these two frames, the buckskin inside, clamp them together with clothes-pins, and let it get dry. It will be as straight as a drum's head now, and very easy to handle.

"4. In mounting large prints I use a very thin paste all over the back of the picture, and a thick paste only around the edges, mainly to keep the ends from turning up.

"5. For cutting out large prints true and expeditiously, I am using a square board of soft wood and a steel rule—I

had it made in a saw manufactory—with a short piece riveted to it at right angles. Lay the print now on the board, and under the rule; see that the horizon or a perpendicular line comes to lay parallel with the rule, then hold it (print) down by means of a weight (piece of marble) and cut it out. If your board and rule is correct, the print will have been trimmed quite true.

"6. I am using a flat dish for silvering my large plates; twenty-five ounces of silver bath will thus do me for plates 13 by 17. Now, before taking the plate out of the dish, which has been kept in motion by gentle tilting, I turn it over and lay it face down upon the solution, thereby washing off any floating particles from the film, and avoiding pinholes.

"7. For fastening my tubes to my boxes I use screw-rings. A half turn to two of them will enable you to take off the tube in five seconds.

"8. When cutting out stereographs, I mark the two prints by a single stroke of a very soft pencil, on the back, in the centre. Then I cut them apart, hold them up between me and the light, superimpose them, see especially that the horizontal lines coincide, and cut them out. In mounting, observe to have the two pencil marks on the outer edge.

"9. In my plate-holder, for larger views, I do not use glass corners, but four pieces of thick silver-wire, which is just bent a little so as not to scratch the film. The spring on the shutter keeps the plate in its place, and a narrow strip of blotting-paper, doubled six or eight times, through which the lower two pins are pushed, serves to suck up all silver solution, and prevents stains.

"10. A very 'handy' and easy way to obtain relief in the background is, to move a very light triangular-shaped frame, about five by three feet, covered with white muslin, behind the sitter during a part of the time of exposure. A little experience will soon teach you how long to expose it, and how far to move it, &c.

"11. For copying pictures I am using a one-quarter size tube, of which the rack-work has been taken off. This enables me, when copying Daguerreotypes, to push the ground glass to one side or take it out, and also slip out the tube and look right at the picture through the camera-box. Any false reflection is noticed immediately, and can be corrected. For enlarging, say a card picture, to one four by four size, or larger, I reverse the tube by putting it into its opening through the camera-box, and have the back lens now towards the picture.

"12. For taking my 13 by 17 views, I generally use a No. 5 Zentmeyer lens. The stand-box, plate-holder, and tube, I do not think weigh over twenty pounds, for I can carry it easily in one hand. Since I found that a picture taken with the Zentmeyer lens was as sharp ten yards off as one mile—for all practical purposes, I found out the length of focus of the lens exactly, made my box just so long, and use no ground glass at all. My camera is made of light wood, and of a triangular shape, which enables me, for instance, to take a view from a window sideways, where I could not find room for a square box, and makes the box so much lighter. A point aimed at by looking over a mark on top of the box will be right in the centre of the plate, and looking alongside the two sides of the box will give about the angle included in the view."

Mr. Benecke promises to send me a description of his box, and if he does, I will communicate it to you. I can testify to the excellent quality of his work, and I send you some examples of it, which are views of the new bridge at St. Louis, taken during the several stages of its construction.—Yours truly,

EDWARD L. WILSON.

Philadelphia, February 13th, 1871.

IS PAPER A CAUSE OF FADING?

BY W. T. BOVEY.

MR. STOKES has doubtless hit a good nail on the head in attributing to paper a possible cause of print fading. In considering this important matter, however, we must not

confound cause with effect; but as the part played by paper is inevitable in its conditions, and being something more than effect, the verbal difficulty will, perhaps, be best surmounted by an application of those half-tones of logical phraseology, *primary* and *secondary*; the first being attached to sulphur, which is the immediate cause; the latter to paper, which aids the destructive working of that cause to an extensive degree. Paper, as is well known, is composed of vegetable substances, artificially prepared. The materials employed in the manufacture of paper, modern science has made manifold and inexhaustible; but in all instances the first principles are maintained and adopted; viz., the conversion of the vegetable substances into a pulp, by means of suitable machinery. Seeing that water is an element largely used in the making of paper, it needs no argument to show that the chemical condition of the paper depends, to a great extent, on the kind of water employed; and it is not impossible that sulphur might, in some instances, be introduced in combination with lime. We have, however, no good reason to suppose that the papers usually employed in photography contain matter which can impair the permanency of the prints produced thereon; for, as far as time has permitted us to judge, a print well fixed, well washed, and entirely free from that nucleus of destruction, *sulphide of silver*, is as permanent and exempt from fading as can be desired. I have a batch of such prints under test, which, up to time present, have resisted a prolonged exposure to a damp and changing atmosphere. How, then, can it be said that paper is a cause of fading? Briefly I proceed to explain: Paper in its texture is soft and porous; it absorbs fluids as readily as a sponge; therefore, when immersed in hypo solution, the pulp speedily becomes saturated with the sulphur compound, which, being imprisoned in myriads of minute cells, its eviction therefrom is a matter of considerable difficulty, as is fully shown by the prolonged washing necessary, and to which silver prints are submitted subsequent to fixation. A further proof of the fact is given by the easy and thorough elimination of hypo from an albumen or collodion print on glass by a very few moments' effort of washing.

Mr. Stokes has doubtless accurately observed the difference in the time and trouble requisite to eradicate hypo from paper and from pictures on rigid supports, and again he hits a good nail on the head in his suggesting the adoption of a paper made impervious to moisture. I have made several attempts in the direction indicated, but, unfortunately, my experiments have only shown that a law analogous to the physical rule of compensation applies materially to the chemical working of the paper, when the latter is enabled to refuse water.

The toning properties of a paper depend greatly on its porosity and absorptive capability; hence a plain salted paper tones the most rapid. If coated with diluted albumen, the prints tone somewhat slower, yet, comparatively speaking, they darken rapidly. As we thicken the albumen, toning grows more and still more sluggish. These variations must be attributed to two causes: first, the resistance offered by the albumen; second, the comparative degrees of free silver, which vary in each instance, having its maximum in a plain salted paper print, its minimum in one produced on a strongly albuminized paper. A patent was taken out some years ago (I believe the kind of paper is still in the market) for rendering paper impervious to water by means of a coating of india-rubber previous to albuminizing; but, as far as my experience went with the paper, I found that the image, though admirably delicate, could not, as a rule, be toned beyond an agreeable brown; and my own experiments seem to confirm the statement as a fact, that similar results to those just described follow the use of any foreign substance for the purpose of filling in the pores of the paper prior to albuminizing. The reason why is obvious. When the porous texture of a paper is blocked with matter that takes no part in the construction of the

photograph, the top stratum is, perforce, very thin (you cannot pour albumen on like collodion is applied); the building material that forms the picture is, therefore, very scant, and a delicate, but not always sufficiently vigorous, print results. Such a paper coated with collodio-chloride would be simply perfection, always premising that the collodion is one possessing stout body. The fuller the body of collodion, the richer the resulting picture, because, under such condition, an ample supply of building requisites are provided. I should like to see in any way clear to the possibility of using collodion exclusively in the production of silver prints. The pictures are so richly transparent, so beautiful and delicate, no albumen print can equal them in beauty, and nothing can promise a more extended degree of stability. Having given away all the examples I produced immediately subsequent to the introduction of the process, the Editor is, perhaps, in a position to state whether the prints I sent him at that time retain their pristine purity of colour. At all events, let the case rest as it will, the prints alluded to received only a few minutes of washing under a running tap.

There are, I fear, adverse conditions that make it improbable that collodionized will ever supersede albuminized papers, the former being unavoidably expensive, and, in some respects, very troublesome to work with and prepare. The possibility might be conjectured of preparing a paper in such a way as to render it impervious to water, yet accessible to silver and the other materials required in the production of the picture. I admit the possibility, but, unfortunately, the water-proof nature of such paper would make it impervious to the action of the fixing agent. In all my numerous experiments in this direction, I have found that whilst silver readily penetrates wherever a chloride salt can be introduced, hypo can only act upon the surface of an impermeable substance, and, therefore, cannot follow the silver that lies beneath; hence the picture continues to darken when its surface is deprived of reducing tendencies.

With this view of the matter, I fear that Mr. Stokes's well-applied nail cannot be clenched. Until we are in a position to do away with silver printing (*and the sooner the better, say I*) we must endeavour, by care and caution, to make our prints as permanent as possible. Were it practicable for the photographer to retain prints in an unmounted state for a month, he need send out no prints destined to fade, as the traces of coming decomposition are soon made evident; but as customers are generally in a hurry for their pictures, the only course to avoid print-fading is to understand the nature of the causes, and, as far as possible, to avoid them.

[We have examples of collodio-chloride prints by Mr. Bovey, and also by ourselves, which have been in our possession six years without any sign of change.—ED.]

INSTANTANEITY.

BY STEPHEN THOMPSON.

THERE is a latent desire running through the minds of most photographers—unshaped and unembodied, it may be, but still felt in some dim way, that has not yet found means of expression—to enlarge the somewhat restricted domain or sphere in which photography lives, and moves, and has its being; in short, the peaceable extension of our frontier line in the region of art; which, happily, in this case, does not necessarily involve any annexation of the territory of our neighbours.

Many feel, after some length of practice, more particularly if they have ever at any time been accustomed to use the pencil, which knows no limitations but in the imaginative power of the limner, a sensation of being "cabinied, cribb'd, confined," to a degree of weariness. At first all is *couleur de rose*; but at length the caged feeling comes. We pace, in imagination, up and down our domain, but soon—

"Shades of the prison-house begin to close,"

and we earnestly scan the horizon on every side, seeking to find some avenue, some outlet, where we may breathe a freer air, and attain a nobler, fuller life. In what direction may we hope to find it? Colour? No, not yet, if ever may we hope to clutch such an intangible beauty as colour! Why sigh for the unattainable? As well bay the moon, or spend our days and nights in seeking the elixir vitæ or the philosopher's stone. That is not the path for the transmutation of our labours into precious metals. But there is one direction, within the bounds of possibility, in which it may be sought, and it would enlarge our sphere of operations in an immeasurable degree; and that is, *absolute instantaneity* on large plates, say plates 18 by 16, a size sufficiently large to make pictures for hanging.

At present we are confined, in a great measure, to one aspect of nature only—nature in repose. The peaceful landscape, the stately ruin, on which time feeds like slow fire upon a hoary brand, are ours; but life, motion, and all its poetry; nature—living, warm, breathing, pulsating nature, with her April face and her April eyes, her stormy passions and her sudden calms; the power and mystery of nature, not only her outward form, but her beating heart—lies just beyond our domain. Walk through one of the annual exhibitions of the Royal Academy, specially noting how many of the subjects would have been within the reach of photography had it but that other step added of absolute instantaneity.

Here are "Fishing-boats coming in," canvas (say) 24 by 18 in.; time, early morning. Their tawny sails, wet with spray, shine brightly in the sun. Around the bluff bows of each seamed and weather-stained craft is a fringe of cloven foam. They plunge and dip cheerily, as with joy of relief after a night at sea, and as they ground one by one on the shingly beach, a picturesque group surrounds them, and all is bustle and animation. What is the condition that prevents its delineation by photography, but instantaneity? More sensitiveness to colour would help, but the whole scene is evenly lighted in the still low-voiced sun, and it is of only secondary importance.

Here another: a pilot's lugger-boat going off through the surf in half a gale to the homeward bound Indianan in the middle distance.

Again: a rain-swirl amidst Highland scenery; broken patches of sunlight lighting it up here and there, such as may be seen almost any day among the Grampians, or the Cuchillin hills.

Or stand with me on an antique wooden balcony at the corner of the market square, or in front of the gothic cathedral—often the market square too—of some old continental town, say Boppard, or, better still, one of those in the west of Normandy (time, seven A.M.), and watch the busy picturesque scene, and wonderfully picturesque costumes of the ever-moving crowd, before a background made on purpose—old gabled houses, and a richly-carved but ripe and crumbly old medieval civic or ecclesiastical facade—and then feel what instantaneity would do. A small stereo might be got of a bit of it, or a larger bit if you submit to the reduced size of the wide-angle lens, but at best it is only a microscopic reduction of the scene, for which you might have cared if you had not seen the original. Then, too, that golden shadow, luminous with softened detail, which slopes right athwart it in the early morning sun, would probably have been represented by a black outline, and no more.

Yet, again, let us regard the pathos that dwells around a lone rugged cliff washed by the restless sea, now crooning its soft sad song, and now dashing its white delicate foam in wild caresses high up the patient rock, and now retreating coy, while sea birds wheel around with hoarse plaintive cries, and large billowy clouds sail by in solemn procession. What has instantaneity to say to that?

But nature knows no pause. She is busy making pictures everywhere. Why should we be shut out from half her joys?

We know it is not in the representation of the physical phenomena only of nature that the truest art dwells, and we also know that at least twenty painters give us that only, for one who can reach the mystery, the pathos, and the suggestive human expression, that underlies all this.

Turn to another class at the same exhibition, and note how many of the figure subjects are barred by the same conditions. Surrounding accessories being within the scope of photographic delineation, some happy idea, some odd bizarre incident, depending for its point chiefly on facial expression, is the difficulty. It is often possible to get the expression depicting or lighting-up the incident or idea, even when there are two or three actors in the scene; but to *preserve it*, never. In this sense

"How fleet is a glance of the mind,
Compared with the speed of its flight!"

Perhaps enough has been said to indicate the direction in which progress may be sought; the means thereof must, of course, come by improved optical or chemical conditions, or both combined. This part of the subject is much too extensive to enter upon now; but with regard to the chemical portion of it, I am not aware that an exhaustive series of experiments with all the known agents has been attempted having this sole object in view, though there has been much invaluable and interesting, yet desultory, work done.

It is very desirable to stimulate efforts in this direction. "Nothing is too wonderful," said Faraday, "if it be consistent with the laws of nature;" but here there is nothing required but improved conditions in means which we already possess. That it will come is a matter of certainty. Something more than indications of it might be seen in the seascapes of Mr. Robinson at the November exhibition. There can be little doubt but that it is worthy of the gravest attention, both because it is quite within the bounds of possibility, and that it would yield a large access of territory to photography.

ON THE SENSITIVENESS TO LIGHT OF THE RED FERRIDCYANIDE OF POTASSIUM.

Communicated from the Photographic Laboratory of the Royal Industrial College at Berlin.

BY DR. H. VOGEL.*

It is a known fact that the solution of red ferricyanide of potassium is easily decomposed, yellow ferrocyanide being formed, together with a blue precipitate of Prussian blue. Gmelin, the discoverer of the red ferricyanide, had already observed this, and it is, moreover, known that organic substances have the effect of materially hastening the decomposition. It would appear, however, hitherto to have escaped the observation of investigators that the action of light plays an important part in this reaction; this I have lately proved by a series of experiments which I will here briefly enumerate.

If a solution of one part of ferricyanide of potassium in ten parts of water be submitted to the action of light, there will be observed, after an exposure of a few hours, a dark colouring of the liquid easily to be remarked when compared with a solution which has been preserved in the dark. Whilst a fresh solution of this kind yields, on the addition of oxide of iron salts, no precipitate whatever, the exposed sample exhibits a blue precipitate, no doubt Prussian blue, and with salts of uranium yields the well-known brown colour of ferrocyanide of uranium. The solarized solution, moreover, shows also the reactions of the yellow ferrocyanide of potassium, so that it may be inferred a reduction has been caused by light. How sensitive this solution of ferricyanide of potassium is to light may be inferred by the statement that an exposure of thirty seconds in sunlight suffices to form yellow ferrocyanide, the presence of which may be proved by means of chloride of iron solution. If the expo-

* *Photographische Mittheilungen.*

sure is continued for some time a small quantity of a bluish black precipitate is thrown down in a similar way as when the spontaneous decomposition of the red ferricyanide of potassium occurs on the presence of organic substances.

In yellow light I have been unable to observe any decomposing action of the red ferricyanide solution; neither have I been successful in discovering any action in the salt itself, although it is nevertheless my opinion that a change does actually take place when the salt is exposed to intense chemical rays during the summer months.

This reaction of light upon ferricyanide of potassium solution I have endeavoured to utilize in the production of photographic pictures. Some paper was floated upon a ten per cent. solution of ferricyanide, and dried in the dark. Placed under a negative in the pressure frame this paper became impressed, after a short exposure, with a weak image, which, when dipped into a solution of chloride of iron, became of a vigorous blue, the yellow ferrocyanide produced by the light being transformed by the chloride of iron into Prussian blue. Similar pictures were obtained, but in a totally different manner, by Herschel in 1840, by employing the chloride of iron as the sensitive material, and treating the subchloride formed by exposure to light with the red ferricyanide of potassium; thus producing an image in Turnbull's blue.

If, instead of treating my faint image in an oxide of iron solution, I had placed it in one of oxide of uranium, a precipitate of ferrocyanide of uranium would have been produced, and thus a picture of an agreeable brown tint obtained.

By exposing ferricyanide of potassium paper under a negative for a very lengthened period, a pale bluish black image is produced, which may be easily fixed by simple washing in water.

In practical photography these reactions are at present of little value, seeing that the durability of cyanide compounds is questionable; but for the manufacturing chemist they are of significance, and he will do well to preserve his red ferricyanide of potassium solutions sheltered from solar action, and to evaporate and crystallize them only by caudle or lamp light.

The analytical chemist may learn therefrom to preserve his solutions in yellow bottles, it being presumed, of course, that the same have been in the first place prepared with perfectly pure water. Very frequently distilled water contains organic matter, and this will alone cause a decomposition of the compound when preserved even in the dark. It is very probable that several other compounds which are stated to decompose spontaneously may be found to be sensitive to light in the same way as the red ferricyanide of potassium.

PHOTO-KALEIDOSCOPIES.

A CORRESPONDENT, signing himself "An Old School Photographer," sends us an old journal containing the following article, remarking that, as the application of photography to the kaleidoscope has been more than once suggested as a novelty during the last few years, the reprinting of this article, which appeared in an American journal signed E. K. Hough, more than a dozen years ago, may interest many readers.]

Every photographic operator knows the value of ways and means for keeping his visitors in good humour while compelled to wait their turn for a sitting. Without such means they often get expressions of anxiety and impatience that interfere sometimes seriously with successful results. With this thought, rooms are often richly furnished to give the soothing influence of luxury and ease. Also the walls are hung with pictures to charm the attention into self-fancifulness—which is the best possible mental condition for a perfect likeness, could it be always attained. But these pictures too often are only a monotonous series of faces with but little variety of expression or position, with few

elements to interest beyond a passing glance as specimens of the artist's success in chemical effects.

Landscape views have a large variety of objects, and, when well executed from interesting scenery, have much more power to engage attention than mere portraits can have, and it seems strange that so few adorn our galleries. But, best for the purpose named is something that contains facility for new combination and variations at the option of the observer, and of course it were always better that it have some relation to the photographic art. That which will meet all these requirements most fully is undoubtedly the stereoscope, with a large variety of interesting views, for none other can show so strikingly the wonderful capabilities of the art.

But as they are too rarely found, especially among country operators, and, moreover, are slightly expensive, I wish to suggest something trifling, yet an amusing substitute, which can be readily constructed by any artist in his leisure moments, and almost without cost. We all remember the interest with which we have watched in our boyish days every varying scenery of the kaleidoscope.

We are but "children of a larger growth," and the toys of childhood are often reproduced in manhood, only on a larger and more expensive scale.

I will give in a few words my plan for the construction of a photo-kaleidoscope.

With a couple of strips of black glass—which can be obtained of any suitable length from the stock dealer—a few strips of cardboard and fancy paper, a tube can be constructed in an hour. Then, in place of bits of glass having no charm but colour, I would substitute small pictures on glass—either common ambrotypes, or transparencies produced by printing from negatives on collodion. If to be viewed by reflected light, they should be coloured, coated with benzine or collodion varnish, and placed on a clear glass fitted in the bottom of the tube, and a dark opaque ground placed behind. In this arrangement openings should be left just above to illuminate them.

With the transparencies, the sides must be closed and the light admitted at the end through a fine ground glass or oiled paper, and the pictures should be coloured with brilliant transparent colours. The figures should be full-length, quite small, and very sharp, on square or oblong plates, and so arranged between the glasses that hold them in their place that, while having a free sliding movement singly, they cannot lap over each other. A moment's consideration will convince that when well constructed and filled with figures in dancing, pugilistic, clownish, and similar attitudes, the thousand shifting combinations will present many comical and amusing phases, especially if they have a local interest. And if in any room the tedium of "waiting for a picture" (to which "waiting for the waggon" is no comparison) should be somewhat relieved, my purpose will be accomplished.

Correspondence.

PROFESSIONAL INSTRUCTION FOR PHOTOGRAPHERS.

DEAR SIR,—I was much amused at the frank confession contained in the letter of "H. S." in last week's NEWS, and also at the funny idea of a "gentleman of established reputation," &c., calling at the various studios and soliciting patronage in the way of giving instruction. It appeared to me like reversing the order of things, as we generally find application made from the other side; and, indeed, the last place expected where such instruction would be needed would certainly be at one of the "best studios" in such a town as Brighton.

I cannot tell what the feelings of others would be, but I must confess that if I were the principal of such a studio, &c., I should feel offended at such a proposition, and not "receive them with open arms and hearty welcome." I quite doubt that "such a method would be very desirable, or an improve-

ment to portraiture." I would rather suggest that before possessing the superior studio, the more important provision should be secured of ability to conduct it. Anxiety to get good results is laudable, but that alone will never enable anyone to compete with superior talent, or to keep pace with the times.—
Yours truly,
J. B. S.

PAPER IMPERVIOUS TO MOISTURE.

DEAR SIR,—So far from the subject of Mr. Stokes' letter in last week's NEWS not being worthy of notice, I think it of considerable importance; indeed, it is one which has often engaged my thoughts. I think there would be great advantages if the paper, previously to being albuminized, was made impervious to moisture. The hypo which we are at such pains to wash out of the paper would not be permitted to get in; there would also be an advantage in the mounting of prints, as the expansion of the paper by the application of glue, starch, or any of those substances requiring water as a solvent, would be prevented; and the cockling of the mounts when the prints are dried would be avoided; probably it might also prevent fading caused by the action of any injurious substance in the mount itself.

Mr. Stokes asks whether the preparation of such a paper is "an impossibility"? I think not, for the following reason: many years ago I had occasion to colour some lithographic views printed on plate-paper, which absorbs moisture rapidly, so that it was necessary to apply a size to prevent the water-colours sinking into the paper. The late W. Day (founder of the well-known lithographic establishment in Lincoln's Inn Fields) was kind enough to give me a recipe for such a size, which, when properly made, answered the purpose well; but on one occasion I accidentally put in an excess of one of the ingredients, and the consequence was, that the paper was made so hard and non-absorbent that a print could be coloured and then the whole sponged off and left as though no water-colour had been applied at all. From this I infer that paper can be made impervious to moisture.

The question, of course, arises, whether the application of such a size would be injurious in the printing? From its composition I think not, but if Mr. Stokes would like to have a copy of the recipe, I shall be happy to furnish him with it; or if you, Mr. Editor, would think it worth while to publish it, I shall have pleasure in sending it for that purpose.—Yours truly,
WM. MONKHOUSE.

Lendal, York, February 27th, 1871.

[We shall have pleasure in publishing the recipe in question.—ED.]

COPYRIGHT PROPERTY IN NEGATIVES AND PRINTS.

SIR,—With reference to the letter of "Colonist" in your last issue, allow me to correct an error in the first paragraph, which, perhaps, is only a slip of the pen. I have never asserted that a portrait negative (taken in the usual way) is the *copyright* of the photographer, which would be absurd. I have only said that it is the *property* of the photographer.

As regards surveyors and reporters, their cases are scarcely analogous, because their rights are not defined by Act of Parliament, as are the rights of artists and photographers.

"Colonist" asks you for advice how to obtain protection for an original design. Allow me to inform him that he can do so by registering it at the Government Registration Office at Whitehall. He can do so through the post without necessity for personal attendance. Registration at Stationers' Hall is needless for anything other than paintings, drawings, and photographs, excepting foreign works of art under the International Act. English lithographs, and similar works, are therefore registered under Talbourn's Act; but such registration affords no protection against piracy, and simply brings grist to the mill of the Stationers' Company. If a principle is involved in "Colonist's" invention, letters patent must be taken out.

Mr. Foster is a gentleman for whom I have the highest respect, for it is greatly owing to his exertions that we have a Copyright Act, and I think our brother photographers would have been grateful had he been pleased to express his opinion respecting the right mode of construing the Act. Instead of so doing, Cassanira like, he utters a prophetic warning to our brethren "not to rush hastily into a course of action," which they will do well to consider. At present they rush hastily to

register at Stationers' Hall, without first ascertaining what they have to register; in consequence, as recent events show, they find "they are landed in an awkward position." Mr. Foster advises them "to seek the opinion of some qualified legal adviser." Good advice, no doubt; but as Diogenes required a lantern at mid-day to assist him in his search for an honest man, so does the photographer require an aid in his search for that *rara avis in terris*, a lawyer with knowledge of the law of artistic copyright. Before he can have his advice, he must follow Mr. Glasse's instructions anent cooking a hare: first catch the lawyer.

Why so few lawyers know anything of artistic copyright law is easily explained: beyond the miserable police court prosecutions, there have been no cases. The Act has been in force eight years, and, during that time, no artist has appealed to it for protection. A few prosecutions have been instituted by photographers, and many by "an eminent publisher." It therefore follows that subsequent to the commencement of the Act, the producers of copies of works of art, and the forgers of signatures, ceased from their nefarious labours—or, that artists value their newly-acquired rights so lightly that they do not think it worth while to enforce them. The latter alternative I think to be correct, for copies and forgeries still appear on the walls of West End auction rooms as frequently as before the passing of the Act.

Whether my notions of copyright law would provoke a smile from lawyers I do not know; but I can say the notions of lawyers upon copyright law have certainly provoked a laugh from me, and I think the same effect would be produced upon Mr. Foster or Mr. Blaine if they were brought under their notice. I once heard an eminent lawyer express an opinion that all photographs were *copies*—it was not the late Lord Chief Baron who uttered it—and I think it calculated to make Mr. Foster smile, to say nothing of Mr. Robinson or Mr. Rejlander. Another eminent lawyer stated that registration of a work of art was only necessary when the proprietor for the time being wished to prosecute for piracy. That opinion, I think, would make Mr. Blaine laugh, seeing that he has always been an advocate for the registration of all copyrights. Another learned gentleman expressed an opinion that no person was aggrieved by a registration unless he had a title conflicting with the title of the person registered, overlooking the fact that where copyright was non-existent there could be no conflict of title.

I think I have said enough to show that the opinions of learned lawyers are not always to be relied upon. The law of artistic copyright is of recent origin, and there is nothing in it to puzzle an ordinary mind having a little knowledge of logical rules.—I am, sir, your obedient servant,
J. CUNNINGTON.
London, Feb. 28th, 1871.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

REPORT OF THE COUNCIL—continued

THE report of the Council concludes with obituary notices of distinguished deceased members.

Obituary.

SIR FREDERICK POLLOCK, BART., who for nearly fourteen years held the office of president of this Society (in succession to the late Sir Charles Eastlake) died at the end of August last, in the eighty-seventh year of his age. During this comparatively long period, Sir Frederick was active in promoting the interests of the Society, and in presiding over its meetings, notwithstanding the many claims upon his time imposed by his high official position of Lord Chief Baron of the Exchequer. A graduate of the University of Cambridge, and Senior Wrangler in the year 1806, the late president associated himself with several of the learned societies, and was elected a Fellow of the Royal Society on the 29th of February, 1816.

In his opening speech (April 1855) the late president predicted a glorious future for photography, and referred to the varied objects and applications of the art, laying stress on the value of its faithful and imperishable records. Later, in 1866, when distributing the medals awarded to several distinguished members of the Society, the president did not hesitate to institute a comparison between the benefits conferred by the discoveries of steam navigation and the electric telegraph and those afforded by the improved processes of photography. The first two in-

ventions had, it was true, the effect of annihilating time, and so were commercially invaluable; but the productions of the photographic art were unerring, historical, and especially attractive as addressing themselves to the sympathies of all mankind. Sir Frederick concluded his speech with some admirable remarks on the value of efforts made in the research of scientific truth as contrasted with the time and labour sometimes bestowed in eliciting the truth from statements made in courts of law. As evidence of the high appreciation entertained by the late president for the post held by him in connection with this Society, it is only necessary to quote a few lines from his letter of resignation, dated 8 A.M., 16th November, 1868. Sir Frederick says:—"Having now reached the eighty-sixth year of my age, and my health requiring that I should abstain from evening meetings, I feel that I can no longer discharge the duties of president of the Photographic Society; I therefore through you (Mr. Durham) place my resignation in the hands of the council, regretting much I am no longer able to hold a situation so honourable, and which afforded me so much pleasure and satisfaction, by bringing me into communication with some of the most enlightened scientific and practical men of the age."

REV. JOSEPH BANCROFT READE, M.A., F.R.S., may be described as one of the founders of the art, and was a contemporary of Sir Frederick Pollock in respect of having been elected into the council on the same day as the late president. As far back as 1837 Mr. Reade obtained enlarged representations of natural objects by the agency of the solar microscope, the images being formed upon paper impregnated with common salt and nitrate of silver, and afterwards washed with infusion of galls; and two years later (April 1839) a collection of these so-called "Solar Mezzotints" was exhibited at the *soirées* given by the Marquis of Northampton and by the Royal Society. Without laying claim to the discovery of the latent image, Mr. Reade obtained these results, and fixed his pictures with hyposulphite of soda, other experiments having been made with iodide of lead on paper and card similarly treated. Mr. Reade's first communication to the Society was read on the 1st November, 1855, and entitled, "On the Use of Gutta-percha as a Substitute for Glass in the Practice of Photography." This was a proposal to use a film of gutta-percha as a kind of substratum, on which the collodion was poured, and the process carried out as usual, a glass plate being temporarily employed, and benzole resorted to as a solvent for spreading the gutta-percha. The finished negative was then stripped from the glass, and preserved between folds of paper until required to be laid in the printing-frame. By a singular coincidence, Mr. F. Scott Archer had just previously secured a patent for the same mode of proceeding, which has never, however, owing to the alterable nature of the gutta-percha, been successfully adopted. Mr. Reade took an active part in advocating the "moving focus" system of portraiture introduced by M. Claudet; and, lastly, was the means of bringing to the notice of the Society a discovery of Sir David Brewster, relative to the stereoscopic effect apparent in the Chiment pictures, lithographic representations of which are to be found in the eighth volume of the Society's Journal. The Rev. J. B. Reade was successively appointed vicar of Stone, near Aylesbury, and rector of Bishopbourne, near Canterbury. He was elected a Fellow of the Royal Society on the 8th of February, 1838, and at the time of his death was President of the Royal Microscopical Society. Of this Society he was vice-president, and regularly attended the meetings until April last, after which he was prevented from coming to London by the illness which proved fatal on the 12th December, when in the seventieth year of his age.

MR. THOMAS ROSS, son of the late Andrew Ross, succeeded to his father's business as optician in September, 1859, and was for many years a member of this Society. He took an active part in raising contributions in aid of the Archer Fund, and has, at various times, addressed the Society on the early history and construction of lenses for photographic use. Mr. Ross's Uniovorsal Binocular Camera was described and figured in the Journal of October, 1862. He died somewhat suddenly on the 16th December last.

The following are the officers for the ensuing year:—

PRESIDENT.

James Glaisher, F.R.S., F.R.A.S.

VICE-PRESIDENTS.

Hugh W. Diamond, M.D., F.S.A.

Arthur Farre, M.D., F.R.S.

R. J. Mann, M.D., F.R.A.S., F.R.G.S.

TREASURER.

Henry White.

MEMBERS OF COUNCIL.

John Anthony, M.D.

Francis Bedford.

Valentine Blanchard.

J. H. Dallmeyer, F.R.A.S.

T. Sebastian Davis.

W. England.

Peter Le Neve Foster, M.A.

Frank M. Good.

Russell M. Gordon.

Jabez Hughes.

William Mayland.

H. Baden Pritchard.

H. P. Robinson.

G. Wharton Simpson, M.A.,

F.S.A.

Prof. G. G. Stokes, M.A., D.C.L.

Sec. R.S.

R. W. Thomas, F.C.S.

Sir Charles Wheatstone, D.C.L.

F.R.S.

Matthew Whiting, jun.

HON. SECRETARY.

John Spiller, F.C.S.

Talk in the Studio.

ALUM IN THE PRINTING BATH.—Mr. Anthony says, in the *Bulletin*, that he still continues the use of alum in the printing bath. He adds: "We now confidently recommend it to photographers. By its means we have reduced the strength of our silver to thirty-five grains, fuming to five minutes, toning to perfect ease, with the least consumption of gold. All tones from brown to purple blue can be obtained, and the prints have all the force and richness attainable by any process."

THE SCIENTIFIC PRESS IN PARIS.—The majority of the scientific journals published in Paris were suspended during the siege. We understand that some are already making preparations for recommencing their issue. M. l'Abbe Moigno states that on the 1st of March he will resume the publication of his journal *Les Mondes*. A portion of the Abbe's library was destroyed by a shell.

INTERNATIONAL EXHIBITION OF 1871.—We understand that during the week ending the 25th of February paintings, sculpture, engravings and photography, architectural designs, tapestries, carpets, embroideries, designs for decorative manufactures and reproductions, also nearly 2,000 objects of pottery, specimens of woollens and worsteds, and educational appliances, making in all a total of about 3,500 objects, were delivered at the Exhibition galleries. Foreign objects arrived from Belgium, the German Empire, Portugal, Russia, Spain, Hongkong, and Tunis.

FOREIGN PATENTS IN AMERICA.—Inventive skill, and enterprise in applying it, appears to be more active in Great Britain than in Continental Europe, as may be gleaned from a comparison of the patents applied for in the United States' Patent Office, which, during 1870, granted 13,321 patents out of 19,176 applications. Of the patents so granted, 349 were to subjects of Great Britain, 89 to Frenchmen, and 206 to all other classes of foreigners.

FRENCH PHOTOGRAPHERS AND GERMAN SITTERS.—The Special Correspondent of the *Daily News*, writing from Paris under date of February 27th, says:—"The French are always very intense in their national likings and dislikes. It is terrible to see their hatred of the Germans at present. I have recently told you that no Germans will henceforth be employed in Paris—that they will be excluded from clubs—and that the French loathe the idea of modifying the terms of their Treaty of Commerce with Prussia and with the Zollverein, not simply as a question of money, but because they wish henceforth to have nothing to do with their enemies, upon whom one day they will take a fierce revenge. I have been reminded of all this by some English friends who went on Sunday to a photographer. Photographers here do a great deal of business on Sundays if the weather is fine. The people are generally in their best clothes, and like to be photographed, perhaps, for lack of talk. My friends went to a very famous photographer on the Boulevards; but their accent betrayed them—they were evidently foreigners—perhaps Germans. "Are you Prussians?" asked the photographer; "because if you are, I cannot take your photographs." His visitors made their nationality evident by the production of sundry passports, and then at last, his patriotic soul being satisfied, he found it in his heart to take their portraits."

NOVELTIES IN PORTRAITURE.—Our correspondent, Mr. Jeffries, to whose scroll portraits, which he has styled "Effeotographs," we called attention, mentions some other novel effects which find favour with customers. In one, the portrait bust, from life, is printed upon a pedestal produced by masking, giving the effect of sculptured bust. In another, the picture is surrounded by a rustic frame-work, also produced by masking and a little aid from the pencil. Mr. Jeffries is trying to produce masks in which the necessary lines or shading will print through, so as to render the pencil unnecessary; and he thinks he will succeed.

MICROSCOPIC PHOTOGRAPHY FOR PIGEON POST.—A Paris correspondent of the *Daily Telegraph* says:—"I was much interested yesterday in an explanation of the pigeon system kindly given to me at the Central Telegraph Office. The microscopic telegrams sent from Tours were at first printed on thin paper by the ordinary system of photographic reduction; but the paper was too heavy—a pigeon could carry only five of the little sheets, though they measure no more than three inches long and two inches broad. To get over this difficulty the despatches were photographed on pieces of collodion of the same size as the paper, each little bit containing thirty columns, and averaging 20,000 words—that is to say, about the contents of thirteen leaded columns of a London newspaper. From fourteen to eighteen of these tiny leaves were put into a quill and tied to a pigeon's tail, several copies of the same leaves being sent by different pigeons, so as to diminish the risk of loss. When the bird reached Paris the quill was immediately forwarded to the telegraph station, where the leaves were read through a microscope to a clerk, who wrote out the despatches for each person. But this was a terribly slow process; it permitted the employment of only one reader and only one writer, which was insufficient for copying some 30,000 telegrams of ten words each. So, after a few days, the leaves were successively placed in a large microscope, to which electric light was adapted; and the magnified image of each leaf was projected on a white board, from which it was copied by as many clerks, taking a column each, as could manage to get sight of it from the writing table. This, however, was still too slow, and the final improvement was invented. Instead of throwing the image on the white board, it was photographed straight off upon a large sheet of collodion; direct positive proofs being obtained, without any intervention of a negative, by the substitution of black for white, and *vice versa*. The collodion sheets were cut up, and the pieces were distributed to a hundred clerks; so that all the cargo of a pigeon was copied and sent out in a single day. The explanation which I received was accompanied by a practical illustration of the working of the process; and when I left I was presented, to my very great satisfaction, with an original pigeon despatch of the 11th of November. I shall carefully preserve that strange little memorial of the siege."

THE ACTION OF LIGHT ON SULPHUR.—Yellow phosphorus is changed into red phosphorus by the action of light. The observations of Lallemand, communicated to the Paris Academy, show that light affects sulphur in a similar manner. His report to the Academy is as follows:—"When a concentrated solution of sulphur in sulphate of carbon is exposed to the concentrated light of a lens, yellow sulphur will be thrown down in a few seconds, the liquid becomes turbid, and small particles of sulphur will collect on the bottom, which are distinguished from the original sulphur by no longer being soluble in sulphate of carbon. Light which has passed through a solution containing sulphur shows remarkable changes in the spectroscope. All the rays between G and H and the extreme violet spectrum have disappeared completely."—*Mittheilungen*.

SELLING INDECENT PHOTOGRAPHS.—On Thursday week police-constable Murgatroyd caught John West, a man minus a hand, selling an indecent photograph to a young man in Bridge Street, Bradford. He took West into custody, and in his possession was found a number of other photographs of a most objectionable character, prisoner apparently doing a trade in these vile productions. A "gallant show," belonging to West, had been left at the Midland railway station, and on a revolving apparatus inside the box were coloured photographs, equally disgusting as those found on his person. West was brought up at the Borough court on Friday, and was sent to prison for one month.

PHOTOGRAPHING UNTRIED PRISONERS.—At the recent Middlesex Sessions a special report was presented from the

Visiting Justices of the House of Detention as to the taking of photographic likenesses of prisoners for the information of the police. It was merely a reiteration of the objections they had expressed on the last county day as to taking the likenesses of persons waiting their trial, who were, until convicted, supposed to be innocent of the charges preferred against them. They had fully re-considered the subject since the last county day, and, having examined it in all its bearings, on constitutional grounds they saw no reason to depart from the opinion they had expressed in their former report. Mr. Sharpe moved the adoption of the report, and said there was nothing in the Act of Parliament to authorize the magistrates of this country to compel unconvicted persons to have their likenesses taken. After some discussion the report was received and adopted.

To Correspondents.

ADVICE TO CORRESPONDENTS.—We are at all times glad to advise our readers on any subject connected with the art upon which information can be given in this column; but to enable us to do so with efficiency, and without unnecessary waste of time and space, it is desirable that a few conditions should be observed by correspondents. All questions should be stated clearly, and written legibly on sheets of note paper, small scraps of paper and sheets of foolscap being equally unsuitable and inconvenient. Where several questions are asked, they should be kept distinct and numbered. Where processes and formulæ have been stated in our pages, it is better for correspondents to refer thereto than to request us to do so, as we cannot, with fairness, occupy space by repeating formulæ which have once appeared, merely to save a little trouble to individuals. Correspondents should use distinctive names or initials: such signatures as "A Subscriber," "An Amateur," and others of a general character being often adopted by a few correspondents in the same week leads to confusion.

J. MALEB.—The legality of copying a photograph entirely depends upon the circumstances. If the proper steps, in accordance with the statute, have been taken for securing the copyright in the photograph, it is illegal to copy it, and you would be liable to the penalties for making a copy. There is no method of ascertaining whether the photograph be copyright or not without examining the Registry at Stationers' Hall, and ascertaining that all conditions have been complied with. The absence of any intimation on the photograph of its copyright character is no guide for your action, so that you are in danger in copying any photograph unless you have definite knowledge that it is not copyright. 2. The material used for making the bellows of cameras is leather lined with black calico or black linen. We believe that the leather is that generally known as *skiver*, which is a split sheepskin. You can probably obtain a bellows-body of the material to make one of some of the camera-makers whose advertisements you will find in our pages. 3. The copying-camera to which you refer was described by the maker; we cannot give you any fuller details.

TREBLA.—You will be able to obtain of a photographic dealer, or of a dealer in chemical apparatus, vessels made of porcelain expressly for boiling solutions, and so annealed as to stand fire. With care, also, you may safely boil a bath in a Florence flask. Ordinary glazed saucepans are not necessarily suitable; the glaze may be of various substances; but it would be difficult for you to ascertain what yours is, or what contamination the silver bath may have received. 2. We cannot, therefore, tell you what the remedy may be. The small, needle-like crystals are most suggestive of iodide of silver, which it is quite possible you may not have eliminated. 3. Acetic acid should not be added to the bath. Some operators use it, but its use generally involves many troubles, and the instability of the bath. 4. When acetic acid has once been added to a nitrate bath it is almost impossible to eliminate it. If you neutralize it with an alkali—say carbonate of soda—acetate of soda is formed, but this is quickly decomposed, acetate of silver being formed. This tends to give density, but it often causes insensitiveness and an unstable condition in the bath. 5. There are various modes of making the paper keep well for a few days after sensitizing. The addition of a little sugar to the bath aids in this. Washing the free nitrate off aids materially. If you only wish the paper to keep a day or two, dry rapidly after sensitizing, and keep the paper dry and protected from the atmosphere, either by rolling up tightly and enclosing in a tin case, or placing under a weight.

ARTHUR T. COOPER.—The article to which you refer was condensed from the *PHOTOGRAPHIC NEWS*, p. 28, Vol. XIII, January 15, 1869.

J. E.—The general arrangement of your studio, as you describe it, appears good, but the green blinds are undesirable. You will find dark blue better. 2. For convenience of pitch, we should have preferred the ridge a foot or more higher; but we do not see that it need be altered. Almost any colour may be used for a carpet, but we should prefer a mixture of browns, with pattern not too pronounced.

OXONIENSIS.—We cannot, with any certainty, explain the differences in advertisements. Here we must confess ourselves *Davus*, not *Œdipus*. Our conjecture is, that the manufacturer determines a retail price for his article, and allows a certain discount to the dealers, some of whom, anxious to push trade on the principle of quick returns and small profits, offer the article in question (collodion) at a very slight advance upon the price they pay the manufacturer. In some trades a leading article is sold without profit, to attract custom. In other trades—bookselling, for instance—some tradesmen regularly allow a discount off the published price, in order to secure custom. We do not know that the article at the cheap rate is ever any worse in quality than when sold at the full price, but, in our observation, the practice has a tendency, through a series of reactions not necessary to trace here, to the general deterioration of goods.

BELMONT.—There are many modes of reducing the tendency to intensity. We before advised the free use of bromides. If that is insufficient, use a somewhat weaker nitrate bath, or use a strong developer, and flush the plate with a large quantity of it in developing. Or use a newer collodion, or dilute the collodion with a little alcohol and ether. Any, or a combination, of these means tends to reduce the production of intensity in the negative. What proportion of bromide are you now using in your collodion? What strength of bath? And what kind of developer? As a rule, free use of bromide is the safest aid in the matter.

G. P.—Where rinsing the paper after removal from the silver bath is recommended, the sheet is to be immersed, and passed through the water, and then hung up to dry. Where it is recommended to blot it off instead of rinsing, a fresh sheet of blotting-paper is laid upon each sheet of paper until the number is completed; they are then taken out and allowed to dry. The blotting-paper may be used over again two or three times. Distilled water is best; it will not soon become too charged with silver to do injury. After fuming and printing, the prints will not require soaking before toning; but it will be as well to immerse them in water, so as to become wet all over before placing in the toning bath.

H. W. TASKER.—The *YEAR-BOOK* for 1866 is out of print.

PHONO-PHOTO.—You will unquestionably gain by getting rid of some of the sash-bars. Do not, however, put in ground glass, as it obstructs a great deal of light, and is costly. Put in plain glass, and then treat it with one of the various excellent means of imitating ground which we have described from time to time. Starch paste, for instance, answers well; or stippling with varnish and zinc white, as described by Mr. Edwards in our *YEAR-BOOK* for 1870, also answers admirably. 2. The question entirely depends on size of stops and diameter of lenses. You will ascertain best by trying; but we are disposed to think that the cabinet will be most rapid. 3. The card you enclose is not too dark.

STUDENT.—Schlippe's salt is not usually kept by chemists; but it is possible you may get it by ordering of a London photographic chemist. Hopkins and Williams made it when it first came into vogue. About 50 grains to the ounce may be employed. The image must be converted into iodide or chloride of silver before applying the Schlippe's salt.

JOHN TERRAS.—Splitting of the film in drying may be due to a variety of causes. The most frequent is the plate not having been quite clean or quite dry when coated with collodion, or excess of acid in the bath, or under-exposure and prolonged development, or the use of old, partly decomposed collodion. Besides altering any or all these conditions, there is a safe method of preventing when the tendency is noticed. Before drying the negative, pour a little stale beer or very dilute gum-water over the film. This will check the tendency to splitting. 2. You can only obtain the *Philadelphia Photographer* by ordering it yearly, in which case you must pay in advance, and you will then receive it regularly by post. 3. The journal you mention never came into existence. It was announced, but never issued.

H. B.—Old writing paper can only be converted into a pulp by maceration, tearing up, and pounding by machinery, similar to that used in paper making. 2. Rub white wax into the paper negative before the fire, and then iron between two sheets of blotting-paper to make it even.

T. A. D.—The address of the Fine Art Printing Company working Mr. Woodbury's patent is Hereford House, Brompton.

ARITHMETICAL CURIOSITY.—Our readers interested in this question will have noticed that in the communication of "*Arithmos*," on the subject, a misprint occurred, in which 3774 is printed for 3744.

JAS. HALL.—With some samples of paper there is a tendency for the prints to become a little deeper in tone in the fixing bath; but in the majority of cases it is due to a trace of acidity in the fixing bath. If you are quite sure your hypo bath is neutral or slightly alkaline, and the prints well washed after toning, then your only remedy is to remove the prints from the toning bath when they are considerably too warm. If the prints enclosed be an example of the result, it is partly due to another cause. The print, although very good, is from a negative which is just a trace too thin, which does not permit the reduction of much silver in printing. Prints so produced generally run to lilac tint as soon as they are past a drab tint.

S. W. BARNES.—We have no means of ascertaining whether the photograph you enclose is or is not copyright. If it be copyright, you, of course run risk in copying it.

M. DEA.—If you paint, or employ some one else to paint, a picture, and duly register it, you can issue photographs of it which cannot, without infringement of copyright, be copied and sold. But this will not invalidate the right of any one else to paint a picture of the same subject, and then photographing and selling the prints.

"PERSONAL INSTRUCTION FOR PORTRAITISTS."—We have received several communications for "*H. S.*," the writer of the letter on this subject in our last. Our correspondents will see, on a moment's reflection, that we cannot undertake the office of intermediary in such case. We have no time to transact private agencies. The proper means of making known all business communications is through our business columns.

JOHN STONE.—It has been asserted that water in freezing eliminates impurities, and becomes equal to distilled water. We have not personally given the subject much attention, but we doubt the statement.

HENRY VIAL.—India-rubber which has been exposed to light often becomes insoluble in its usual menstruum. Take a piece of india-rubber and cut away the black outside, only using the light-coloured inside portion. You will probably find that dissolve readily if pure. The solution should be filtered. You may use the same chloroform. 2. The solutions will keep separately. You acted wisely in the matter of the still.

J. W. CAMPBELL.—You may communicate with the small sum you mention. Go to a respectable dealer who is also a practical man, and state the facts; he will give you good advice. A tent will serve, but a dark room is better. Try Mr. Hughes's, 379, Oxford Street.

G. N.—The hours of business vary in different houses, and for different departments. Operators usually work from nine in the morning until dark. Printers often commence at eight in summer. We will examine the coloured portraits if you send them to our office.

E. WILLIAMS.—The advertiser in question was Mr. Godbold, of St. Leonards, whom we know to be a respectable man. The neglect must have been an oversight. Your letter got overlooked last week.

R. TUDOR WILLIAMS.—Many thanks. We shall have much pleasure in forwarding the coffee prints. The portraits are very excellent indeed; soft, delicate, forcible, and rich as photographs, they are also satisfactory and artistic in arrangement. They are decidedly above the average quality of portraiture with which we meet. Thanks for the communication. In our next.

F. BOSWELL (Lynce Regis).—We have received three prints without any communication respecting them.

CAPTAIN ROSS THOMPSON.—Thanks. We shall publish the ingenious hint shortly.

The Communications of G. R. Gill, W. Marquand, and Isaac Wilde, are again compelled to stand over until next week.

E. P. OGIER.—Thanks. In our next.

Several Correspondents in our next.

Photographs Registered.

- Mr. J. JACKSON, Rochdale.
Photograph of J. Ashworth, Esq.
- Mr. S. FRY, Kingston-on-Thames.
Photograph of Countess de Paris.
Photograph of Princess Amalie d'Orleans.
Photograph of Duc d'Orleans.
Photograph, Group of Countess de Paris and Duc d'Orleans.
Photograph, Group of Countess de Paris, Duc d'Orleans, and Princess Amalie d'Orleans.
- Mr. G. R. GILL, Kentish Town.
Photograph of Rev. W. Calvert.
- Messrs. DEVAL and Co., Manchester.
Photograph of Mr. G. Wilson.
- Messrs. R. WARD and Co., Belfast.
Photograph of Design entitled "Two Views of Life."
- Mr. F. BOSWELL, Lynn Regis.
Photograph of Ancient Roman Tools.

THE PHOTOGRAPHIC NEWS.

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CAMPHOR IN COLLODION.

A PARAGRAPH recently appeared in the *Athenæum*, and has since been quoted in some other journals, describing some experiments with gun-cotton, published by Professor Seely in New York, which, although interesting in a chemical point of view, may mislead photographers unless accompanied by further information. Professor Seely points out that whilst ordinary gun-cotton or pyroxyline is insoluble in alcohol alone, the addition of a little alcohol at once produces solubility. The value of camphor in aiding the solubility of gun-cotton in various menstrua is well known in this country, and has been rendered available in the manufacture of xylonite, as described in our last volume; and the addition of camphor to collodion for photographic purposes was the subject of a patent in this country about sixteen or seventeen years ago.

At the last meeting of the Liverpool Amateur Photographic Association we notice that Mr. Green, calling attention to Professor Seely's experiments, made a suggestion which was excellent in itself, and which, if the premises had not needed qualification, might have been very valuable. He thought that that singular fact, to which the paragraph in question referred, might be of much importance to photographers, as it might enable them to dispense with ether, which, comparatively with alcohol, was a very unstable compound. It might also shorten the exposure, by keeping the film of dry plates in a better condition for the action of the developer. He thought it might also act like oil of cloves, and similar hydrocarbons, in facilitating reduction of silver from its compounds; and, if so, might in that way shorten exposure. Mr. Green's conjecture very accurately represents the actual facts. The action of camphor in collodion is very similar to that of oil of cloves and other bodies facilitating the reduction of silver. A dozen or fifteen years ago we made a tolerably complete series of experiments on the effect of various additions to collodion—camphor, wax, glycerine, glycerine, grape sugar, honey, gallic acid, resins, and various essential oils. It is not necessary to recount all the details of our experience here; it is sufficient to say that the temporary advantages gained by the use of some of these substances was more than compensated by the subsequent losses. With camphor, at the rate of one grain to each ounce of collodion, as used in Cutting's patent process, the advantage gained, either in sensitiveness or vigour, was less palpable than with many other substances, whilst the disadvantages were very definite. The first defect which attracted attention in a negative taken with the camphorated collodion was the complete opacity of the film throughout. Camphor being an opaque gum, the collodion film in which it is present dries white and opaque, giving the appearance of fog to the image.

It is true that after varnishing, this disappears; but it is inconvenient, and deceiving to the eye, to have to deal with a negative presenting this fogged appearance. The bath used with collodion acquired a tendency to fog, and the collodion itself was not stable.

Our object in recalling these experiences is not to discourage experiment. We believe that it is always interesting and instructive to repeat old experiments in the light of fresh knowledge. We simply mention these facts by way of caution to the experimentalist, and to suggest that his operations should be conducted on an experimental scale, that he may not risk the injury or derangement of large quantities of material which may be working well now, but might, by incautious experiment, be rendered useless.

AMERICAN PHOTOGRAPHIC EXHIBITION.

THE next American Photographic Exhibition, held under the auspices of the National Photographic Association, will open in Philadelphia on June 6th. Our American friends are especially anxious to receive contributions from the Old World, and every arrangement will be made to give ample space, and good position and light, to foreign contributions. A grant from Congress allows the entrance and return of foreign specimens free of duty. Photographers who desire that what they send should be sold on their account, and not returned, will receive the best attention to their wishes. In all cases, two itemized invoices should be sent by mail, and notice as to date of shipment, name of steamer, &c. Packages should not be sent later than April 15th; but if sent at any time earlier (and the earlier the better), they will be carefully stored. All packages should be addressed as follows:—National Photographic Exhibition, care Edward L. Wilson, Secretary, Philadelphia, U.S.A.

We hope, in the course of a week or two, to be able to announce that arrangements are made to send all the cases to one person in London, who will pack the cases sent to him in one or more large cases, and undertake the shipment, in which case the National Association will pay the freight to America. For the credit of England, and the perpetuation of the fraternal feeling existing between American and English photographers, we hope that a fine collection of photographs may be sent from this country, and we urge the matter on the attention of our readers.

PHOTOGRAPHY AND THE ECLIPSE.

IN spite of delays, mismanagement, and mishaps, the photographic observations in connection with the English eclipse expedition were not altogether a failure. Our readers are familiar with the delay in the preparations

for the expedition, owing to the tardy response of the Government to the application for aid in carrying out the arrangements; and with the uncertainties of the last moment, when it was discovered, that no funds remained to secure competent aid. Accidents and shipwreck *en route* followed; and unfavourable weather at the critical moment, at more than one of the stations of observation, threatened to render the best arranged plans of little avail. Notwithstanding this, Lord Lindsay, at Cadiz, obtained nine photographs, and Mr. Fryer and Mr. Brothers, at Syracuse, obtained six photographs. A few days previous to the starting of the expedition we received a telegram from Mr. Brothers, asking for the address of Dr. Vogel, as it had been resolved on, at the last moment, to secure his valuable aid, and he was, we believe, the only scientific man who had had photographic experience on a similar occasion who was present. As our readers know, he joined Mr. Lockyer's expedition *en route*, and they have already read his graphic narrative of the observations at Mount Etua. We now subjoin some particulars furnished by Mr. Brothers to the *English Mechanic*. After some preliminary remarks, he says:—

The temperature at Syracuse on the day of the eclipse at twelve o'clock, in the shade, was 60·5° Fah.; but, during the same week, 70° in the shade was registered. At night, the lowest temperature was 46°. I have no record of the temperature during the totality, but it was decidedly "chilly."

The weather for some days previous to the 22nd was very fine, and particularly favourable for photographic work, but the barometer had shown a tendency to fall. We also observed that Etna, which was about forty miles distant, and which had been remarkably distinct, became clouded.

The morning of the 22nd was somewhat cloudy, but the sky cleared, and the sun remained bright until within about an hour of totality, when a dense cloud came up, and we had almost abandoned all hope of seeing any other eclipse than the one caused by the cloud. Darkness continued to increase, and we saw the sun no more until within a few minutes of the disappearance of the last gleam of sunlight, when the thin crescent of the sun made its appearance through an opening in the cloud, which we could now see was thinning off, and there was a prospect, after all, of our getting some photographs. The sky, in every other part excepting near the horizon and just in the neighbourhood of the sun, was brilliantly clear.

For about fifteen minutes before totality I had been occupied in the dark room preparing six plates; but when I came into the observatory, about two minutes before the time, I was much struck by the beauty of the sight which at once attracted my attention. The darkness of the eclipse was fast approaching, but there was distinctly seen through the cloud the crescent sun, giving just sufficient light to illuminate the fleecy cloud bordering the denser parts, and producing a very beautiful effect—brilliant rainbow tints being reflected, not in broad masses of colour, as we see in a rainbow, but broken up, and producing more of the effect of sunlight reflected from drops of dew than anything else with which I can compare it.

The critical moment was fast approaching. At last Mr. Fryer, who had been watching through a small telescope for the disappearance of the last ray of sunlight, gave the signal "total," and our work commenced.

I must pause here to say something of the preparation we had made before leaving England and after our arrival at Syracuse. I will first state what we proposed to do, and then describe how we did it.

Photography was, I believe, first employed by Dr. De la Rue and Father Secchi, in Spain, in the year 1860, when the red prominences were successfully photographed, and at the same time proved to belong to the sun. Again, in India and America the red flames obtained the chief share of attention, but observation had been scarcely at all directed to the corona. Faint traces, however, of this mysterious light were found on the photographic plates. The corona had, indeed, been known as one of the phenomena of all total eclipses of the sun, but very little attention had been paid to it while the prominences attracted so much notice. It was, however, determined by the English observers, that during the recent eclipse, the corona almost exclusively should be observed, and I was requested to take charge of the photographic arrangements. Bearing in mind all that had been done during previous eclipses, it

appeared that the corona could not be successfully photographed if a telescope were used for the purpose. There are objections to both reflectors and refractors. I therefore determined to attack the matter somewhat differently, and, as the event proved, successfully.

The corona has usually shown itself on the photographic plate merely as a bright light extending a very short distance from the moon's limb; but all observers of the phenomena speak of this bright light as extending much further, and of rays projecting in some cases one or two diameters in every direction around the moon, and presenting all sorts of fantastic shapes. These appearances also have been said by some observers to change during the eclipse. The small extent of the corona hitherto photographed had given rise to the idea that its light was not very actinic, and that a very long exposure would be necessary to photograph the image. That I might obtain negatives showing the rays and a corona such as is usually visible to the naked eye, and also test the matter as to the actinism of the light, I determined to take several pictures, and to give each plate a different exposure.

It is, perhaps, unnecessary here to describe the telescope, cameras, and observatory. I will merely say that the telescope was one belonging to the Royal Astronomical Society; that the framework of the observatory and dark room was constructed in England, and was forwarded by way of Malta (with the other heavy baggage), so as to be ready immediately on our arrival at Syracuse, thus saving time, few hours sufficing to put the erection together. The whole was covered with thin waterproof canvas, and as an additional protection, chiefly from the wind, a large sail was securely fastened over the building—a protection of the value of which we had ample proof before our work was over.

To the eyepiece end of the telescope (which is mounted on the German plan, and driven by clockwork) was fixed the camera for taking photographs of the partial phases, and also for taking one picture during the totality. Mounted on the telescope was the camera for photographing the corona. I wished to obtain the pictures with short exposures, and yet to get as large an image as possible. Fortunately, an instrument combining these two qualities—a long focus and quick-acting—was available, Mr. Dallmeyer having very kindly lent me one of his "rapid rectilinear" lenses of 4in. aperture and 30in. focus, giving an image of the sun 3·10in. in diameter. This lens was fixed to a camera adapted for plates 5in. square. Six dark slides were prepared and fitted for use in either camera. As I had to do the whole of the photographic manipulation myself, a large number of partial phase pictures could not be taken—time was lost in the preparation and development of the plates—but I secured about nine negatives before clouds prevented further work. My plan was to prepare three plates, and expose them after intervals of two minutes; then develop, and so on up to the time when it was necessary to get ready for the totality.

I had found that it required two minutes to prepare each plate, and at fifteen minutes before totality I commenced the preparation of the six plates required. No. 1 was placed ready in the camera for the corona, and No. 6 was put into the telescope camera ready for exposure at the proper time. We had arranged a scale of exposures varying from three to thirty seconds, and we had found, by repeated drilling, that it required about six seconds to change the slides and make the exposures. We had previously decided that we would go through the ceremony of exposing the plates regardless of the atmospheric conditions at the time, and so take the chance of any break in the cloud which might occur. Exposure No. 1 was, therefore, made with very little prospect of success, and it came out blank, No. 2 and the others following in their proper order; the whole showing results, but No. 5 giving a perfect picture. The cloud had completely cleared away by the time this picture was taken. No. 6 was exposed three seconds in the telescope for the prominences.

The plate No. 5 was exposed eight seconds. It is, of course, impossible to say whether this plate shows as much of the corona as would have been seen on the plate exposed thirty seconds if there had been no cloud at the time when that picture was taken; but, as it shows the corona extending about a degree on the north and west sides of the moon, and less on the east and south, and as one of the observers who was watching through a telescope for the re-appearance of the sun assures me that there was no cloud at the time my photograph was taken, it is, I think, safe to assume that the whole of the corona is shown on this plate.

How could six photographs be taken in 105 seconds? This is a question which will, no doubt, occur to many readers. It was done in the manner following:—Mr. Fryer stood at the end of the telescope ready to uncover the camera at the appointed time. Lieutenant Spaight (who had very kindly consented to assist us) was standing near my right hand ready to give me the dark slides, and to take those already exposed from me, and Sapper W. Gardiner was at the chronometer counting seconds, and I was stationed at the telescope. The changing of the slides was effected in six seconds each, and at the finish we had about two or three seconds to spare.

It might be asked why we did not use repeating frames. This was thought of, but decided against, for reasons which I need not particularize here. I believe the plan adopted was the best.

Immediately after the end of totality I commenced the development of the plates, and most anxiously did I watch for the appearance of the image. My anxiety was not of long duration; the picture was there, and good beyond all expectation; this was plate 5. The other plates were all under-exposed, as I have before stated, owing to the partial cloud.

Early in the day a strong breeze sprang up, and at the time of the eclipse it was blowing half a gale; consequently clouds of dust covered everything. This we attempted to keep down by watering, but only with partial success; and, worse than all, the cloud, no larger than could be covered with the hand when held with the arm extended, and yet which appeared not to move, threatened total failure. Fortunately, we were deceived in this respect; the cloud did move, and we obtained at least one good picture of the corona. The effect of the wind can be seen in most of the pictures by the traces which the red prominences have made. Red is not usually considered to be very active in its effects on the photographic plate; but these strange appendages of the sun form an exception to the rule. The light from them is extremely quick in its action—many times more so than the light of the corona, which has more of the character of moonlight in its photographic action. The gusts of wind appear to have caught the telescope, and the images of the prominences have left their marks where the dark outline of the moon should be; and then the telescope has gone back to its place again. The effect of this has been, no doubt, to soften the corona; but the coronal light being so much less actinic, the vibrations of the telescope have not materially affected the *form* or *extent* of the corona. The disc of the moon should, of course, appear perfectly circular, but the light has *eaten into* the moon's limb. This might have happened to some extent, probably, if there had been no wind, owing to the tendency of the silver to form a greater deposit on those parts where the action of the light has been greatest; but the doubling of the image has been the chief cause of the irregular shape. The north and south limbs of the moon are perfectly sharp *where there are no prominences*; and I consider this a proof that the detail of the corona has not been injured by the doubling of the image in other respects.

The readers of this article who are interested in photography will no doubt say: "What process do you use? What collodion? What developer?" &c. To all I reply, that I used a process for obtaining negatives; that any process which will work quickly, and give clean pictures, would have answered the purpose. In fact, just the process that any one would employ who wished to take good landscapes. Were I again to attempt to photograph an eclipse of the sun, I should perhaps adopt a different plan. What we want is a picture of the phenomenon such as we see with the naked eye; and for that purpose the old, and now almost disused, positive process on glass—the process by which those exquisite pictures one now so seldom sees were produced—is the one I should prefer to use. This would give a picture from which negatives could be made of any size, and, for certain details, could still be viewed by transmitted light.

PARCHMENT PAPER AND HYDRATE OF CHLORAL.

BY T. L. Phipson, Ph.D., F.C.S.

THE modified form of cellulose known as parchment paper, obtained by passing sheets of paper through sulphuric acid diluted with half its volume of water, and remarkable for its toughness compared to ordinary paper, becomes

extremely brittle when submitted for a certain time to the vapour of chloral hydrate of the ordinary temperature of the air, or when left in contact with this substance, and can then be easily rubbed to a powder.

A SIMPLE DRYING BOX.

BY E. TUDOR WILLIAMS.

THE following will be found a cheap and easy way of making a very efficient drying box for dry-plate work, viz:—

Procure two old tea chests, the one slightly larger than the other, so that the larger may be made into a lid in such a way that it drops over the smaller or box part, similar to the way in which the lid fits on a pill-box, but care must be taken that it does *not* fit too tight. Both box and lid must be lined with thick brown paper, to exclude all white light. The box is then complete.

For resting the plates and avoiding any contamination, it is necessary that tumbler glass or marmalade jars should be arranged round the inside, one for each plate to be dried, also a dish to contain the sulphuric acid that acts as the drying medium.

I have a box so made that has been in use over twelve months, and see no reason to abandon it for any other or more expensive form; indeed, coffee plates dried in this kind of box, by the means of sulphuric acid, I have kept for eight months before exposure without the slightest perceptible deterioration.

MY EXPERIENCE WITH WASHED PAPER PRINTING.

BY B. WYLES.

THERE seems to be a good deal of difference of opinion on the advantage of washing paper for commercial printing. Will you allow me to record my vote decidedly in its favour? Yet I can quite appreciate the difficulties which some have found in working it.

Our usual printing had been with a 40-grain silver bath, to which nitrate of soda was added, and the sheets were blotted off between white blotting paper. Now, when the sheets were washed in three or four waters, then blotted off as usual, and printed with fumed pads, the prints dried a peculiar nasty bluish-black, quite different to our usual tone; and no difference was made by taking them out of the toning bath earlier; no matter how agreeable the tone whilst wet, they went to the blue dirty black on drying.

This peculiar appearance has been attributed as a necessary result of the washed paper process. It can scarcely be so, as we have got rid of it entirely, and now get any tone required, just as used to be the case before washing, with the addition of some advantages which the old plan had not.

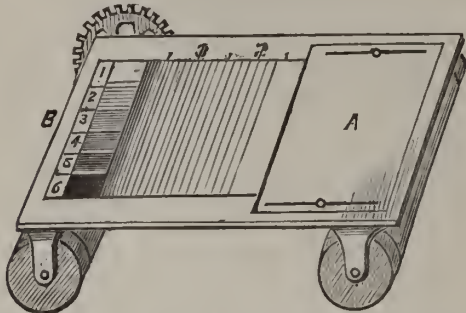
The procedure was as follows:—The previously slightly acid nitrate bath had a few drops of liquid ammonia put to it, the paper was rinsed through one water, instead of three or four, and the blotting papers were discarded; the paper being hung up till surface dry, and then finished off by the fire.

To conclude, with the exception of the whites being purer, and so giving the prints a more vigorous appearance, no one could tell from the tones that the paper had been washed and fumed. But in working there is much greater latitude in keeping the paper good, and a greater number can be got off in a given time, on account of its quick printing. I, therefore, consider it, from a commercial point of view, not merely practicable, but of great advantage. I am the more glad to be able to say this, as at first the colour of the prints threatened to force us back to the old system. Now, I think, the failures are fewer than with the ordinary mode of printing.

SUGGESTION FOR AN ACTINOMETER.

BY W. MARQUAND.

THE diagram illustrates an idea of an actinometer for showing the variations of the light's activity during the day. A strip of sensitive paper is made to travel from A towards B by means of clockwork at a fixed speed, say half an hour for a given portion to do the whole distance.



When the paper arrives at B, it will have darkened more or less, according to the light's activity, and correspond with one of the painted tints. If the light should be so powerful as to make the paper darker than No. 6, the shield A must be slipped towards B, thus reducing the length of the opening, and the extent of the reduction read off on the edge thereof.

Guernsey.

KEEPING THE NEGATIVE BATH IN WORKING ORDER.

BY ELBERT ANDERSON.

MR. ANDERSON, in our Philadelphia contemporary, still continues his dialogue instructions. In the following conversation he reviews some of the diverse opinions on the treatment of the nitrate bath, and gives his own method to his pupil, Mr. Marshall. Mr. Anderson commences:—

I have told you that a bath of three gallons will sensitize upwards of 600 4-4 plates, and may require filtering once—twice at most. Somewhat depends upon your own cleanliness of manipulation. A half-gallon bath, newly made, may very properly be iodized by coating a 4-4 plate twice with collodion, and leaving it in the solution over night.

M. I met a feller out west, who told me that he found his bath worked better the older it got; and, in fact, that he got better chemical effects as his bath approached over-iodizing. Is there anything in this?

A. The "feller out west" certainly knew what he was talking about. Unquestionably, as the bath approaches a state of saturation with iodide, the best chemical effects are procured, from the simple fact that the iodized film is less and less interfered with, the saturation of the solution preventing its attacking the film. That fact alone is one in a dozen good reasons for using a large bath, well iodized, as you may thus use it for a long time without its becoming over-iodized. E. L. Wilson says:—"A bath not saturated with iodide of silver will produce unequal results." He makes no allusion here to those little "tuppeny" baths of half a gallon, which must go out of order every semi-occasionally, for which reason you cannot iodize sufficiently without overdoing it after dipping very few plates.

M. "Devine's Practice" says:—"Every plate must be removed from the bath as soon as coated, that the solution may be preserved as long as possible below the point of saturation." It strikes me that this gentleman's head is level.

A. You are right; and "Lea's Manual" answers it completely: "The plate should never be left in the bath longer than necessary."

M. Now here's something that is an enigma to me, which might even bother the Sphynx herself. I will read it to you, from "Hardwich's Chemistry," 7th edition, p. 521:—"When the iodide of silver, previously dissolved in the bath, crystallizes upon the film, leave a plate in the solution all night, that the excess of iodide of silver may gradually crystallize upon its

surface, and so be removed." Now, considering that you have taught me that this dipping of plates in the bath was the very cause of its becoming over-iodized, and now I am told, on the contrary, that this is the method of removing it, I am rather muddled.

A. I cannot conceive how Mr. Hardwich could have written this paragraph as it now reads. Either I don't understand what he means at all, or else "Why, this is lunatics; this is mad as a mad dog!"

M. Now we come to sunning the bath. What do you say—sun or not sun?

A. If the bath be put in the sun whilst it (the bath, you know, not the sun) is acid, it might be left there a year without the sun's having the least effect upon it. It must be first made slightly alkaline, when the effect of the sun's rays will be to blacken the solution from organic matter, which will finally be thrown down as a black powder, and when the solution becomes perfectly clear, all further action ceases.

M. It does benefit the bath, then?

A. Yes, of course.

M. You say, "Yes, of course," but you hold something in reservation, I know.

A. I do. Boiling a bath properly for an hour will do more good than sunning it for a year. I never sun a bath.

M. "It has, however, been justly remarked that, in diluting the bath, the disordered bath must be poured into the water, and not the reverse." (M. C. Lea, *Mosaics*, 1867, page 10.) Then follows the word, "WHY?"

A. Mr. Lea is correct; and when we come to renovate our bath, you will be told "WHY?"

M. Another passage says: "When, in the course of time, the bath becomes saturated with iodide of silver, add crystals of nitrate of silver." But Devine enters a protest.

A. I agree thoroughly with Devine, "and" (to quote his words) "advise the operator never to strengthen his bath until it is thoroughly renovated and made over." And now, Mr. Marshall, what do you think of the following?—"Better make a new bath than repair the old one, since nothing satisfactory will be likely to be got from it." (R. D. Ewing, *Mosaics*, 1870, page 54.) Considering that I have been "repairing" my bath for about four years past, and have received the first premiums at all the Fairs of the American Institute during this period, I am not unnaturally led to suppose that something "satisfactory" has been got from it.

M. Well, yes; "it does look that way," certainly. But you must have made a new bath some time or other, or else you must have a "healthy old bath" by this time.

A. There stands in Milan an old cathedral, where visitors are shown a wheelbarrow supposed to have been blessed by some patron saint hundreds and hundreds of years ago, and yet it has been used ever since to perform the roughest kind of work, and is at this present day just as good, aye, better than now; in fact, it never will wear out.

M. Never is a long day. Why won't it wear out?

A. Because, in former years, when it was first put in use, the wheel broke, and so they got a new one put in; later the bottom fell out, and a new one was put in, in its place; by and bye, the handles broke, one after another, these in turn were replaced by new ones; next the new wheel gave out, and was replaced; again the bottom succumbed, and so this has been going on for hundreds of years.

M. Yet this is the same wheelbarrow (!)

A. Exactly. Like my bath, it's the same one; repaired from time to time, ever since it was first made.

M. I should say you were not very partial to new baths.

A. I look upon a new bath pretty much as my cook regards the griddle "buckwheat-cake mornings;" she says she must "grease up and fry two or three rounds" before she can "git things runnin' smooth-like."

M. How do you replenish your bath, then?

A. I have told you I use two baths of about four gallons each. I coat from fifty to sixty 4-4 plates daily, and find they last me about six or eight weeks, during which time I may have filtered once or twice; thus I am enabled to coat upwards of two thousand plates before any signs of exhaustion exhibit themselves. In the meantime, I make up a bath two gallons at twenty grains strong, and, in an alkaline state, boil down to forty grains. Iodize as before stated, by leaving in an eight by ten plate all night. I use this as opportunities present themselves, and in a short time it works perfectly. I then decant this into a large demijohn, and, if necessary, make

another, or more, and it is with these I replenish the larger baths.

M. What is the best method of abstracting water from collodion?

A. I should suggest, as the best method of doing this, "chucking" the collodion out of the window.

M. Now a question of developing. How is your developer made?

A. I make two solutions as follows: No. 1. 1 ounce proto-sulphate of iron, 1 ounce of acetic acid "No. 8," and 12 ounces of water. No. 2. 1 ounce iron, 2 ounces acid, 23 ounces water; alcohol (only if necessary) enough to make it flow over your plate smoothly. Mix proportions of Nos. 1 and 2 to suit. Much depends upon light, exposure, drapery, weather, &c. In case of children, where you cannot get "time," use No. 1. With a fine light and full time, use No. 2; even weaker. I have never noticed the effects alluded to on these last-mentioned.

M. C. W. Hull says: "In developing, hold the plate absolutely still; by so doing the detail is better obtained." How is that?

A. Assuredly. I have seen some operators (!) "jiggle" a plate up and down as if they were trying to balance a marble on its surface. Why, I cannot conceive; that's probably one of the "secrets of the dark chamber."

M. E. Dunmore says: "Use the developer with a lavish hand; never mind the silver washing off." Is this "sound on the goose?"

A. I flow my plate as rapidly as possible, and endeavour to wash off all the silver I can. There is always plenty left, and to spare. And, I make my developer fresh every day.

M. "Devine's Practice" says: "The operator should aim to get his negative intense enough after one development with iron; there will generally be found no difficulty in accomplishing this object."

A. I find no difficulty whatever. Beware of strengthening (!) Remember what Crockett says: "Be sure you are right, and then go ahead."

M. What is the effect of bromide in reducing contrast?

A. If the contrast is caused by improper lighting, don't look to your chemicals to remedy it. A proportion of about three of bromide to five of iodide is not far out of the way.

PHOTO-MICROGRAPHY.

BY THOMAS HIGGIN.*

THE application of photography to the delineation of microscopic objects dates from the earliest days of photography. It was one of the first uses to which it was applied, and an endeavour was made so far back as twenty-five years ago to give microscopical information in this truthful way at a small cost. The plates then used, silver ones, soon wore out, and it does not appear that any similar attempt has since been made.

The difficulties met with in producing photo-micrographs have caused numbers of persons who have from time to time taken the matter up to abandon the study, and the hopelessness of finding a sale amongst the general public has prevented professional photographers from devoting any time to it. Thus the production of photo-micrographs in this country was mainly confined to a few scientific gentlemen who produced them for their own purposes, until Dr. R. L. Maddox, of Southampton, a few years ago issued his beautiful series for the magic lantern.

It was in the year 1839 that M. Daguerre communicated to the public his discoveries in photography. In the following year Mr. Dancer, of Manchester, produced images of microscopic objects upon silvered plates. In the same year Dr. Donne, of Paris, presented to the Academy of Sciences copies of various microscopic objects on Daguerreotype plates; and five years afterwards he and M. Leon Foucault published an atlas of microscopic anatomy, in which the engravings were printed from Daguerreotype plates which had been chemically etched.

The first publication in this country of photographs of

microscopic specimens took place in the year 1852, when Mr. Joseph Delves presented to the Royal Microscopical Society of London a paper illustrated by beautiful prints from his own collodion negatives, and this paper, with its illustrations, appeared in the next issue of the *Journal of Microscopical Science*.

The art has been fortunate enough to obtain Government patronage in the United States, and it is in Washington that the greatest advances have been made, and where it has been availed of for recording microscopical information on a large scale. The Army Medical Museum there is rich in the productions of Dr. J. J. Woodward and Dr. Curtis; and the researches of these gentlemen appear from time to time in reports issued by the War Department. Dr. Woodward has introduced the use of the heliostat, and has designed one for photographic purposes. By the application of this instrument the greatest difficulty in manipulation has been overcome. He has also introduced an amplifier, a double concave lens, used in the place of the eyepiece, by means of which, with the one-eighth, an object may be magnified as many times as by the one-fiftieth alone, and with quite as good definition. This amplifier is made by Mr. Wales, of Jersey City, New York, at a cost of about 30s.

The use of the cell containing a solution of ammonio-sulphate of copper is also due to Dr. Woodward. This solution stops the heat rays in their passage from the mirror, but does not interfere with the actinic rays. Dr. Vogel has stated lately that this solution serves to render the chemical and visual foci coincident. I am not able to say whether this is so or not.

The most ardent worker in this country has been Dr. Maddox. He has perseveringly stuck to his love, has overcome the various difficulties which stopped other men, and has always been ready to communicate for the benefit of others the results of his labours. He has photographed a variety of objects, not excepting living objects. In 1867 he illustrated a paper read before the Royal Society with photographs made from an *Aquatic Larva* whilst living. Most of the photo-micrographs hitherto produced have been made by means of transmitted light; some have been produced by reflected light, but these have not generally been successful or satisfactory. The powers generally used for the table microscope are employed, but if the visual and actinic foci are not coincident, they require to be corrected in order to work with any degree of comfort.

Before the heliostat was used there existed very great difficulty in using the higher powers. The illumination might be made satisfactorily, but, before the plate could be got ready, the altered position of the sun made it necessary to readjust the mirror; and this had to be done over and over again so often that patience became exhausted, and the pursuit was abandoned. But with the heliostat the light, once adjusted, requires little consideration. The mirror of the heliostat follows the sun, and throws the light on the mirror of the microscope in exactly the same position for hours together.

Dr. Woodward thus describes the heliostat designed by him:—"It is designed to throw a steady beam of sunlight in the direction of the south pole of the heavens. It consists essentially of a mirror adjustable perpendicularly according to the declination of the sun, and attached to the south end of a rod set parallel to the axis of the earth. This rod is then rotated at the rate of one revolution in twenty-four hours, by having a wheel fixed upon it which is connected by a band with the arbor of the hour-hand of an ordinary clock." The one on the table was made for me by Messrs. Abraham and Co., of Liverpool, from a drawing sent to me by Dr. Woodward.

Sunlight is the source of illumination generally employed, because it costs nothing, and gives the best definition; but when it is not possible or convenient to use sunlight, the electric light, the oxyhydrogen light, or the magnesium light, may be used.

Having got a good source of illumination requiring little

* Read at a meeting of the Liverpool Amateur Photographic Association, February 23, 1871.

further attention, the next difficulties met with arise from the impossibility of being at both ends of the camera at the same time; some mechanical arrangement becomes necessary to enable the operator to manipulate the microscope whilst arranging the image on the screen of the camera. Dr. Woodward has got over this difficulty by converting his operating-room into a camera, and lately Dr. Maddox has followed his example. The adoption of this plan enables them to sit down before the microscope and use it as they would for ordinary purposes, and, when all is adjusted, the removal of the eyepiece allows the image to fall on the screen. The final adjustment of the focus can only be done at the screen of the camera, and some arrangement is necessary by which the fine adjustment of the microscope can be communicated with whilst viewing the image on the screen with a focussing-glass.

The disadvantage of Dr. Woodward's arrangement appears to be—that part of his apparatus (the heliostat and mirror) is outside his window, it being necessary to adjust the mirror by means of rods passing through the shutter. In addition to this, it is not always convenient to convert a room into a camera.

In the arrangement I have adopted, I have the heliostat upon the camera, and whilst standing towards the front of the camera it is within easy reach, as is also the mirror, the condenser, the stage, and the coarser adjustment; and a small opening in front enables me to see the image upon a sheet of opal glass, which is placed in the dark back—in the place afterwards to be occupied by the sensitized plate. The interior arrangements of the camera may be thus described:—The carrier for the objective is attached to a plate of zinc, which is moved by the fine adjustment rod worked from the screen end of the camera; this plate travels upon another plate moved by a rack worked by the milled heads at the sides of the camera. The camera stands in a window having a southern aspect, and I do not find it necessary to have the window open whilst operating.

Dr. Woodward focusses upon a sheet of plain plate glass. I do not experience any difficulty in focussing upon a sheet of ground glass. I use, for a focussing-glass, a hand-microscope, with a two-inch objective set for the ground surface of the glass.

Dr. Woodward has been successful in using all the powers of the microscope up to the one-fiftieth; but he tells us that the pathological photographs executed under his direction have been chiefly taken by means of low powers, the objects being magnified from twelve to fifty diameters—in other words, with objectives ranging from the two-inch to two-thirds.

My own experience proves that the low powers are those most generally useful; and this is important, because it is easier to work with them, and they are less costly. I find a four-inch objective makes an excellent condenser for all these powers, but, when higher powers are employed, it is necessary to use an achromatic condenser of the best description.

The manipulation having been so much simplified, and the great difficulties overcome, it is to be hoped that a much larger number of persons will be induced to take up this most interesting and engaging work; and there is really no reason why anyone possessing a good microscope should not, if so inclined, use it for the production of photo-micrographs. A very small amount of knowledge of photographic manipulation and chemistry is sufficient; and at the present time, when collodio-bromide plates can be purchased ready for exposure, and which will keep sensitive almost any length of time, the art is open to a vast number of persons—in fact, to any one who possesses a microscope.

Speaking of the collodio-bromide process, I cannot help remarking that it is becoming the dry process of the day. I regret, however, to see that, as in the case of astro-photography, which received its first great impulse in Liverpool, when the splendid photographs of the moon were produced by Liverpool amateurs, and exhibited to the members of

the British Association in St. George's Hall in the year 1854, Liverpool amateurs are allowing others to appropriate the honour due to them. The advertisements in the journals read as if this process was the discovery of Mr. M. Carey Lea and Mr. Dawson, although the discovery is entirely due to Liverpool amateurs, Mr. Sayce and Mr. Bolton, and the process was perfected and in general use by the members of this Association before these gentlemen ever worked it at all, and I understand that the original formula has never been improved upon.

Dr. Woodward tells us that his form of heliostat can be produced in the United States for ten dollars; and a simple camera with the baseboard extended in front, to carry the microscope laid in a horizontal position, with a rod running through it carrying a wheel to communicate with the fine adjustment by means of an elastic band, need cost very little, and gives everything necessary. For a full description, with drawing, of what appears to me to be the simplest arrangement capable of producing good results, I beg to refer to *The British Journal Photographic Almanac*, pages 38 to 40.

The application of photography to art and science is beginning to occupy a good deal of attention. Papers are being read before various scientific associations, and some of our monthly publications contain articles on the subject. The photographic exhibitions contain specimens of the different ways in which it is being successfully and advantageously employed. The instructors in our large educational establishments are beginning to feel that the value of their lectures would be much enhanced, and much valuable time saved, if microscopical information could be supplied in a cheap form in a way to be seen by large numbers at a time. The attention of Mr. Henry Cole, of the South Kensington Museum, has lately been directed to this subject, and the large photograph of the larva of one of the tortoise beetles has been produced at the South Kensington Museum within the last few weeks under his directions from one of my negatives. Such photographs must prove very useful for class instruction where it is not convenient to use microscopes, and, when doing so, would consume too much time. The lecturer would, by these means, find the task of describing his subject much facilitated.

Photo-micrography may also become very useful for the purposes of original scientific research, and when its use becomes more general, and records are taken in this way of what has been seen, many differences of opinion and disputes which have previously arisen will exist no more.

Amongst other ways in which photo-micrography may become useful, it has been suggested by my friend, the Rev. H. H. Higgins, that photography might be advantageously employed in delineating the microscopical view of various articles of commerce, thus demonstrating the causes which render some descriptions more valuable than others, and, whilst no verbal descriptions would be likely to lead to the employment of the microscope more generally in the examination of various samples of produce, the production of photo-micrographs might initiate changes in buying and selling of which it is impossible to see the full results. In the article of starch, now largely used in the manufacturing districts, the publication of drawings of the forms of the various starch grains has led to the constant and daily use of the microscope for the examination of the different samples offered for sale, and it is the only way in which the various adulterations can be detected, and by which it may be known with certainty what samples are suited to the purposes of the manufacturers, and what are not. I allude particularly to the use of starch in preparing mordants for the calico printers.

In the same way photo-micrographic delineations would be likely to lead to the use of the microscope in the examination of samples of flour, thus detecting at once the presence of unsoundness, whereas at the present time every

sample of flour has to be tested by being made into bread. There could surely be no difficulty in detecting flour made from sprouted wheat, or detecting the admixture of flour of this kind with that made from sound wheat. Similarly, it may lead to the examination of various samples of cotton, some of which cannot now be accurately valued by touch and ordinary sight only.

It appears to me that it is of great importance that "microscopical information thus made permanently accessible to every observer" should be offered to the public at the smallest possible cost. So long as photographs are offered this cannot well be done, the cost of production being too great; but by means of the Woodburytype, or some similar process by which the impression can be transferred to metal plates and large numbers of copies struck off in printing ink, it will be possible to accomplish this. By this process all the delicacy of detail is preserved and reproduced.

The photo-micrographs which I exhibit this evening are large enough probably for all purposes excepting the illustration of lectures, but they cannot be issued at a small price. Professional photographers could not afford to sell them at less than two shillings, but if reproduced by the Woodburytype process I think it likely that they could be sold for sixpence each.

My own efforts in photo-micrography commenced some seventeen years ago, and the negatives which I exhibit to-night were taken by me in the year 1854 by means of a small camera for working plates $6\frac{1}{2}$ by $5\frac{1}{2}$. They were produced in the evening by artificial light, the camera and other apparatus being placed on my dining table. They will serve to show the advances made since that time.

I cannot conclude without alluding to the use which has been made of photography during the Franco-German war. The way in which it has been used is so familiar to us all that I need not do more than allude to it. For months the inhabitants were dependent on micro-photographs carried by pigeons for communication with the outer world, and were it not for them very few persons could have communicated in any way during the siege with their friends shut up in the beleaguered city.

In the years before us perhaps there may not be any startling photographic discoveries, but I am sure of this, that there will be steady advance and improvement in all known processes and appliances, and that every year the application of photography to the purposes of education, and to the spread of scientific knowledge, will be more general and extended, and that each year we shall find it more and more associated with art and science in all their branches. As Liverpool amateurs have hitherto taken a good stand in the foremost rank, so we may expect to see Liverpool names associated with the discoveries and applications of the future; and I take this opportunity of urging the younger members of our Society to emulate those who have preceded them.

PHOTOGRAPHY AND THE ARMY.*

MILITARY organization should be in the nature of an elephant's trunk, which is equally available for raising luggage and picking up pins. Among the pins, with all deference to those practising it, we may rank photography in its relation to war purposes, the value of which has been promptly recognized in the Prussian army. The geographical knowledge possessed by the Prussians—not only as regards their own country, but that of the countries they have invaded—has been matter of wonder. It is, however, easily accounted for. The little hand-map familiar to all travellers in Germany has sufficed for local purposes, while photography has lent its aid in what pertained to foreign countries. It is known that before the campaign in Austria, and again before active proceedings were taken in France, Prussian officers settled down as photographers in towns

and villages importantly situated, in places about which topographical knowledge was likely to be wanted, pursuing their business as if for a living; and, while ostensibly devoting themselves to taking local views, they secured all the necessary topographical and strategical features of the country, and then disappeared. When next seen in those localities it was in uniform, at the head of their men. Now we do not say that this somewhat sneaking style of procedure is to be commended to English officers for imitation; but undoubtedly photography is too valuable an art in its possible relations to military proceedings to be wisely ignored. Its topographical value is not all. The importance of presenting to the eye what is with difficulty conveyed by any verbal description is obvious; while the system of microscopic reduction is simply invaluable as affording a means of rapid and secret communication. What, then, we may fairly ask, are those at the head of our military affairs doing in this matter? The answer is, "As little as possible," and that answer will hardly occasion much astonishment. There is a department of military photography at Chatham, and the art is practised with more or less method at Woolwich. We have heard something also of photography in connection with the Abyssinian expedition, but there has not yet been a full recognition of the advantages offered by it as by telegraphy, and certainly no approach has been made to any organization by which it may be fully utilized, and its available resources adequately and systematically developed. It may appear to some that this is a question of minor importance. Our answer is, that nothing is unimportant which places us at a disadvantage relatively to powerful and aggressive neighbours; while, from a military point of view, importance attaches itself to minutiae. The horse that was lost through the loss of the nail from the horseshoe amply typifies what may be the fate of an army—which often means the fate of a nation—from inattention to trifles.

MANIPULATION.

BY DAVID DUNCAN.*

THE various effects which can be produced in making photographic pictures by a difference in the mode of manipulation is a subject deserving attention—the more deserving because it has hitherto received too little notice, even by those who are termed "skilled manipulators." Photographers, as a rule, bow before the "mighty god Brains," an idol which certainly should command our adoration, but which is robbed of its potency without manipulation. The word manipulation is expressive; there is magic in the sound. To skilfulness therein civilization and the world at large owe much. The cunning and skill of the mechanic, artist, sculptor, or musician depend much on manipulation. So does many a good photograph, though light, temperature, chemical condition, &c., are valuable auxiliaries. That success in the photographer's art owes much to skilful manipulation is a point generally known—a "corn" universally acknowledged. "If you think photography is a mere mechanical business, and success more dependent upon good luck than careful manipulation, get out of it—you are in the wrong business," says Edward L. Wilson in *Mosaics*, 1869. Operators who rarely stoop to notice the cleaning and albuminizing of plates, will find it advantageous to recede a step or two, and become efficient plate preparers. It will be found better than cursing the boy when plates are dirty, or consigning the "nigger" to the nethermost hell. There is more in plate-cleaning and preparing than is dreamt of in our philosophy.

Again, not every one that saith "I am an operator" knoweth how to coat a plate with collodion—a simple matter, apparently, but requiring much skill in the manipulation thereof. No definite mode as to how a plate should be coated can be clearly stated; the operation requires

* *Morning Advertiser.*

* *Philadelphia Photographer.*

judgment, experience, and depends much on the condition or quality of the collodion itself.

It is not my idea, however, to write about skillfulness or unskillfulness in manipulation; the effects of the latter or former are well known. I merely desire to direct attention to the different effects which can be produced at will by altering the method of manipulation. For example, in coating a plate with collodion, one can obtain softness or intensity, fulness of detail or a lack of it, with a good sample, by the *modus operandi*. It is this power that enables one man to obtain pictures of a class widely differing from another, albeit both may never change the mode of working they acquired in the early days of apprenticeship. It is this power which makes a photographer a success or a failure. Further, how various are the effects which can be obtained in a negative by changing the style of development. Flooding the plate, driving the "frec nitrate" before it, and letting the solution run over the sides, yields a negative of one class; pouring on smartly just enough to cover the plate without spilling a drop gives a negative of another. Do not let me be understood to say that because a man lets the solution run over the sides of the plate he is a careless manipulator, for much is dependent on the mode of manipulation, upon the kind of negative he strives to make, or condition of the chemicals.

Only observe the *power* we photographers possess! To make at will—premiing light, temperature, &c., aid us—by experience and practice, a "hard" negative or "soft" one, a "thick" one or a "thin" one. Further still; the fine details of a picture can be arrested while the "high lights" are building up during the development. By holding the plate still, and as even as possible, the picture develops evenly, and possesses far more fine details than when the solution is waved to and fro.

The subject could be expatiated on to a much greater length. In considering the matter, the day can be recognized when "secret processes" shall be no more; and while the *power of knowledge* shall be appreciated, the *power of manipulation* shall likewise be esteemed, for no man can take it from him who possesses it.

REGISTRATION OF DESIGNS.*

CONSIDERING the great number of articles only worthy of registration that annually appear on the patent lists; that many meritorious inventions are patented merely with a view to a public registration of priority of invention; that the whole business of registration can be done by post; and, above all, that a provisional registration, giving protection for one year, costs, in fees, only *ten shillings*, it appears to us to be a singular circumstance that the Designs Office is not more used. The advantage of giving a year's protection for 10s., and without agents' charges, ought to be a powerful argument with impecunious inventors. Looking to the great proportion of patents that are only provisionally protected, the neglect of the registration for the Patent Office appears the more strange. It is true complete registration, costing £10, only lasts three years. But neither does a patent, costing £25 in fees, and, with the agent's charges, often double, unless it be renewed for five years more by the payment of another £50. And how many come to this stage? Not one-half, while only three or four per cent. pass the Rubicon of the £105 at the end of the seventh year. Successful patents are mostly those of persevering people who re-patent improvements—often completely changing the original invention—suggested by practical trials. In the meantime, the £25 and the agent's fees are possibly heavy payments for a young man, while nothing would prevent him from patenting his completed invention after working under the protection of the three years' registration. It must not, however, be presumed that the registration of an article affords a protection of the same kind as that by a

* *The Stationer.*

patent; though a patent does not afford protection to a principle. By departing from little more than the shape the succeeding patentee may nullify the grant to a predecessor.

A number of Acts have been passed since 1787 for protecting ornamental designs; and in 1843 and 1853 similar protection was afforded to articles of utility. By them protection is given to the shape or configuration of any article, "whether it be for the whole of such shape or configuration, or only for a part thereof." It does not protect "any mechanical action, principle, contrivance, application, or adaptation;" nor the material of which the thing is made. But then, in very many cases, the mechanical action is absolutely inseparable from the shape. As at the Patent Office, so here, no warranty of soundness is given by preliminary examination. The principle of provisional registration is carried out in the Designs Office as well as at the Patent Office. A copyright for one year is given to the originator, as also to the proprietor, of any new design "for the shape or configuration either of the whole or of part of any article," the "shape or configuration having reference to some purpose of utility, whether such article be made in metal or any other substance." During the year the proprietor may sell the right of applying it, but must not, under penalty of nullifying the copyright, sell any article made according to the design. This can only be done after a complete registration, by which a copyright of three years is given to the author, under the same terms as for the provisional registration. Briefly, provisional registration gives the right of selling the design, but not the article made according to the design. By a special order of the Board of Trade the time of the provisional registration may be lengthened by six months, making eighteen months in all. The amount of novelty required is, that the design must not have been published in at least Great Britain. The fee for provisionally registering a design for one year, affording protection during sale or putting to work, is only ten shillings; the fee for complete registration for three years is ten pounds.

On sending the money by a Post Office order, together with the design and description, to "The Registrar of Designs, Designs Office, London, S.W.," provisional or complete registration can be at once obtained. Any communication or inquiry similarly addressed is at once responded to. The Registrar has to be furnished with two exactly similar drawings, with a written description, with the title of the design and name and address of the person claiming to be the proprietor. For the drawings and descriptions there is a regulation maximum size of 24in. by 15in., with a blank space left on one of the sheets of 6in. by 4in. for the certificate. Every article registered must be marked as such, but a penalty is imposed on so marking a new article after the expiration of the registration. The drawings of the designs for which the registration is expired can be examined; but with unexpired designs this can only be done in the presence of the Registrar himself, and copied solely under a judge's order. We may mention that, in several important patent cases, the registry has been lately successfully searched with the view of proving prior publications.

There can be no doubt that the Office for Registering Designs would acquire very much greater importance if it afforded protection without instantaneous publication. In this way it contrasts unfavourably with the Patent Office. Ornamental designs are not open to the public until their expiration, but useful designs are. If only one month of secrecy were granted, time would be afforded to an inventor to look about him, and determine whether his invention might be worth a patent. Registration would thus, at less expense, take some of the main functions of the provisional protection of a patent. Another drawback is, no doubt, the fact that only one shape of the same thing can be registered. This also evidently limits the safe employment of the office in some cases.

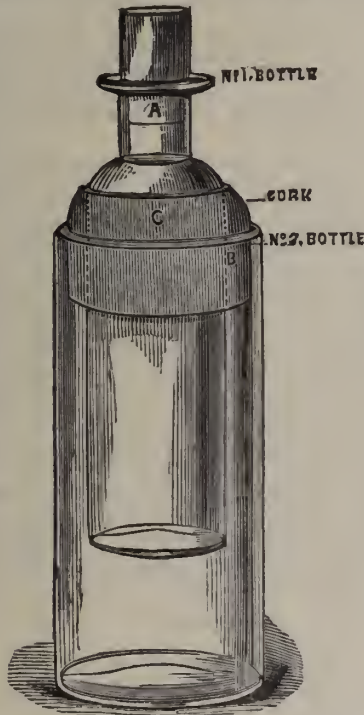
Correspondence.

HINTS TO PORTRAITISTS.

DEAR MR. EDITOR,—Will you kindly read first, and open the enclosed after; there is something inside got out of the fog. I fancy I hear you exclaim, "Fog? Do not talk about fog, unless you wish to drive a photographer's brain to desperation!" Well, of course, you know how very foggy it has been for a very long time.* Do not throw away my letter, or cast it into that dreaded basket. Why should that word fog so arouse your ire?

There is something to be got out of fog, though it might have been next to hopeless for us to have got clear of it of late. Indeed, I have often asked myself the question, on seeing the landscape upon my chamber window most fearfully fogged, Is it any use lighting my stove to-day? This has not been the only thought of perplexity I have had to battle with; they have come upon one thick and fast, for it has been a time for thinking, and thinking is good; we should not waste time, much less kill it. Well, in this time of thought, I asked myself whether I could do anything to help on others who might still be surrounded by fog, even when the beautiful spring shall dawn upon us once again? And, do you know, I found there was light enough coming into my mind to make an impression, in spite of an atmosphere through which I could give it you for those who deal in light, for I am one who believes in letting light shine for others free as it comes from heaven. I thought if anything could be done to give the art a fresh start it would be a great boon for many. This led me to think, and I send you the poor result, and hope to send better still.

Now you can open envelope, in which you will find a *carte* and a bottle, out of the fog; the *carte* is to help in bringing gold, the bottle to keep comets in. There is a little colour in the face of the portrait, without a touch of a



brush upon the surface, enough to take away the coldness sometimes found fault with.

I will explain—not see—my neighbour's defects across the road, and well too, for I could exercise myself with my own faults. No studio bell's incessant call compelled me to see to my plates being clean, or keep me from cleaning my own. No sitters, no babies kept me under glass; I was free, and at liberty to ask myself a few questions, which, at times, is a good thing; good to turn over all one's troubles, to look them through, and try again to master them. Fog should not stop this warfare.

Yes, Mr. Editor, there is no such thing as darkness in this world without light. There is always light if we would remain long enough in the dark to see it. Well, I have got some light out of the dark fog days, and I will all if you think it work while some other time; but the bottle, I think, will be useful to all. It is a bottle within a bottle, for the use of collodion or varnish, and is valuable in keeping back sediment, which so often comes out upon the glass, causing trouble in every print. I made it by grinding off the bottom of the small bottle, and the top of the larger one, using two corks for the purpose of emptying when requisite.

At all events, whether good or bad, take the will for the deed, and believe me, with many thanks, for light received from the PHOTO, yours sincerely,
G. R. GILL.

PAPER IMPERVIOUS TO MOISTURE.

DEAR SIR,—The following is the recipe for the size to be applied to prints on plate paper, so that they may be coloured:—

To a quarter of a pound of best parchment cuttings add two quarts of water and a piece of curd soap about the size of a thimble; let it simmer over the fire two hours, keeping it skimmed; strain it, and add two quarts more water, in which one and a-half ounces of alum has been dissolved. It will be about the thickness of cream when cold.

When used, make it hot, and, with a large camel's hair brush, pass over the face of the print, taking care that every part is covered with as much as it will absorb; then spread the prints out to dry.

In the case in which I had made the prints so very non-absorbent, I had used an excess of alum.

I notice that Mr. Bovey also considers the matter important, but is of opinion that if the paper is made impervious to moisture it will interfere with the production of vigorous prints, and gives his reasons, in which, I think, there is force. Nevertheless, if the advantages in other respects would be great, is it not worth while making some experiments to test the matter, with a view of overcoming any such want of vigour?—Yours truly,
WILLIAM MONKHOUSE.

Lendal, York, March 6th, 1871.

REDUCING A BATH TO CARBONATE OF SILVER TO PURIFY IT.

DEAR SIR,—Amongst the many valuable articles contained in the YEAR-BOOK for 1871, is a method of curing a disordered negative bath, by Mr. W. Brooks (I believe the plan was first proposed by Mr. Gage).

I followed out the instructions of Mr. Brooks, with somewhat curious results. About eighty grains of negative bath had been prepared, and, on trying a plate, a number of large star-like spots were formed. The bath was then allowed to rest some days, and deposited on the sides and bottom of the bottle a number of needle-shaped crystals of a deep purple colour. These crystals adhered so tightly to the bottle that they could not be removed by violent shaking. The bath was again filtered and tried, and then gave plates covered with myriads of small pinholes; in fact, just the appearance of a bath supersaturated with iodo-nitrate of silver.

The bottle with the purple crystals adhering to it was filled up with water, which soon became of a deep purple colour, although the quantity of the crystals is not sensibly diminished.

I shall be glad to learn if any of your readers, having tried the plan, have obtained similar results.

I enclose some of the crystals for your inspection, and remain, dear sir, yours truly,
A. W. H.

Dublin, March 1st, 1871.

[The result is curious. Have any of our readers had experience with this method?—Ed.]

* This letter was received before the recent prospect of spring weather commenced.—Ed.

SELENEGRAPHY.

SOME REMARKS UPON THE NATURE OF LUNAR LIGHT.

SIR,—I remarked in the number of your journal for December last a letter from Mr. Baxter addressed to the *Philadelphia Photographer*, in which he affirms, in reference to the moonlight effect secured by Messrs. Robinson and Cherrill, that the production of a moonlight landscape by means of photography is impossible, and that an image only of the moon itself can be obtained. This statement, coming apparently from a man well versed in the study of physical science, merits particular attention, and I have taken upon myself the task of removing Mr. Baxter's error, seeing that I have proved by actual fact that it really is quite possible to produce a photographic landscape during the night with real moonlight effects. As it is probable that Mr. Baxter has not seen the different articles which have been published in your journal, I have sent copies to him, as also to the *Philadelphia Photographer*, accompanied by proofs obtained by me in July and August last.

As the question is one of importance, perhaps you will allow me to make a few speculative observations on the subject in your journal. In the first place, then, let me ask, is the moon merely a screen, so to speak, or a reflector of the light of the sun? I think that there can be no doubt it must possess, besides, a certain illuminating power of its own, from the fact that its light impresses the sensitive plate the more readily the greater its distance is from the sun. Thus the image is more powerful at ten o'clock than at nine, and at eleven again than at ten, the time of exposure diminishing rather than increasing. The luminous lunar rays, if but a reflection, would reproduce the same elements as those of the sun, but in a less degree; but this we find not to be the case, for the sensitive plate reproduces, under the influence of lunar rays, colours which sunlight reproduces with great difficulty, as, for instance, yellow. If the illuminating power of the sun produces an image which is for the yellow 110 times less intense than for the violet, how is it that the moon, whose illuminating power is many thousands of times less than that of the sun, reproduces equally yellow and violet? Moreover, the moon ought to produce the photographic image in a proportionate space of time to the sun—that is to say, two thousand or ten thousand times more slowly; but this is not the case, for while the impression is produced in a quarter of a second in sunshine, with the same apparatus, and a similarly prepared plate, twenty minutes suffice to secure the so-called lunar reflection, instead of exactly 666 hours, or 23 days, which would be necessary if, as it is affirmed, the sun's rays are actually ten thousand times more intense than those of the moon.

Every one knows that by means of the wet process it is possible to allow an interval of three-quarters of an hour to elapse between the sensitizing of the plate and its development. I have obtained on the island of Sark, at a temperature of 78° (Fahrenheit?), some beautiful plates free from stains, sensitized and developed under the dark tent at a temperature of 50° (Fahrenheit?), and it is, therefore, equally possible to expose a wet plate for twenty or thirty minutes, especially during the night, such a pose being quite sufficient to secure a moonlight landscape.

In making this statement I do not deceive myself, nor do I deceive others, for my negatives will themselves prove the veracity of my remarks. A student of astronomy would be able to verify the duration of the pose by estimating the distance travelled by the moon, the dimensions of which are fixed upon the negative, and also the hour at which the proof was obtained by examining the height of the luminary.

I do not pretend, sir, that my experiments demonstrate that the sun unquestionably possesses a power of illumination of its own, but they prove, nevertheless, I think, that the rays of the moon, wheresoever they come from, are not many thousands times less powerful than those of the sun, as it has been affirmed.

Approaching a more general order of ideas, may I put the question, whether it is absolutely proved that all light sources emanate exclusively from the sun? On this point there is much to be said; the aurora borealis, electricity, terrestrial magnetism, the glowworm, inflammable gases, phosphorescent waves, the eyes of the lynx, the fur of a cat, crystal, and colours to a certain degree, as many other things, are either of themselves luminous and light giving, or derive the property from foreign influence. The moon is doubtless a combination of bodies having themselves individually a light of a particular nature and intensity, unknown at the present day, but of which photography appears to bear evidence. Why should not the moon, indeed, possess a luminous

photosphere, for is it not a planet, in all probability appertaining to the sun, like other planets?

It remains to be discovered whether it is the moon herself that throws out at one time luminous rays, or only reflections thereof, or whether it is the terrestrial atmosphere filled with luminous matter that voids ether, which becomes heated, cooled, magnetised, and luminous by friction, undulation, and vibration. Also whether the luminous rays or reflections of the moon, which arrive at our earth within the space of about a second, are not more actinic (better photographic agents) than those of the sun, which require eight minutes to traverse our atmosphere. And finally, whether the law of the decrease of solar light with the square of the distance is or is not modified in the case of the luminous rays from the moon; and at what height the moon must be employed as a photographic agent, in order to utilize it when less subject to the law of interference which obscures it; or at what point the rays emanating from the sun, and reperculated by the moon, cross under an angle less than 20°, as their undulations, crossing one another, increase materially in luminosity at this point.

If Newton has told us the truth, and if the moon, in like manner as the sun, sends its rays direct from the luminous body, it would be impossible to obtain a photographic image at night. But if Descartes, Huggins, Euler, Young, Wheatstone, and Fresnel are right in admitting that the undulations of the ether produced by all bodies visible at night, and of which the moon is the principal, give rise to the phenomena of light, then photographing at night, at certain hours, is possible—that is, under certain degrees of elevation, at certain periods, in suitable localities, and especially when aided by a luminous mirror (as in the case of a phosphorescent sea), when the magnetic state of the sky helps to multiply the luminous effect. The fixed stars and planets have also a considerable illuminating power, which may be added to the power of the moon. In Sweden, as is well known, the moonless nights are often so clear that it is possible to read by simple starlight; while in Russia, again, the moonlight is of extraordinary power; and if Russian photographers would only make experiment, they would be certain of definite results. I would, therefore, lay down a last hypothesis: the light of the moon is white—that is to say, composed of all the colours of the spectrum—and, this being the case, cannot its light be actinic, seeing that nitrate of silver is affected by it?

After having started so many speculations, I will finish by calling the attention of artists and philosophers to this fact: with a pose of twenty or twenty-five minutes, from nine in the evening till one in the morning, it is possible to obtain a landscape photograph during the night by the light of the moon, and of this I can afford ample proof.

If Mr. Baxter had confined himself to stating that the picture produced by Messrs. Robinson and Cherrill was not produced by moonlight, I should have said nothing, and the task of replying would have fallen upon Messrs. Robinson and Cherrill; but as he affirms that it is possible only to secure an image of the moon itself, and that a landscape photograph with real moonlight effect is out of the question, as the power of the moon is many thousand times less than that of the sun, I have taken up the pen to refute these arguments.

I hope shortly to be able to give you the details of my process, which is, indeed, so simple, that I cannot make out why it has not been discovered a dozen times since I had the pleasure of sending you my results. Being a Frenchman, I only await the end of the siege of Paris to divulge my little secret, and have contented myself, hitherto, with your testimony given in August last, as likewise that of my friends in Paris, that I have been the first to produce veritable moonlight landscapes by means of photography. As regards the splendid imitation pictures of Messrs. Robinson and Cherrill, I fully admit the difficulty of producing them; for, by using a method analogous to theirs, I find myself quite incapable of producing anything capable of comparison.—Believe me, &c.,

E. P. OGIER.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The usual monthly meeting of this Association was held at the Free Library, William Brown Street, on the evening of Tuesday, the 23th ult., the President, Mr. THOMAS HIGGIN, in the chair.

On account of the illness of the Secretary, Mr. Murray, the minutes of the last meeting, not being produced, were taken as read.

The Treasurer's report for 1870 was read, and the accounts, audited by Mr. Wilson and Mr. Forrest, were passed accordingly.

Mr. GREEN drew the attention of the members to a paragraph in the *Athenæum* of the 18th ult., relating a curious experiment by Professor Seely, of New York, namely, that gun-cotton as prepared for photographers' collodion was not soluble in alcohol, but if a little camphor were added it dissolved at once. He (Mr. Green) thought that that singular fact might be of much importance to photographers, as it might enable them to dispense with ether, which, comparatively with alcohol, was a very unstable compound. It might also shorten the exposure by keeping the film of dry plates in a better condition for the action of the developer. He thought it might also act like oil of cloves and similar hydrocarbons in facilitating reduction of silver from its compounds, and, if so, might in that way shorten exposure.

A discussion ensued as to the functions performed by the preservatives for dry plates in general use, in the course of which Mr. HENDERSON stated his conviction that the action was as much chemical as mechanical.

Mr. PHIPPS sent for exhibition some photo-enamels kindly lent by Mr. A. L. Henderson, of London, which were examined with great interest, and much admired for their exquisite softness and delicacy of detail. It was explained that these, however, were by no means the best specimens yet produced by that gentleman.

A letter from Mr. Llewellyn Nash (a former member of the Association, who is now at Para) was read, in which reference was made to the picturesqueness of the neighbourhood. Mr. Nash offered photographic aid in that country, for which thanks were accorded to him.

Mr. WILSON read a letter from Mr. Flukes, of Bath, who volunteered to come down and exhibit in the lantern architectural views of Wells. The Society accepted thankfully the kind offer of Mr. Flukes, and Mr. Wilson was requested to communicate with him, placing the next monthly meeting at his disposal, when the members might invite their friends.

The PRESIDENT then read the paper for the evening, on Photo-Micrography (see page 113). The paper was illustrated with diagrams of the plans in use by Dr. Woodward and Dr. Maddox, and also that employed by himself. He also exhibited and explained a heliostat which had been constructed for him on the same principle as Dr. Woodward's.

Mr. HENDERSON, in moving a vote of thanks to the President, remarked that there was no evidence that the sulphate of copper solution had the effect of correcting the action of the lens. The lenses in use by the President were corrected for photographic purposes, and he used the copper solution likewise with success, whereas, according to the theory adduced, they would have been "de-corrected." He (Mr. Henderson) also thought that if the bleaching of the more opaque tissues of insects would destroy the more delicate portions, the better plan would be to take two negatives, viz., one of each portion, and print them by combination.

Mr. HUGHES, in seconding the motion, spoke of the careful manipulation required for work of that class.

The PRESIDENT exhibited a series of photo-micrographs which he had received from Dr. Woodward. They were chiefly microscopic test objects, and some of them were magnified to the enormous extent of 4,500 diameters. A "Pleurosigma angulatum," showing the course of a fracture, was remarkable.

The Excursion Committee were requested to report to the next meeting on localities deserving of a visit.

A discussion ensued as to the collodio-bromide process and the merit of its discovery. The opinion was, that since its discovery very little, if any, real advance had been made in the process.

Mr. LEWIS HUGHES said that he had recently developed six collodio-bromide plates which he had exposed eight months previously; they were all good negatives but one, which was a little under-exposed.

Mr. GREEN corroborated this by informing the members that he had kept a plate exposed in August until February, and that a good negative was then developed.

The consideration of the appointment of honorary and corresponding members was entered into. It was ultimately resolved

that the matter should be left to the Council to report on at the next meeting.

Mr. GREEN exhibited one of the cards put forth by the Stereoscopic Company, purporting to be a "pigeon letter" sent to Paris during the late siege, whereas it was quite illegible under any magnifying power. Many of the members who had been similarly deceived concurred in denouncing such a proceeding.

The meeting was then adjourned.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF LONDON.—The next meeting will be held at No. 9, Conduit Street, on Tuesday evening, 14th inst., when a discussion on the causes of injury to negatives from splitting of the film will be introduced by Mr. O. G. Rejlander. A paper "On Large Photographs" will be read by Mr. E. Dunmore. A series of dry-plate pictures will be exhibited by Mr. F. Beasley, jun., and two novel forms of copying camera by Mr. Rogerson, of Manchester.

M. ADAM-SALOMON.—This distinguished French photographer and sculptor, who has, during the siege of Paris, been a resident in London, returns with his family in two or three days to his home in Passy. He ascertains that it has suffered very little during the siege, his chief loss consisting of a favourite horse (a present from the Duke of Hamilton) and some domestic animals, which have been eaten. We are glad to state that his exile in this country has been lightened by the attentions of friends. He was spontaneously elected a visiting member of the *Athæneum* Club, and an honorary member of the Solar Club, during his stay.

PORTRAITS IN A GRADUATED TINT.—A correspondent says:—"I have just been looking over some Russian photographs, and am struck with a very good idea made use of in them, *i. e.*, a graduated light and shade from top to bottom of the picture, being a warm brown at the top, graduated down to the original colour at the foot. I suppose that it is effected by a graduated coloured sheet of glass laid on either before or after printing. Will you be good enough, through the columns of your journal, to explain the process, and say where we can get the materials? I have no doubt that it would be interesting to many of your readers, as the effect in photographs of sculpture, columns, &c., is very good." Can any of our readers give information on the subject?

FAME AND PHOTOGRAPHY.—In our time the path of glory leads to the photographer's studio, and monarch and murderer, hero and hound, find there, as in the grave, an equal platform. The famous greyhound Mastor M'Grath, which has added at once to the wealth and distinction of the Lord of Lurgan, has, in common with all celebrities, had to run the gauntlet of the studios. By order of Her Majesty, after she had inspected and fed him, he proceeded to Messrs. Hill and Saunders' atelier, and was photographed there; and, on another day, among visits to royalty, nobility, and clubs, we find a photographic engagement at MM. Mayall's studio in Regent Street.

THE COLLODIO-BROMIDE PROCESS.—Messrs. Horne and Thornthwaite have just issued a valuable little pamphlet by Mr. Henry Cooper, Junr., entitled, "Hints on the Collodio-Bromide Process." It contains very clear and concise instructions for working this elegant process successfully, and will, doubtless, aid in giving it a popularity which, from various causes, it has not yet attained; and this result will be materially aided by the selection of the requisite preparations which the same firm will supply.

REDUCING CHLORIDE OF SILVER.—Chloride of silver can be reduced by grape sugar, and this method affords a way for reclaiming photographic wastes, and of preparing pure metallic silver. Take 14 parts of well washed and still moist chloride of silver, 24 parts of caustic soda, sp. gr. 1.333, 11½ parts ammonia, sp. gr. 0.925; to this add, with constant agitation in a flask, 7½ parts pure honey, or 9½ parts grape sugar syrup, and let the mixture stand in a warm place, until sulphuretted hydrogen affords no sign of silver. Decant, and wash out all traces of chlorine. The reduced silver can then be dried, and melted in a crucible. Platinum black, finely divided metallic platinum, can be obtained from the chloride by adding carbonate of soda

in excess, and, after adding grape sugar, heating the solution for ten minutes. The precipitate can be collected in a filter, and then well washed and dried.—*Professor Joy.*

MORE INDECENT PHOTOGRAPHS.—During the week the police made another raid on Holywell Street, and seized a large number of indecent photographs and books. The accused persons, of whom there were several, were charged at Bow Street, and remanded.

IMPORTANT COPYRIGHT CASE.—An important copyright case has just been decided in Ireland. At the Nanagh Assizes, in Tipperary, Messrs. H. Graves and Co., brought an action against Mr. Tracer, for pirating the copyright of the engraving of the "Departure of the Pilgrim Fathers." Verdict for the plaintiff—damages, £100 and costs.

PARCHMENT PAPER.—Some improvements in the manufacture of vegetable parchment or parchment-paper have recently been patented in this country by an agent on behalf of Colin Campbell, of Buffalo, New York. By a well-known process, vegetable parchment is produced by passing common unsized paper through a bath of dilute sulphuric acid, the catalytic action of which changes the substance of the paper into an article resembling, in structure and qualities, ordinary animal parchment. Great care and delicacy are requisite for the successful accomplishment of the operation, which almost entirely depends on the strength of the acid, the temperature of the factory, and the length of time the paper is immersed. If the sulphuric acid is not sufficiently diluted, the material is charred. If, on the contrary, the solution is not of the necessary strength, and the paper is left for too long a time subjected to its action, the latter becomes partially converted into dextrine. Experiments have proved, however, that a much superior article can be manufactured by employing commercial sulphuric acid, or oil of vitriol, in an undiluted state; the new process, moreover, permitting the acid to be used in a cold state, and the operation to be carried on in a room at any ordinary temperature. Parchment-paper manufactured by this method retains its qualities after being wetted and dried; whereas that produced by the usual process, when treated in a similar manner, loses to a great extent its pliancy, and becomes hard and stiff. The invention to which letters-patent have been granted consists in passing the paper through a solution of alum, and thoroughly drying it previous to its immersion in undiluted acid, thus preventing any undue action of the corrosive principle of the vitriol. The patentee also claims, as part of his invention, the treatment of the paper with acid during its manufacture, by allowing the web, after passing the drying rollers, and with or without previous immersion in the solution of alum, to dip into a tub containing the acid, and then into a vat of water. The paper is afterwards passed through an alkaline bath, being subsequently treated with water to remove the acid. According to the inventor, written and printed paper may undergo this improved process without materially affecting the clearness and distinctness of the letters.—*Stationers and Bookseller's Circular.*

To Correspondents.

ADVICE TO CORRESPONDENTS.—We are at all times glad to advise our readers on any subject connected with the art upon which information can be given in this column; but to enable us to do so with efficiency, and without unnecessary waste of time and space, it is desirable that a few conditions should be observed by correspondents. All questions should be stated clearly, and written legibly on sheets of note paper, small scraps of paper and sheets of foolscap being equally unsuitable and inconvenient. Where several questions are asked, they should be kept distinct and numbered. Where processes and formulae have been stated in our pages, it is better for correspondents to refer thereto than to request us to do so, as we cannot, with fairness, occupy space by repeating formulae which have once appeared, merely to save a little trouble to individuals. Correspondents should use distinctive names or initials: such signatures as "A Subscriber," "An Amateur," and others of a general character being often adopted by a few correspondents in the same week leads to confusion.

MELBOURNE.—We believe that caustic potash will remove *tunicare* from used plates. 2. As we understand the Post Office arrangements, an invoice or bill can be sent with a parcel of photographs by book post, provided no note in the character of a letter be added.

H. C.—The collodio-bromide process has not been extensively worked in this country, nor, so far as we are aware, anywhere. We do not know of anyone who has worked it out according to the formula of Mr. Carey Lea. We have received from Mr. Lea some exceedingly fine photographs produced by himself by his own method. In our own comparatively limited experience with the process, we found it required about three times or four times the exposure of wet plates. 2. We hope, and believe, that the test between carbon and silver printing will be carried out, as it must be very interesting and instructive to many photographers, who are anxious to know the relative capacities of the two processes on the score of beauty of result. We have seen many carbon prints inferior to silver prints from the same negatives, but, on the other hand, we have seen many carbon prints which we preferred to silver prints.

W. P. COWING.—Yes; you can obtain the number. It is clear that the wrong number was sent by some mistake. Send it back, and the desired number shall be sent. Let us know if any further error occur.

W. W.—The small white spots with black centre are generally due to iron spots in the paper. When the fault is in the paper, you will generally be able to find some indication at the back as well as at the front of the print. 2. Washing in distilled water before toning is by no means imperative, and, unless your ordinary water is very impure, scarcely necessary. We, as a rule, wash very slightly, and in ordinary water, before toning.

E. ALLEN.—A background screen for vignette pictures should be of a light tint; grey or drab will answer best.

CHARMADY GHAUT.—Removing spirit varnish is sometimes a troublesome operation. It can only be done by the use of strong alcohol. Place the negatives in a dish covered with the alcohol, covering the dish with a plate of glass to check evaporation. When the resin is softened, rinse repeatedly with alcohol. It is as well to run an edging of black varnish round the negative first. This will not be dissolved by the alcohol, and will check any tendency in the film to leave the glass. When the varnish has been removed, wash the film with water until it flows freely; then remove the iodide with hyposulphite solution. 2. From five to ten grains of gum-arabic per ounce will serve. 3. Unless the Autotype Company undertake such work, we do not know of any firm which undertakes carbon printing for the trade.

G. E.—Mr. Croughton, of 14, Church Road, Albion Road, Hammersmith, is an excellent retoucher of negatives.

W. WALKER.—We have not seen any of the Russian photographs of the kind you describe, nor do we know how the matter is managed. If you can send us a copy for examination we can possibly give an opinion. 2. Fluid ounces. 3. Into a dull light, yes; but it is better to avoid risk as much as possible.

J. R.—Bromide of potassium is very sparingly soluble in alcohol, and therefore, can only be used in very small proportion in collodion. The introduction of water into the collodion should be avoided. Use bromide of ammonium, or bromide of cadmium, which is more easily soluble in alcohol. To what formula do you refer as recommending bromide of potassium? The ether and alcohol you have used will, we have no doubt, answer.

IRON.—We do not know any manufacturer of iron sashes. If you have access to any journal devoted to gardening or horticulture, you will probably find the advertisements, as they are chiefly used for greenhouses.

A. W. H.—The result you describe is very curious. The purple crystals were chiefly in a state of black powder when they reached us. Had permanganate been used to the bath? We only once tried the plan, and with very excellent results.

LITHO.—In our YEAR-BOOK for 1867 you will find an article on the subject; and in our Volume for 1869 there is a series of articles on the subject of photo-lithography and photo-zinco-graphy.

1871.—The collodion in question will, doubtless, work with any good formula; but it may fairly be assumed that the formula which accompanies the bottle is especially well adapted to its qualities. 2. Boiling down a bath does not necessarily get rid of all contamination. It gets rid of organic matter, as a rule; but excess of iodide of silver may remain and cause pinholes, and an alkaline condition will, probably, remain, which the addition of a trace of nitric acid may remove.

F. BOSWELL.—The prints are duly registered.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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IS PAPER A CAUSE OF FADING?—IMPERVIOUS PAPER.

IN a recent issue of this journal, one of our correspondents, Mr. Stokes, asked a very important question: Is the character of the paper used in photography a cause of the fading of photographic prints? And he argues, with some reason, that, as negatives composed of reduced silver do not fade, neither should prints of the same metal, unless the substance—paper—with which the metallic image is in contact, were in fault. If the paper be in fault, the defect may either proceed from something in its constitution of a deleterious character, or from the fact that its porous character, unlike that of the glass supporting the collodion image, permits the ready access of moisture and impure air to the image; and assuming that the porous and absorbent character of the paper is a chief source of danger, Mr. Stokes asks if it is impossible to prepare paper impervious to moisture, and so get rid of a serious drawback on silver printing.

The enquiry generally is an interesting and important one, which has not hitherto received as much attention as it deserves. Fortunately, a tolerably definite answer can be given to both Mr. Stokes's questions. The paper undoubtedly is a frequent cause, directly or remotely, of the fading of prints; and paper impervious, absolutely or partially, to moisture can be prepared for photographic purposes. Unfortunately, the subject comprehends more than is involved in these answers. Any aid, however, to the securing of permanency in silver prints is of the deepest importance, and it may be interesting to enquire into the sources of stability in negatives, and ascertain how far the same conditions may be secured in paper impressions. The first question to be decided, however, should be whether the negative is absolutely stable—or, rather, under what conditions it is stable. Apart from abnormal conditions, such as cracking, a negative is permanent when it is protected by a waterproof varnish from air and moisture. A silver image on collodion, whether positive or negative, exposed to the atmosphere without protection by varnish, very rapidly becomes tarnished by the action of sulphur and other sources of atmospheric action, but not so much or so disastrously changed, perhaps, as an albuminized print, because the conditions vary. There is in the negative a much greater body of silver than in a paper print, which, of course, resists such action as would produce fading, surface discolouration alone taking place. The collodion on which the silver image is formed, resting on glass, also protects the negative from all atmospheric action except that which reaches its surface, and thus affords another element of safety to the negative, of which the ordinary paper print is quite destitute; and

the negative, when properly varnished, may be said to be protected from all outward injurious agencies.

The negative owes its stability, then, to the simple fact that the susceptible substance of which it is formed is thoroughly protected from the deleterious agencies to which the silver print is exposed. The glass at the back of the film and the varnish on its surface protect the silver alike from moisture and gases. And in such degree as the silver print can be placed under similar conditions, its permanency may be anticipated. That this is so, is in accordance with experience as well as analogy. Paper negatives which are thoroughly waxed are quite permanent, whilst unwaxed paper negatives are apt to change. Prints treated with wax and encaustic pastes preserve their pristine beauty much better than those which receive no such treatment. Mr. Blanchard's method of treating prints on both sides with collodion was proved, beyond a doubt, to exercise a most beneficially protective influence. So with varnished and French-polished prints. The one thing required to make a carefully produced silver print absolutely permanent is some means of rendering it impervious to moisture and atmospheric influences, without, at the same time, detracting from its beauty.

Without at present considering how far the sizing of the paper, or the albumen on its surface, contributes to instability, we may for a moment glance at the methods of rendering paper impervious to moisture, and the value of such quality in securing stability. Methods of rendering paper impervious to moisture have frequently been devised and frequently patented. In 1853, Henri Joseph Scoutetten patented a method of rendering paper impermeable for photographic purposes, which consisted in immersing it in a solution of india-rubber or gutta-percha in purified sulphide of carbon, and then rolling thoroughly. Five years afterwards, Mr. Alonzo G. Grant entered a provisional specification, describing a method of rendering paper for photographic purposes insoluble by means of a solution of india-rubber and other resins; and a method was patented by Mr. Sutton for rendering the paper impermeable by means of india-rubber previous to albuminizing. In 1855, Mr. Mayall patented a method of preparing a substitute for paper for photographic purposes, which was a form of artificial ivory. In the specification various modes of producing such a substance are included; but amongst other things we find sulphate of baryta and albumen, or gelatine, made into sheets or slabs, and rendered insoluble. This process was given up because the material, although insoluble, absorbed and retained the various salts employed in solution with great tenacity, and was altogether unmanageable. It was impossible to get rid of the hypo, and the pictures were far from permanent. Four or five years ago a method of preparing paper possessing many advantages was patented in America and in this

country by Mr. Brinckerhoff. A preparation of kaolin or sulphate of baryta and gelatine was applied to the paper, after which it was treated with a solution of alum, tannin, or other suitable substance, to render the gelatine insoluble. The result was a hard, smooth, pure, white surface, not readily permeated by aqueous solutions, giving a very pleasing texture to the finished photograph; in our estimation much more pleasing than the glossy surface of albuminized paper. Although the paper possessed many advantages, and was introduced to photographers ready for use, it never came much into use. Last week we published a letter from Mr. Monkhouse, giving a method of preparing impervious paper, based on somewhat similar principles. The method employed in this country of securing a hard surface in the manufacture of paper is analogous: the paper is sized with a solution of gelatine and alum, and in proportion to the quantity of the size employed, the paper becomes hard and impervious to moisture, and so varies from the softest and most bibulous samples to the finest vellum surfaced paper. One of Mr. Swan's patents includes a method of preparing paper with a coating of gelatine rendered insoluble by means of chromealum. The well-known method of parchmentizing paper by means of dilute sulphuric acid renders it impervious to moisture, and the difficulty hitherto felt from the harsh and intractable character of parchmentized paper has recently been met by Mr. C. Campbell's patented method of using undiluted acid, by which pliancy and smoothness are retained. It will be seen, then, that methods of rendering paper more or less impervious to moisture abound, and that some of them are well suited for photographic application. In the methods in which india-rubber was employed, the coating was so slight that moisture was not repelled. Brinckerhoff's paper was highly impervious to moisture, but not sufficiently so to interfere with photographic operations. The results it gave were in every way pleasing; and the patent having, we believe, expired, the process is now open to the public.

How far the prints were more permanent on such paper we cannot state, as we have no data upon which to form an opinion. *A priori*, there is every reason to believe that the less permeable the paper, the less the print is likely to be subject to deleterious action. All the solutions will be more readily washed from non-absorbent than from absorbent material; and the more impervious the paper in the finished print, the more nearly it must approximate to the condition of the stable varnished negative.

CAMEO VIGNETTE PORTRAITS.

ABOUT twelve months ago we described a very pretty novelty in portraiture, several examples of which had reached us from Italy, and, in the absence of any specific or descriptive name, we styled them, in an article on the subject, cameo-medallion portraits, and strongly recommended them to English portraitists, as easily produced and very effective. Subsequently we reproduced in our pages an article by Carl Orziwanek on the subject, who stated that the style was becoming popular in Vienna. Curiously enough—and, as we think, unfortunately—novelties are not readily welcomed in this country if they involve effort or enterprise. We have pleasure in announcing that facilities are now provided which will render the introduction of the novelty in question easy to English portraitists, and that, besides facilities for producing them, an important inducement will exist in the possibility of obtaining examples of the new style. "Things seen are mightier than things heard;" and it is doubtless true that the mere description of a novelty may fail to impress many with its value. Messrs. Marion, of Soho Square, have undertaken the introduction of the style to which we refer, under the title of "Cameo Vignettes," and to provide all the necessary aids for their production.

The cameo vignette is of the usual card size, containing

a vignetted head and bust, or three-quarter length, preferably the former. After vignetting, an oval mask is laid upon the figure and vignetted portion of the background, and the margin exposed so as to print a deep black, forming a dark border round an oval aperture containing a vignetted image. This is finished, trimmed, and mounted in the ordinary manner. After this it is subject to pressure under an oval convex die, like that used for the "diamond cameos," the die being, of course, of precisely the same size and shape as the oval mask which protected the image whilst the border was printing. The size of the oval in the examples before us is, in the major axis, about three inches, and in the minor axis two inches and one-eighth. The white edge of the mount surrounding the black framing the image is about one-eighth of an inch broad.

The general effect of the picture is striking as well as novel. The convexity of the mount gives the effect of relief with which many of our readers are familiar, and which is seen in enamel portraits on the well-known convex tablets. Indeed, these portraits in many respects very closely resemble ceramic portraits, in the appearance of delicacy, force, and finish. The especial advantage to be gained by the deep purple brown or black of the border is the peculiar delicacy conferred, by the force of contrast, on all the half-tones and shadows in the image itself, and gives much value to all the lights, and such especial delicacy to the flesh. The very deep-tinted spandril gives an effect of brilliancy to the lights, and extreme tenderness and delicacy to all the shadows in the image, although the picture is printed sufficiently deep to secure vigour and force.

We have received a number of examples of this style from Messrs. Marion, by different photographers, some by Rabending, of Vienna, and some by Messrs. Hill and Saunders, being especially charming. We are indebted, also, for a number of examples, not less charming, to Messrs. Vandyke and Brown, of Liverpool, who speak in high terms of the promise of public favour which the new style is likely to command. The increased charge which they propose to make is five shillings extra upon each dozen of cards. We think a higher charge would be cheerfully paid by the public for the greatly superior result produced. As, however, there is no form of taxation in the form of patent or registration dues, the increased cost consisting in a little extra apparatus and a little extra trouble, each photographer will determine this point for himself; but it will be wise not to make the new style too cheap. Messrs. Marion, as we have said, provide all the facilities, amongst which is an ingenious press, with various dies, and suitable counters, masks, fittings, &c. These are, however, matters of detail into which we need not enter, but we may remark that all who have the presses used for "diamond cameos" will need only some slight alterations, and an oval die sufficiently large for a single image on the card; all photographers requiring some novelty to stimulate business will find this well worthy of attention. We commend it strongly to portraitists generally.

THE RECENT ECLIPSE.

It is much to be regretted that as yet no complete or official report of the British eclipse expedition has appeared, or, indeed, seems likely to appear. Little by little, the accounts of the proceedings come out—now one gentleman detailing his experiences, and now another—so that possibly, if we only wait long enough, and carefully study the whole number of scientific and technical periodicals which are published from time to time, a full description of the observations and the results may be collected. If the expeditions had all of them proved unsuccessful, one would have thought the best policy would have been to have frankly admitted the fact; or, if important results had been obtained, then these should have been

published, with some sort of authority. As it is, however, every one who has taken part in the affair seems to have published a few incomplete remarks in reference to his own peculiar duty; and we are thus in ignorance whether certain data furnished by one class of observers are confirmed by the results of others.

In making these remarks, we do not in any way wish to throw blame upon any of those gentlemen who have narrated their personal experiences for our benefit; on the contrary, if they had not come forward with their accounts, we should have been without any information on the subject at all. We cannot, however, help thinking that there should have been some collective report, short and concise, drawn up by those who managed the expedition. There seems to have been some sort of organization as regards the disposal of the observers and the choice of stations, but here the matter apparently ended, for, their task accomplished, every one appears to have gone his way, and to have treasured up his experiences for his own special and individual benefit; so that, after a few brief and hurried telegrams, all we hear of the affair is from some disjointed reports, contributed by individual observers, and printed in the various journals.

Moreover, we must not forget that the expense of the expeditions—which was, as we know, extremely heavy—was borne entirely by the country, and this, surely, is another reason why an equivalent of some sort should be rendered in the shape of an official report. Besides the three thousand pounds liberally allowed by the Chancellor of the Exchequer, there must be taken into consideration the value of Her Majesty's ship *Pysche*, whose loss occurred whilst conveying a party of observers to Sicily; and one would have thought that for the credit of the expedition, therefore, those in charge would have rendered up an account to the public.

But it may be asked: Who is to do this? Upon whom does it devolve to collect and digest the data obtained at the cost of so much time and money? Obviously upon those gentlemen, we answer, who had the direction of affairs and the disposal of the money grant. If there was no committee, there surely must have been a directing body who decided upon the distribution of the funds, and to these we naturally look for an account of their stewardship. This may, of course, still be forthcoming, and we sincerely trust that such is the case; but we must remember that already three months have nearly elapsed since the date of the eclipse, and as yet no signs of any report have been seen. For it must be borne in mind that a communication of this kind requires but little time to prepare, seeing that what we desire is not the elaboration of any theory, or speculative explanation of results obtained, but simply an account of the observations made, and a statement of the conditions under which the data were secured, so that we may be able to draw our own conclusions from the evidence afforded.

It is, indeed, strange that this country, so especially noted for its special correspondents and high-class journalism, should have been indebted to foreign journalism for the first circumstantial account of the expedition. The interesting description given by Dr. Vogel in the *Mittheilungen*, and reproduced in these columns, was certainly one of the very first, as it was likewise the best account of the manner in which the expedition was organized and the duties apportioned; and if the worthy doctor had been fortunate enough to have had favourable weather, we might safely have relied upon him for a clear and systematic description of the proceedings.

We are glad to find that the photographs taken by Lord Lindsay's party in Spain are much more perfect than was at first supposed, some examples exhibited last week at Burlington House, on the occasion of the *soiree* of the Royal Society, being, indeed, very perfect.

AMERICAN CORRESPONDENCE.

SALTING THE COLLODION—PHOTOGRAPHY AS A BUSINESS—“THE YEAR-BOOK OF PHOTOGRAPHY”—THE ALCOVE BACKGROUND—SIMPLE CONTRIVANCE FOR GRADUATING THE BACKGROUND—THE ECLIPSE.

Salting the Collodion.—You are, no doubt, often amused at the stress laid by some upon the proportions and kinds of salts best to use in making up collodion. One will advocate cadmium most stubbornly; a second, potassium or ammonium; and a third, the most sensible of all, a mixture. It should always be borne in mind that the metallic bases of the salts used have no direct influence upon the sensitiveness of the collodion or on the beauty of the results. On the contrary, the amount of iodine and bromine in the collodion is of first importance, and so long as a sufficient measure of these in the proper condition is supplied, the results will be satisfactory. The matter came up before the Pennsylvania Photographic Association a month or two ago, and quite a discussion followed, when Mr. Charles Evans volunteered to make actual experiments bearing on the subject, and to state the results. Thereupon, at the last meeting of the Association, he exhibited a series of very interesting negatives, and prints therefrom, and read a paper, from which I make a few extracts, because they throw light upon a subject which, although not new, is often forgotten. Mr. Evans says:—

“I find the different salts used to sensitize do not, weight for weight, contain the same amount of iodine and bromine, so that one salt will produce a smaller amount of iodide or bromide of silver in the film than another. Taking the formula of ammonium and potassium as the standard, we have in 5 grains of iodide of ammonium 4.38 grains of iodine, and in 2½ grains bromide of potassium 1.68 grains of bromine. Collodion salted with the above, with a 40-grain bath, gives us good results, and may be considered always reliable. Many sensitize with the other salts in the same proportions as the above, without reference to the fact that they vary in the amounts of iodine and bromine they contain; they therefore do not produce the same results as with the formula of ammonium and potassium. Take iodide of cadmium, for instance, 5 grains of which contain only 3.47 grains of iodine, being .91 grains less than in the iodide of ammonium; therefore, in using cadmium, if we wish to maintain the same strength, its quantity should be proportionately increased, as observed in the standard formula; so in the use of bromide of cadmium, 2½ grains of which contain 1.47 grains of bromine being .21 grains less than in the same amount of bromide of potassium. The iodide and bromide of magnesium contain more iodine and bromine than any of the salts, and smaller proportions can be used. Ammonium, potassium, and magnesium collodions lose their sensitiveness in a short time, cadmium alone being an exception, producing a collodion which will keep for months, giving good results.

In order to show the different effects when the various salts are used in the same quantity, without regard to their proportions, Mr. Evans prepared several collodions, using the same iodide, but different bromides, and made negatives with each at the same time, with the same bath, and the same developer. The negatives and prints were produced, and the difference in result was remarkable. I enclose you the four prints which he exhibited. With—

- No. 1 bromide of magnesia was used.
 - No. 2 " potassium
 - No. 3 " cadmium,
 - No. 4 " ammonium and potassium,
- collodion six months old.

The effort was made to secure the comparison of effects upon the drapery rather than on the face; and, by comparing the four, you will find in No. 1 much better detail than in any of the others, although No. 2 nearly equals it. No. 3 shows a great falling off in quality, while No. 4

made with old and insensitive collodion, shows an immense loss of detail, due to the lack of sufficient bromide in the collodion. The study is an interesting one, and the matter should be borne constantly in mind when working in the studio.

The following table gives the proportions of iodine and bromine present in each of the salts used:—

250 grs. iod. of magnes. contain	228½ grs. of iod.
" ammonium "	219 "
" potassium "	191½ "
" cadmium "	173½ "
250 grs. brom. of magnes. cont.	217½ grs. of brom.
" ammonia "	209 "
" potassium "	168 "
" cadmium "	147 "

Photography as a Business.—I was not at all surprised to see you advocating the advantages of considering photography in its two great spheres—as an art and as a business—so warmly. In America, in former years, photography was regarded too much, I fear, as a business; but since the organization of our grand National Photographic Association, and the inauguration of its annual exhibitions, photography as an art has made rapid strides, and caught up with its companion, so that the two walk hand-in-hand. And when a new thing is offered, the question is not only asked, "Will it pay to make it?" but "Is it beautiful and artistic?—will it degrade our art and retard its progress?" Hence these two elements characterize the deliberations of our Association, and occupy the minds of our fraternity at large. Our photographic journals, too, must take part in, and sides with, both these objects of their patrons; and their editors are expected to help bear the business battles of the craft as well as to supply them with matter to guide them in their manipulations—to be awake alike for the interests of the store-room and the studio. With us, our country is so wide that our six or seven thousand photographers must be more or less isolated, for they are everywhere, from the top of Mount Washington down to the depths of Mammoth Cave, and among the rainbows and spray of Niagara; and this fact renders them often an easy prey to the vulturous process-monger and the dealer in quack requisites. The journal which such take is, therefore, expected to keep them forewarned and informed as to all that pertains to the interests of its readers. We find the two elements to work well together here, and the "dignity" of our societies does not suffer from the closest admixture of them.

THE YEAR-BOOK OF PHOTOGRAPHY.—As fresh and full of good as ever, it comes to us in due season, an ever welcome visitor. It seems to have exceeded itself this year, and I find in it many admirable things which I wish all could read. There is one advantage which a year-book has over a journal. It is the occasion of a grand annual re-union of photographic authorship, while the other is merely a small gathering, which, coming often, is not so generally attended. Once a year we hear from many good men in the art whose talent we are conscious of, but who will not be coaxed to write more than once a year, and then they write for the *YEAR BOOK*. A grand *table d'hôte* you give us this year, and let us all be refreshed and strengthened by it.

By the way, your *YEAR-BOOK* has a good sale in this country. A few days ago I found, just arrived, one thousand copies in one place, and three hundred in another. I hope it is abundantly appreciated at home.

The Alcove Background.—A few days after M. Salomon's alcove background was described by you in the *Philadelphia Photographer*, Messrs. Gihon and Thompson, one of our most enterprising firms in this city, had one erected. It answers admirably for all you have claimed for it, and an inspection of, and actual trial with it, enable me to say, that it gives the photographer wonderful power over (under) his light, so that he may drive it where he will upon the subject. Mr. Gihon tells me that his background cost him a great deal of toil, being a new thing to him; but he feels rewarded

for all his pains fully. He made the framework as you suggested, and covered it with thin pine wood, such as is used here for backing in picture frames. On the inside, over this, he placed stiff paper, which he covered with flock-grey, red and blue mixed, which gave him a very desirable tint; otherwise the construction is the same as M. Salomon's.

Simple Contrivance for Graduating the Background.—Mr. R. Benecke, of St. Louis, has shown me some very desirable effects secured with a dark background, by moving over it at one side during exposure a little triangular-shaped screen. The contrivance is merely a light wooden triangular frame covered with white paper. It is moved up and down without stoppage during a part of the exposure, behind the head of the subject, by means of a handle. Being of this shape, sharp lines are prevented. In this way a dark background may be lighted up, and a regular effect of gradation is the result.

I have seen Mr. Black, in Boston, use a similar contrivance, and both his and Mr. Benecke's pictures prove its excellence.

The Eclipse.—I suppose by the time this reaches you the eclipse will have been almost forgotten. You have, no doubt, received from Dr. Vogel some account of his fruitless expedition. I know full well what his disappointment was. We have some cheering news, however, from the party who were at Jerez, Spain. Mr. Willard, who was with us in Iowa in 1869, got one good coroual picture, showing structural lines. How our English brethren in the same neighbourhood succeeded I have not yet heard. It is to be hoped that after the wonderful sacrifice made by the English Government to fit out an expedition success resulted.—Very truly yours,

EDWARD L. WILSON.

Philadelphia.

COMBINED IRON DEVELOPER.

BY B. J. EDWARDS.

So much has been written and re-written concerning development with iron, and such an endless variety of modifications have been suggested, that it would seem almost impossible to say anything new upon the subject.

I have tried, and abandoned, an immense number of different formulæ, including most of those in which organic matter, such as sugar or gelatine, is used; with regard to the latter substance, I have, in every instance, found it a positive disadvantage. Perhaps the best and simplest developer known is the old fifteen-grain solution of sulphate of iron, but it should be used the third day after it is mixed, when it is in its best condition. This is the plan adopted by one of our most distinguished art photographers. If this solution be used freshly mixed, it is apt to fog; if too old, it will be found too weak to develop the delicate half-tints of the negative. The iron solution keeps much better in a concentrated condition, but a simple saturated solution of sulphate of iron soon acquires the property of rapidly decomposing when mixed with water in the proper proportion for use, otherwise there are many advantages in keeping. The ingredients which form the developer in a concentrated solution which shall be always ready for use. I have found that the saturated solution of iron can be so modified that it will keep indefinitely, and with it developers suitable for every variety of subject and condition of light can be made at a moment's notice.

To a professional photographer this is a matter of considerable importance, inasmuch as the suitability of the developer will depend, to a great extent, upon the complexion and dress of the sitter, and, in the case of children, upon the amount of exposure the plate has received. The latter, I need scarcely say, is not always under the control of the operator.

It will be found that by the formula I now give, any required result can be obtained by simply altering the strength of the mixture. To make the saturated solution, take one pound of common sulphate of iron, and one pound

of the double salt of iron and ammonia, with about one ounce of sulphate of copper. Throw them together into a large jar, and add water (about forty ounces) to form a saturated solution; after agitating until no more of the salts will dissolve, allow the mixture to settle, when it will be perfectly bright and clear, and of an apple-green colour. This colour it will retain for any length of time, together with all its properties, as when freshly mixed. I have kept it many months, and have never known it to become discoloured, as is the case with a plain saturated solution of sulphate of iron.

When required for use take, by measure—

Iron solution	...	...	...	4 drachms
Glacial acetic acid	...	...	...	4 "
Alcohol	...	...	...	4 "
Water	...	...	...	8 ounces

This will make a capital developer for summer use. For quick pictures, or winter work, the formula will be—

Iron solution	...	...	...	1 ounce
Glacial acetic acid	...	...	...	1 drachm
Alcohol	...	...	...	4 drachms
Water	...	...	...	8 ounces

For instantaneous work a still stronger solution may be used with advantage; while for copying engravings, or where strong contrasts are desired, the first formula may be very much diluted.

It is a good plan to keep each of the above developers ready, and use them either alone or mixed in different proportions as required; by these means the developer may be adjusted in a moment to suit the subject or the exposure. If desired to intensify, which is seldom requisite, a little silver solution may be added to the iron developer; this can readily be done without forming a precipitate; or, if preferred, the plate may be flooded (without washing) with a fresh portion of iron developer without the addition of silver, in many cases where only a slight degree more vigour is wanted, this will be found the better plan.

I have hitherto been speaking of portraits, but this form of iron developer will be found not less useful for all kinds of landscape work; there is no danger of fogging the plates, with far less than the usual difficulty in obtaining the right intensity in the negatives, which, at the same time, will possess great delicacy of detail, both in the shadows and high lights. For distant views and cloud effects this developer is invaluable, some of the most delicate effects of distance with clouds being often secured with a fully exposed foreground on the same plate.

I have found, during the four years in which I have had it in constant use, that this developer is all that is required for every kind of work with wet plates. I have not tried it for dry plates, but think it would probably serve instead of the gelatino-iron developer for gum plates.

For other purposes I feel sure that those who try it will always use it, and I trust it will prove of good service to many, both amateur and professional photographers.

GERMAN CORRESPONDENCE.

ART AND PHOTOGRAPHY IN ITALY—STEINHEIL'S NEW LENS—ALBERT'S LITHDRUCK.

AFTER shipwreck and a solar eclipse, with a hailstorm as an accessory, I am safely back in Berlin, in spite of snow and ice. With such drawbacks the photographic result of my trip is, of course, of little moment, but we can always learn something if we only keep our eyes open; and, starting with this principle, I was able to observe many photographically interesting objects. It is said that Italy is the home of art, and it might be supposed that the youngest of the arts—photography—would occupy a position worthy the art-reputation of the country. But this is correct only so far as the past is concerned. The Italy of our day has no good artists. Raphael, Michael Angelo, Leonardo, Ghiberti, Guido, Reni, and a host of others, are

no more. The proud palaces of Sansovino have gone to decay. The former splendor of the old Roman empire offers a still sadder spectacle. Nothing is left but gigantic ruins, mutilated statues, and faded frescoes. But these mute stupendous ruins speak a language of tremendous power. They tell of deeds of heroism and horrible crimes, of pomp and splendor, as well as of the squalid misery of ancient times. They impress upon us this world's history more forcibly than large folios, and all those ruins still retain the lustre of the unreachd beauty of antique art.

The disciples of art wander amongst these ruins. They leave, and are elevated by their study.

Our own time, by its grand inventions, is far in advance of ancient Rome, still, in the realm of art, it fails to approach it. We are imitators, and must remain so, and may consider ourselves fortunate that photography has given us the means to reproduce the art-treasures of antiquity with inimitable fidelity. There is hardly an antique remnant which the camera (and it, too, is an Italian invention), has not delineated, and the photography of Italy is devoted almost entirely to this class of work.

Pictures of all sizes are offered for sale at fabulously low prices. Pictures 8 by 10 inches are frequently offered for twenty cents, and, withal, tolerably well executed. The fact that the cost of labour is exceedingly low, and that imperfect prints are sold without compunction (which, considering that the multitude possesses very little taste, is not to be wondered at), explains this.

To please the public taste, extraordinary and almost impossible things are represented. I saw, for instance, in Naples, a photographic picture of an eruption of Vesuvius; also a photographed ascension of the mountain, and an interior view of the Blue Grotto. An expert could see at once that these pictures were copies of drawings, but the public demanded them, and bought them. *Mundas vult decipi.*

Another kind of pictures with which a Roman photographer here made his fortune are moonlight views of the Coliseum. It has become fashionable to view the remnants of the walls of the colossal amphitheatre by moonlight; and it is easily understood that photographs by moonlight, to be taken home as remembrances, found a ready sale. The secret of their production has been explained long ago; a negative against the sun is taken, with very short exposures, and printed very dark.

Otherwise we must admit that architectural photographs of imposing size and excellent execution are made in Italy. Sheets of from twenty to thirty inches are nothing unusual. With the above-mentioned low prices a splendid finish cannot be expected; generally they are pasted on very thin cardboard; and frequently, in order, to facilitate packing, they are not mounted at all.

In portraiture very little is done; and, perhaps, of all the countries of Europe, Italy has done the least towards the advancement of photography. The education of the people is of a very primitive character. No wonder, then, that foreigners have usurped the business, and English, French, and German photographers have gained reputation and money.

As photographic productions of an extraordinary quality, the pictures of Mr. Braun, of Dornach, Alsace, must be considered. He had the courage to take direct pictures of the darkened frescoes of Michael Angelo in the Sistine chapel. He employed the plan proposed by myself, of throwing sunlight on them by means of reflectors, and the result is admirable. His sheets made by the carbon process have been published; they are very little known; but we will hope that, with returning peace, they will become more generally appreciated.

But, notwithstanding all the interest which Italy offers, the season for travelling was too unpropitious. The entire absence of all heating arrangements made even a moderate cold very uncomfortable. It is no pleasure to go to the dinner-

table of the first hotel in Florence with overcoat and furs on, and I felt very well contented to return over the snow-covered Alps to my cold northern home.

I soon reached Munich, and could not let the opportunity pass of calling on Steinheil, Albert, and Obernetter. I found all the three establishments in full activity. It made a most favourable impression on me, when coming from the lazy Italy which only lives in the past, to be placed at once in the busy present of the new-born German empire, where, in spite of war, flourishes art, trade, and commerce as never before. Theatres, concerts, balls are frequented as in the midst of peace. Gambetta, who, ten days ago, declared that trade and commerce were prostrated in Germany, that social life was dead, &c., should have paid a visit to a Munich beer saloon before making such an assertion; he probably would not have babbled such nonsense. Munich beer and Munich art are considered standard in Germany; perhaps both stand in "Consal nexus;" and hence we must not be surprised to meet here with some new discoveries in our art.

To these I must add a new wide-angle lens by Steinheil. The lens is particularly intended for taking pictures at short distances, and for copying drawings. It admits of the employment of small ateliers and short cameras. With every lens a prism is furnished (it serves to give reversed pictures, so far as right and left are concerned). In this manner negatives, which can be used at once for the Woodbury and Albert process, are obtained.

I have, in a previous letter, reported on Obernetter's Lichtdruck. Albert works for the war on a large scale. War maps and pictures of the war are made by thousands. The negatives, which necessarily must be reversed, are obtained by a very simple process. A negative is taken in the ordinary way, and a sheet of gelatine is placed on the still moist collodion film, and the plate left to dry; when dry, it is detached from the plate and made transparent by means of wax; an excellent reversed negative is made in this manner. The maps which are made from these negatives leave nothing to be desired. The direct printing on Bristol board must be considered as a great improvement in Albert's process. It obviates the tedious and expensive mounting. On chalk paper, pictures are furnished which are in no way inferior to silver prints. Formerly chalk-paper was affected by water. This has been remedied long ago. A slight coating of varnish makes the picture impervious to water, and gives to it, at the same time, a gloss equal to albumen paper.

Albert is indefatigable in his endeavours to improve his process. Numerous "light-printers" have since started, but to Albert remains the merit that he was the first to use glass plates as the foundation, and, at the same time, to use an intermediate film between the glass and the gelatine, in order to secure a more perfect cohesion. The former circumstance gave to his prints that remarkable fineness which neither Tessie du Motay nor Poitevin have ever obtained (both of them worked with metal plates). The second point gave to his plates an extraordinary durability. The other "light-printers" were only able to accomplish anything after these processes of Albert became known.

DR. H. VOGEL.

COOK'S PATENT CAMERA.

BY C. E. ELLIOTT.*

In bringing before you this evening Mr. Walter Cook's patent dry-plate camera, I think I may say it is a real novelty. Although, no doubt, there may be some who have long since had the idea of making a similar camera. But, be that as it may, I believe no arrangement like the one I am about to describe has before been published.

If one were asked to indicate the principles on which a perfect dry-plate camera for tourists ought to be constructed,

they would doubtless be indicated to be—1st. Compactness and portability. 2. The ability to contain a store of plates sufficiently ample for a day's work, without the necessity of using a dark slide for each. And—3. A ready and certain way of bringing each plate in rotation to the focus of the lens, and, after exposure, returning it to the place whence it was stored, all being done without the aid of tent, hood, or dark cloth of any kind. These were the problems which the inventor of Cook's camera set before him to work out, and, in the camera now exhibited, you will find that, not only have all these conditions been fulfilled, but some other features of value added to them.

The compactness of the apparatus is so great that, in a very small space, we have the following:—A strong mahogany box, which serves as a case or body for the apparatus; a bellows-bodied camera, fitted on a substantial baseboard, and capable of extending to many inches, the focussing being effected by a double rack-and-pinion movement; two fronts for single and stereoscopic lenses; a receptacle or space in which to pack leuses, focussing cloth, and even refreshments on a partially limited scale, together with a supply of sensitive plates, up to a dozen and a-half, more or less, according to the thickness of the glass, and all of them so arranged as to be manipulated by merely drawing up or closing a slide, each plate being mounted in such a manner as to preclude the possibility of its sustaining harm, either from contact with its fellows, or from the admission of a stray beam of light.

The cabinet is divided into four parts: the camera proper; a chamber in which to keep the lenses and focussing cloth, and other "odds and ends;" and the other two are filled with sensitive plates, which, as I shall hereafter describe, are packed closely together, yet without any danger of scratching or other damage accruing.

By a mechanical arrangement the plates are presented in rotation to the action of the lens in the camera, and, as soon as each one has been impressed, it is, by another mechanical arrangement, transferred to a lower compartment, an unimpressed plate from which is, in turn, added to the supply in the upper chamber. Thus, by the exercise of the most ordinary care and common sense on the part of the operator, each of the sensitive plates is presented in rotation, and *without fail*, to the aperture, where it will be in sharp focus, and, after exposure, consigned to the plate box underneath.

In the front of the cabinet is a door the size of the whole of the upper part, and which opens downwards. This "door," which is retained, by means of brass straps, in a horizontal position, forms the baseboard or bottom of the camera, on which the front that carries the lens travels, the body of the camera being "bellows" fashion.

The focussing glass is mounted in a frame which folds down in the front recess below the camera. When the focussing has been effected, the ground glass frame is turned down in its own resting-place, and the back portion brought into contact with the front by the simple act of revolving it on its hinges.

The subject having been selected, and both upper and lower receptacles charged with sensitive plates, the next operation consists in exposing them. For this purpose the front slide, or shutter, is pulled up as far as it will go.

When the exposure has been completed, and the lens capped, the front slide, which has been up during the whole time of the exposure, is now pressed down. By this act the plate which has just been exposed is carried down along with it, and is safely lodged in the lower chamber, from which no subsequent action of the front slide can again dislodge it.

There is another slide at the back, the action of which is the very reverse of the front slide; for, while the latter pushes the plate down, but cannot take it up, the former lifts up a plate from the lower compartment to the upper, without having the power of again carrying it down. Thus, to ensure the harmonious working of the parts, the operator

* Read at a meeting of the South London Photographic Society, March 9.

should get into the habit of always pulling up the back slide, and pushing it down again before he takes a picture. Those who have had the camera in use aver that there is never a hitch or miss in its successful working.

From the foregoing description, the mode of construction and working of this, the latest addition to our photo-mechanical resources, will, I trust, be apparent to everyone present; and that an invention of this kind is destined to prove serviceable to tourists, no doubt whatever can be entertained.

The camera now before you has not been brought to its present perfection without many misgivings that it would never be complete, as one difficulty after another cropped up. I may mention one great obstacle, which I feared would militate against the adoption of such a camera by dry-plate workers, viz., the way in which we protected the film from being scratched. It was thus:—A piece of cardboard the exact size of the prepared plate had the centre cut out, leaving a margin all round one-eighth of an inch. The frame of cardboard was placed on the prepared side of the plate, and the back of the plate brought in contact with a piece of pasted paper somewhat larger than the plate. The edges of the paper were then folded over and made to adhere to the card frame in front. This was found in practice to be tedious to do, and, if not done very neatly, was liable to check the plates whilst moving round in the camera. After trying several plans, we hit upon one which was so simple that we were only surprised that we had not thought of it sooner, which is to take a strip of gummed paper, and stick in the centre a strip of cardboard the width of the plate; these strips are then folded round the ends of the plate, and secured by being attached to the back of the plates. I think, gentlemen, if you will try to attach some of the strips lying on the table, you will say the plan adopted for the protection of the film is as simple as it is efficient. The plates, of course, are coloured on the back.

In some of the first cameras we made it was frequently asked, "But suppose we purchase our dry plates ready made, and they are of a different thickness to those the cameras are made for, how will they revolve?" This was a question which I could not answer, but felt there was strong ground for objection, and after a little time this difficulty was overcome by as simple a means as the former one. The point to be gained was to have a slot through which the plates passed after exposure, which would increase or decrease according to the thickness of the plate. This has been effected by cutting the bottom of the upper compartment in two, and putting between the two pieces a spring.

The tourist's camera measures five inches by five inches and eight inches high, and weighs, when filled with twenty-one $4\frac{1}{4}$ by $3\frac{1}{4}$ plates, $6\frac{3}{4}$ lbs., which, when slung over the shoulder, is but little inconvenience to the traveller. We have no doubt that by its agency we shall obtain many a picture from positions which with wet-plate apparatus it would be difficult, if not impossible, to take.

I would venture to suggest that such an equipment is just the one thing needful for our army in the field; for, since we have seen of what great service photography has been to the Prussian army in the late war, we ought to take advantage of every means to improve our military photographic staff.

I trust, gentlemen, you will pardon the egotism I may have been guilty of, for I assure you I feel towards my pet camera something like a fond parent who loves the child that has given him most trouble, so I may be led to eulogise its capabilities more than I otherwise ought to do; for, without in the least detracting from the merit due to the originator of the idea, I may, in justice to myself, lay claim to some portion of the credit due to the successfully overcome coming of numerous difficulties in getting that idea worked out to a practical issue.

ON POSITIVE PRINTING.

BY W. L. SUOEMAKER.*

In presenting this paper, I shall only attempt to explain that which has proved of value in practice; and the prints used in illustration were not made for competition, and, therefore, must only be criticised by the tone.

In positive printing on paper, the paper is immersed or floated on a solution containing chloride. After drying, it is floated on, or swabbed with, a solution of nitrate of silver, which, after exposure, to reduce the chloride, is fixed in a solution of hyposulphite of soda. This is the simple base of printing.

The quality of the print depends upon the amount of salt used in forming the chloride of silver. The manner of applying regulates the amount in the paper.

The kind of salt used regulates the colour or strength. The organic substance used in combination with the salt determines the sensitiveness.

Immersing salts more strongly than floating, and floating more than swabbing. Therefore, heavy paper which requires a heavy salting, we immerse; medium, which requires less, we float; thin absorbs quickly, and we swab it.

The chloride of ammonium produces purple or black tones, chloride of barium sepia or brown tones, chloride of sodium blue tones. We prefer the use of chloride of ammonium. Gelatine, arrowroot, albumen, and other organic substances, are used in salting, to give body or strength to the surface, and have different degrees of sensitiveness. Gelatine, with us, has always been found the easiest managed and most sensitive.

Saxe paper requires to be floated longer than Rives', which is more absorbent. This applies both to plain and albumen paper.

I find great difference of opinion existing in regard to the proper strength of silver, and as to the time of floating and fuming.

The time of floating determines the delicacy of the print, and the strength of the silver the strength of the print.

I have found more prints ruined by floating too long than by any other error. Paper floated too long absorbs too much silver, decomposes much quicker, gives less definition in the shadows, injures, and frequently flattens, the appearance of the print. Too short a time produces weak and mottled prints, incapable of receiving a tone.

I have always worked my silver perfectly neutral and perfectly plain, using it, in summer, at 20 grains; in cold weather, from 30 to 40 grains; now working, 35 grains; floating both plain and albumen paper forty-five seconds; fuming ten minutes.

Whenever, in warm weather, my silver solution decomposes, I add a few drops of a strong solution of permanganate of potash; but this will fail to act if the solution has albumen or gelatine in it, and we then remove it by boiling.

Paper should be perfectly dry before fuming; and, if damp after fuming, be dried before printing. The brilliancy of the whites is destroyed by being damp. As fuming increases the sensitiveness of the silver on the surface, the time should be in proportion to the strength of the solution. The treatment of the prints after printing determines the quality of tone. Ten minutes' washing in running water I find sufficient, and will tone more brilliant and with better results than a longer washing, which produces flat results.

A toning bath should never be decidedly alkaline, as it produces measles by dissolving the albumen surface.

Salt is used in the toning bath to precipitate any free nitrate, and prevent meanness.

The kind of alkali used in combination with the gold determines the tone.

For sepia or brown effects, the acetate of soda or citrate of soda baths are generally used.

For blue or purple tones, bicarbonate of soda, borax,

* Read before the Pennsylvania Photographic Association, January 9.

lime, chalk, are used. But it will be seen, by the samples shown, that but little difference can be seen between any, as, by careful manipulation, the same tone can be produced by all. After toning, the prints should be kept wet until fixed.

The strength of the hypo solution determines the time they should be kept in. I use two ounces to the quart, and time twenty minutes to thirty. I prefer placing the prints in the solution face uppermost, dashing the solution over the surface; then reversing and changing several times before removal for final washing.

We always dry our prints spontaneously; and I would here add, for the benefit of all, that prints that dry too blue may be reduced in tone by steeping in boiling water, as will be seen by the sample, on the card, of trial prints.

COLOUR.—TEXTURE OF NEGATIVES.

BY M. CAREY LEA.*

SOME wet negatives exhibit a peculiar cream colour, which occasionally reaches to a faint pinkish tinge. I had often observed this, without even guessing at the reason; but the observation of an extremely great variety of negatives, made in the most different manners, has led to the explanation: the colour in question arises from a certain fineness of the deposited silver.

In working, some years ago, the glycerine and honey process of Mr. Harrison, I noticed the almost excessive fineness of the deposit of which the negative was made up, a fineness that made the negatives suffer more than negatives ordinarily do in the fixing bath. Connected with this fineness of deposit were some curious freaks of colour. For example, if the negative was considerably over-exposed, the sky would come out blood-red. This deep red colour was connected with an extraordinary fineness of deposit, so great as to render that part of the negative quite transparent, so that it looked not unlike the ruby glass used in stained glass windows.

This red colouration by extremely fine particles of a metallic body, ordinarily destitute of that colour, is very curious, and reminds one of the experiment in which gold is reduced to so fine a powder that it remains suspended in water for weeks, imparting to the water a deep red colour.

In the glycerine and honey process red is not the only colour produced, but shades of purple, and even of blue. These shades seem to indicate a still greater degree of fineness of deposit. These seem to show that iodide of silver is capable of assuming a variety of shades of colour just as chloride can.

This influence of the fineness of deposit upon colour may be roughly exhibited in the following manner:—

Let a piece of glass be ground on one of its substances with common sand. Its texture may be taken as a comparison for certain negatives of extremely coarse grain taken under conditions that will be referred to presently. If we use finer sand, we get a finer grain, corresponding to that of another class of negatives. But if, instead of sand, we take fine emery and simply "gray" the glass—that is, just take off its surface—we shall find that if we observe a distant bright object—as a white window-shutter across the street—in direct sunlight, it will show a distinct light orange tint. This property of the glass is much more strikingly shown by closing a window shutter, and allowing a beam of light three or four inches square to fall on a table. On the table a piece of looking-glass—or even a piece of ordinary window glass—is laid, so as to reflect the beam of light upon a white ceiling. If the piece of grayed glass be held in the path of the ray, the spot of light on the ceiling will change from white to orange colour.

The matter has also a certain practical interest in this respect, that these negatives with a creamy shade of colour seem to print particularly well, and to give a beautiful

silky velvety look to the print. Without undertaking to affirm that the finest quality of print can only be got from such negatives, I think I may say that coarser grained negatives are not very apt to produce them.

It is certain that a large proportion of bromides in the collodion is very apt to produce a granular crystalline (very white) deposit on the negative; and, moreover, that such negatives, however fine they may look to the eye, are very apt to be disappointing in the printing. They mostly prove to be thinner than they seemed, and to give a tame and characterless spirit. Some of these negatives will deceive even very experienced printers.

On the other hand, a good cream-coloured negative will often be found to be completely free from all traces of granularity. In some conditions of the bath, the material of which these cream-coloured negatives are built up has a certain clearness about it, so that it, so to speak, looks as if it had been mixed up with varnish. Such negatives are apt to give soft, bright, silky prints.

Of course, other conditions besides excess of bromide in the collodion will give gray granular negatives. Very acid baths, or old baths, tend that way.

I have never tried the plan of putting glycerine into the developer, which was proposed not very long back; but if it should be found to promote fineness of deposit, it would have a real advantage; and the facts that I have mentioned respecting the glycerine and honey bath would seem to render this at least possible.

Correspondence.

ON THE INFLUENCE OF RED LIGHT IN THE CAMERA.

SIR,—Having seen an article in the PHOTOGRAPHIC NEWS ALMANAC, 1871, contributed by M. A. de Constant, on the influence of red or rose-coloured light in the camera, it struck me at the time that it might be made available for a reverse negative process by making a fluid or built-up prism to fit on the lens, filled with rose-coloured fluid.

I have not yet tried it myself, but shall do so on the first opportunity. In the meantime, I give you the idea as it occurred to me, hoping it may be of service to the profession.—
I remain, yours,
ALPHA BETA.

ALBUMINIZING PAPER BOTH SIDES.

SIR,—A correspondent, Mr. Monkhouse, in your last number of the PHOTOGRAPHIC NEWS, gives a recipe for sizing the backs of photographs in order to counteract the porosity of the paper ordinarily used.

The application of any such substance, either on the entire sheet of paper, or on each individual impression, would be simply "a bore," even if successful.

Has any one suggested that the paper should be albuminized on both sides?

I throw out the hint for what it may be worth,—and am, sir, yours obediently,
C. S. HERVE.
15, High Street, Aldershot, March 12th, 1871.

MOONLIGHT PICTURES, ETC.

SIR,—In the last number of the NEWS there appeared a letter from M. Ogier on the above subject, on which, with your permission, I would like to make a few remarks.

In the first of his speculative observations, he sets out by asking, or rather asserting, that "the moon must possess an illuminating power of its own [besides the reflected light of the sun], because its light impresses the sensitive plate the greater the distance from the sun; that its light is more powerful at 11 o'clock than 9," &c. Now it must be apparent to any one who takes the least trouble to enquire, that such is not the case. If it were so, we would always see the moon full, whatever might be its age—at least the part illuminated by the sun could always be seen, which any one who has looked at the moon with the telescope, or even with the naked eye, knows is not the case. That the light would be mere actinic at 11 o'clock

* Philadelphia Photographer.

than 9 may be true enough, because its altitude would then be a good deal higher.

With regard to the relative light of the sun and moon, he is likewise in error. He says: "Moreover, the moon ought to produce the photographic image in a proportionate space of time to the sun—that is to say, 2,000 or 10,000 times more slowly. But this is not the case; for, while the impression is produced in a quarter of a second in sunshine, with the same apparatus and a similarly prepared plate, twenty minutes suffice to secure the so-called lunar reflection, instead of exactly 666 hours or 23 days, which would be necessary if, as it is affirmed, the sun's rays are actually 10,000 times more intense than those of the moon." Now if the sun produce a certain effect in a quarter of a second, and the moon the same effect in twenty minutes, he would have given the picture of the moon 4,800 the exposure than that of the sun picture; and an exposure of forty minutes would give 9,600 that of the sun, which would be pretty near the 10,000 times he speaks of.

The relative actinic light of the sun and moon have never, I believe, been correctly estimated. The "Old Photographer," in his "Echees," when M. Ogier's pictures first appeared, estimated (on whose authority I know not) the moon's light as 30,000 times less than that of the sun, and M. Ogier speaks of some one giving 10,000 as the figure. Now I think that neither of the above figures are correct. From some experiments of my own, I conclude that the actinic light of the full moon is from 5,000 to 7,000 times less than the sun. I have taken pictures of the full moon which were properly exposed in from four to seven seconds. They were taken at the focus of a telescope $4\frac{1}{2}$ in. in aperture, 6 feet in total length. With the same instrument I calculate that a picture of the sun would be properly exposed in about the 950th to 1000th part of a second, which would give about 5,000 to 7,000 times as their relative intensity.

Further on he says, "The fixed stars and planets have also a considerable illuminating power, which may be added to that of the moon." Now, whatever actinic power the stars and planets may possess in themselves, they can have little or no effect on a landscape as far as photographing is concerned.

With regard to starlight in Sweden and other high latitudes, I may say that it is not simply starlight, but rather sunlight. In the island of Lewis, in the north of Scotland (which is in the same latitude as Sweden), there is a hill on the top of which for one or two days in the year the sun never sets, and for two or three weeks at that time of the year it would be possible to take a picture the whole night through, simply by the reflected light of the sun, so little is it below the horizon.

To conclude, I believe it perfectly possible that a picture may be taken by moonlight; indeed, if I mistake not, I have seen it stated years ago that Mr. Breeze had taken a white statue by moonlight, with an exposure of half an hour. It was not till lately that I had the pleasure of seeing Mr. Robinsen's picture "The First Hour of Night." That it is a splendid picture there can be no doubt; there likewise can be no doubt that it was not taken by moonlight. It is perfectly apparent to me that the sea and sky were not taken at the same time, but separately. The sea, in my opinion, is taken in full sunlight, and instantaneously; and the sky and moon at another and suitable time, with an exposure of a few seconds. In fact, were it not to considerably lengthen my letter, I might prove from the picture itself that the sea and sky were not taken looking to the same point of the compass; and with a little trouble in calculation, I could tell the year, day of the month, and hour of night on which the picture of the moon was taken, and likewise the focal length of the lens with which it was taken.

Apologizing for the space I have taken up, believe me yours, &c., J. M. TURNBULL.

Edinburgh. March 14th, 1871.

PHOTOGRAPHS OF THE LATE ECLIPSE.

MY DEAR SIR,—I shall be glad if you will correct an error which appears in the News of last week.

Dr. Vogel was not applied to at the last moment. He accompanied the expedition at his own request, and paid his own expenses. When I heard of his wish to be attached to my party, I wanted to know something about him, and applied to you for information, and in your reply you gave me his address. I did not ask you for it. Dr. Vogel was at Etna, I was at Syracuse. I do not wish it to be supposed that I owe my

success to Dr. Vogel, as anyone reading your remarks might suppose.

It is much to be regretted that bad weather prevented Dr. Vogel getting any pictures of the corona.

Enclosed is a copy of my No. 5 picture, also a copy of the American.—Yours very truly,
A. BROTHERS.

Manchester, March 14th, 1871.

[Our correspondent will note that we stated that Dr. Vogel was with the Etna party, and, as we have before published his graphic account of his operations, and the bad weather which caused his failure, our readers could not suppose we attributed Mr. Brothers' success to him. Our correspondent's memory is in error. His enquiry extended, amongst other things, to Dr. Vogel's whereabouts. Thanks for the admirable photographs.—Ed.]

REDUCING A NEGATIVE BATH TO CARBONATE OF SILVER TO PURIFY IT.

DEAR SIR,—Having successfully tried the method of treating worn out negative baths described by Mr. Brooks in the YEAR-BOOK, possibly an account of my mode of procedure may be of use to some of your readers.

Perhaps it would be as well to state that the bath I experimented with had resisted nearly all the known methods of doctoring, and was given up as only being fit for residues. I first diluted the bath to about three times its bulk with distilled water, and sunned till the milky deposit had settled to the bottom; and after filtering, added solution of carbonate of soda until a slight turbidity was produced, sunned for about half-a-dozen hours, and again filtered. I then added carbonate of soda until the whole of the silver was thrown down as a carbonate, decanted the solution, and washed the precipitate in four or five changes of water, using distilled water for the last washing, and, after decanting as much of the last washing water as I possibly could, I proceeded to dissolve the carbonate, which I found rather difficult. I used an aqueous solution of pure nitric acid, consisting of three parts acid to eight of water, and of which I added (cautiously stirring all the while) about half an ounce. I then left it for two or three hours, and again added the acid. This I repeated several times, until the precipitate was nearly all dissolved. The solution then was inky black, and I must say I thought the experiment a failure.

I nevertheless thoroughly filtered it, and made up in bulk to about 35 grains to the ounce. Believing that, although I could not dissolve the whole of the precipitate, my bath was a very great deal too acid, I tested it, and found I was right in my conjecture, and after neutralizing and sunning for about a week, I ventured to try a plate, and was agreeably surprised to find my bath in splendid condition, and gave negatives free from stains, fog, or pinholes, and that, although attended with some slight mishaps, my experiment was, in the end, a complete success.

Not knowing the exact conditions under which "A. W. H." worked, I cannot venture to offer an opinion as to the cause of the purple crystals formed in his bath. In my own experience, once, on the application of the developer to the plate (while experimenting) a thick purple veil or fog developed out, and entirely enveloped the picture. That I accounted for through having added an excess of ammonia, and afterwards removed by adding nitric acid.

I have also noticed that one of my baths, while sunning, turned slightly purple, and in that state gave very foggy negatives, although quite free from pinholes or comets, and which purple colour would not filter out. In this case I added kaolin, sunned, and filtered, and was pleased to find I had removed the purple colour from my bath, and could produce negatives entirely free from fog.

Hoping the above will be of some slight use to "A. W. H.," I remain, dear sir, yours truly

A YOUNG PHOTO STUDENT.

CARBONATE OF SILVER—ALUM IN BATH.

SIR,—I have used the process for reducing a silver bath by means of carbonate of soda for six years, and never met with failure once.

What does "A.W.H." mean by 80 grains* of bath? Does he mean 80 grains of silver to the ounce, or 80 ounces of bath? If the former, I think that the solution, being too strong, might

* Ounces were doubtless meant.—Ed.

have a tendency to precipitate, and cause spots upon the film. But I cannot think what is the cause of the purple crystals, unless the bath originally contained acetic acid, and had permanganate of potash in it as well. I expect that the two combined might cause purple needle-shaped crystals.

On dit. If Mr. Wyles, in addition to ammonia, will add alum to his nitrate bath, he may dispense with both washing and fuming his paper, and the strength of the silver will not need to be greater than 30 grains, and the paper will keep white longer than in the washed process.—I remain, yours truly,

March 14th.

W. T. WILKINSON.

Proceedings of Societies.

THE PENNSYLVANIA PHOTOGRAPHIC ASSOCIATION.

The meeting of the Association was held on Monday evening, January 9th, 1871, Mr. ALBERT MOORE, Vice-President, presiding. After some routine business,

The paper for the evening was read by Mr. W. L. SHOEMAKER, assistant to Mr. Moore, the solar printer, "On Positive Printing" (see p. 127.) Mr. Shoemaker illustrated his paper by a number of prints of one subject from the same negative, printed and toned by fourteen different photographers by as many different methods. His paper was greeted with applause, and followed by a discussion on the different methods of printing, and the advantages of heat in changing the tone of prints on paper and on porcelain.

Mr. SAYLOR said it was his habit, in porcelain printing, to dry the plates spontaneously when he desired a warm sepia tone, and if they were a foxy red, he could improve them by drying by heat.

Mr. SCHREIBER said if cyanide was used for fixing, the print and the tone of the porcelain could both be regulated and reduced.

A negative was shown with the film badly split up and partly dissolved away, the party claiming that it was caused by the varnish. Several guesses were made as to the cause, as it seemed an unusual effect, and among others the following: 1. Dirty plate, and old, thin collodion. 2. Intensified with bichloride of mercury, and varnished with a varnish containing ammonia. 3. More alcohol in the collodion than in the varnish. 4. Imperfect fixing and washing. 5. Under-timed, improperly washed, and film eaten away by bichloride of mercury. 6. Rotten collodion, and dirty plate. No one seemed to think the varnish did the mischief, and a vote was taken on the subject, and it was decided that the varnish could not have caused the breaking up of the film.

Mr. CLEMONS then stated that the varnish used was his new N. P. A. varnish, and he was glad to find it innocent, as he knew it was. In answer to the second guess, he stated that there was no ammonia in his varnish, and it would dry without heat in a room of 60° temperature.

The SECRETARY, Mr. R. J. Chute, then read his annual report.

Dr. Vogel was then elected the first honorary member of the Society, the vote being taken standing.

Mr. WILSON stated that there was another gentleman, a warm friend of America and American photography, whom he desired to propose for honorary membership, Mr. G. Wharton Simpson. His proposition was heartily received, and Mr. Simpson unanimously elected.

It was resolved that the protest of this Society be filed with the Commissioner of Patents, against the extension of the patent for solar cameras, granted to D. A. Woodward, Feb. 24, 1857, and the Secretary was instructed accordingly.

The proceedings terminated by the exhibition of various interesting matters.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The usual monthly meeting of this Society was held in the City of London College on the evening of Thursday, March 9th, the Rev. F. F. STATHAM in the chair.

The minutes of a former meeting having been read and confirmed, Mr. B. J. Edwards and Mr. W. Brooks were elected members of the Society.

Mr. C. E. ELLIOTT then read a paper on Cook's Camera for Dry Plates (see p. 126), and illustrated it by exhibiting the instrument itself, showing the admirably perfect way in which,

after exposing a plate, it was passed into a reserve cell, and a fresh plate brought into position before the lens by this simple and unfailling machinery, provided as described in the paper.

Mr. J. T. TAYLOR, answering a question as to the risk of the opaque backing of the plate being removed by the pressure of the spring against which the plate had to slide, said that he had met that difficulty very easily. He coated the backs of the plates with Spanish brown and gum-water, and then gummued a strip of paper across the middle, against which the spring pressed. This removed all risk of the colour rubbing off.

A desultory conversation followed, on the possibility of removing one set of plates in the field, and placing another set in position, without risk, which, with a little care, it was shown might be easily done. After some further conversation,

Mr. TAYLOR said he thought it ought to be known that the present perfection of the apparatus was chiefly due to Mr. Elliott, who had done as much in improving it as the patentee in first inventing it.

Mr. B. J. EDWARDS said that everyone must admire the exceedingly ingenious camera and its convenient arrangements. So far as dry plates were concerned, nothing could surpass it; but he must confess to a prejudice against the use of dry plates, and the trouble, risk, long exposure, and uncertainty involved in their use. He thought that no photographer would willingly use a dry process when wet plates were available, and he was happy to announce that, having spent much time in trying to combine the advantages of the two, he believed he had succeeded. Without entering into detail, he might say that he hoped shortly to be able to describe a means of taking wet plates without tent or dark room, with apparatus less bulky or heavy than was required for dry plates.

Mr. FRANK HOWARD, recognizing the ingenuity of the camera which had been exhibited, must confess that he thought nothing would supersede double backs for convenience and simplicity.

After some further conversation and a vote of thanks,

Mr. PRICE exhibited his metal camera and some negatives which had been produced in his last year's tour. They were produced on collodio-albumen plates, with a final wash of gallic acid. They had been prepared in May, and some of them not developed until November or December; all yielding good negatives except a few which had been subjected to great heat whilst in the backs, and these fogged. He used three lenses for the same sized plates to suit the different classes of views he wished to take. The plates were the ordinary quarter-plate, and the lenses were of 2½ inches, 5 inches, and 9 inches focus respectively. Each was focussed, previous to going out, for a marked place in the camera, and for subjects at a distance suited to each lens, required no further focussing, all objects beyond the proper distance being in perfect focus. For near views, of course, the lens of short focus was used, whilst for distant scenery a lens of long focus was indispensable. The framework of his camera was light and portable, and worked easily and accurately. The general design was like the Kinnear camera, the framework being metal. He used three double backs, and generally found that six plates were the utmost he could expose with advantage in one day. He showed also a little camera he had designed some years ago, but never carried out. It was intended for use with curved mica plates, and had combined with it a series of baths, so that the plates could be prepared and developed in the field without a tent.

A general conversation followed, in the course of which much admiration was expressed for Mr. Price's metal camera, which, for compactness, efficiency, multiplicity of ingenious details, and accurate workmanship, we have rarely seen equalled. After a vote of thanks,

Mr. BARNES exhibited an interesting series of the early collodion negatives of the late Mr. Archer, originator of the collodion process. He also showed a book in which had been placed a number of these negatives transferred by means of gutta-percha, as patented by Mr. Archer. These had all decomposed, and now consisted simply of broken fragments. After some conversation, and a vote of thanks to Mr. Barnes,

It was announced that at the next meeting Mr. B. J. Edwards would exhibit his new apparatus for working the wet process without a dark room, and that Mr. Foxlee would read a paper on the quality of small negatives best suited for enlargements.

The proceedings then terminated.

PHOTOGRAPHIC SOCIETY OF LONDON.

The usual monthly meeting of the Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, the 14th instant, Dr. MANN in the chair.

The minutes of a previous meeting having been read and confirmed, Captain Stanley Mortimer and Mr. John Sherrington were duly elected members of the Society.

Mr. REJLANDER then introduced the subject announced for the evening's discussion: the cracking of negatives, of which cracking he proceeded to say there were two distinct kinds, which he wished to distinguish as *cracking* and *splitting*. In the first, the film was raised in irregular ridges, which were due, doubtless, to damp. The second form was a very fine distinct splitting in the film, and his object was to ask the collective wisdom of the Society if a cause or cure could be assigned to the latter form. Two reasons were given by crack makers for this splitting. One was imperfect washing after fixing the negative; and the other, that the film had not been quite dry when the varnish was applied. This he did not believe, as in some cases, when he had seen a tendency to a film splitting in drying, he had hastily applied varnish before the film was quite dry, to save it, and these had not cracked. He might mention one bit of experience, that he never had this splitting in small negatives, only in large ones, and the splits were generally in the shadows. The question he should like answered was this: Was the fault due to the varnish, or to the collodion? The chief examples which he had had belonged to one year's productions, those of 1861. He produced two negatives produced some fifteen years ago, under the same circumstances, and treated alike, both being treated with Archer's gutta-percha varnish. One had split, and the other had not. A manufacturer of varnishes, not photographic, recently told him that varnish cracking was generally due to the condition of their under-coating; if that were good, the varnish would never crack; and instanced the case of a painting upon a joined canvas: one portion cracked all over, whilst that on the other piece of canvas remained quite good. His aim was to show examples, which he now did, and to ask for information.

A variety of curious examples of cracking and splitting, both in negatives and transparencies, were then handed round for inspection.

The SECRETARY then read a communication from Mr. England on the subject, in which he expressed a conviction that the collodion was often in fault. The action of the nitrate of silver, derived from the albuminized paper attracting moisture, might also operate; and he recommended that the negatives, after printing, should always be cleaned, and then treated with a paste of wax and turpentine. When these fine splits had occurred, he found that Indian ink and water, rubbed in with a piece of silk, was more effective than black-lead or lamp-black in powder, and lasted much longer, permitting hundreds of impressions. He showed an example in the form of a print from a split negative, before and after treatment with Indian ink: the first being covered with black lines, the other not showing any trace of them.

Mr. REJLANDER said that the remedy, filling up the cracks in the shadows as much as the lights, must cause white lines, requiring touching-out in the print.

Several members stated that in practice this did not occur.

Mr. WHARTON SIMPSON pointed out that as the fissures in the film were of different depths, according to the thickness of the deposit in the split part, and the pigment applied only filled the fissure, it followed, that the amount applied followed the gradations of thickness in the negative, and so produced no perceptible difference in printing.

Mr. REJLANDER said the specimen admitted that the fact was there, but he did not still see how it could be.

Mr. HUGHES explained, and some conversation followed, Mr. Rejlander dissenting.

The SECRETARY read a letter from Mr. W. J. A. Grant, and one from Mr. Blair, giving some experiences and opinions on the subject.

Mr. HUGHES said it was important, in a discussion like this, to keep distinctions clearly before them. There were two kinds of cracks, and he thought they would be more clearly defined if they spoke of them as the cracks caused by contraction, which split the film, leaving fine transparent lines; and cracks caused by expansion, which caused the film to rise in ridges, the latter not necessarily showing in printing, but being constantly dangerous, as, when they broke, the defect

could not be remedied. The latter were clearly due to damp. The cause of the other was yet to be determined.

A conversation here arose on the film splitting in drying, Mr. HUGHES suggesting that, as this was in no way connected with the splitting of varnished negatives, it was rather complicating the matter to enter upon that question.

Mr. FRANK GOODE said that, having recently changed his residence, he had had opportunity of proving that damp was the cause of the ridge-like cracks, negatives which had remained good for seven or eight years having suddenly been destroyed by a change to a damp residence. He found the best plan to avoid it was to keep the negatives in paper in open racks instead of in closed boxes. That, in his case, had stopped the evil. The fine, hair-like cracking, he thought, was often due to the use of a large quantity of bromide in collodion.

Mr. ENGLAND used a large quantity of bromide, but he had done that always; and it was only recently he had been troubled with cracks.

Mr. BLANCHARD said there were probably various causes in operation. The fine transparent cracks were due, he thought, to the use of a special kind of collodion, which many of them would recognize by the description. It readily set on the plate, giving a glossy, horny film; was generally very sensitive, and the finished negative pulled away from the edge of the glass. This process, he believed, went on slowly and subtly after the negative was varnished; and eventually, when the contracting tendency met with sufficient resistance, cracked. Sudden changes of temperature would especially tend to this end. The plan of keeping the negatives wrapped in paper was, he believed, beneficial. Imperfect washing away of hypo was a well-marked cause of an especial kind of splitting. He thought negatives kept in the pressure-frames, being protected from the sudden effect of changes of temperature, were safe.

Mr. GOODE, on the contrary, had found many of his commenced their cracking career in the pressure-frame.

Mr. PETER LE NEVE FOSTER asked if any experiment had been tried with films of varnish alone, to see if they cracked.

Mr. ENGLAND said that imperfect washing, so often suggested as a cause, certainly was not so in his case, as he washed the negatives himself, and was most careful.

Mr. GOODE said he could bear similar testimony.

Mr. HUGHES said the subject was too complex to be solved by any general statement. The ridges, he thought, were, beyond question, due to damp. There was the special crack which he knew well as described by Mr. Blanchard, which was due to hypo. He had no doubt that sudden change of conditions was a cause of cracking, and the more carefully negatives had been preserved prior to such change, the more likely they would be to suffer. He remembered a case, which Mr. Blanchard also knew of, in which a box of negatives in good condition having stood by the stove during the day, and being then left in the glass-room during a cold night, all were covered with the ridge-like cracks. Mr. Goode's case was a similar illustration.

Mr. GOODE said he found that negatives on green glass escaped, whilst those on white glass suffered.

Mr. HUGHES had escaped the evil since he abolished plate-boxes, and kept the negatives in envelopes in open racks.

Mr. HENDERSON kept his negatives in parcels of paper, and had none cracked.

Mr. ENGLAND never found a film split which had been re-varnished. He thought it was a good time to clean off the stained varnish, and varnish again.

Mr. SPILLER referred to a paper he read before the Society in 1863, describing a method of curing the ridge-like cracks, by submitting the negative to the vapour of alcohol. He then referred to the practice of various distinguished photographers in keeping the negatives in a dry warm room, out of contact with outer walls; and also mentioned the conclusions of the recent varnish committee at Berlin.

The CHAIRMAN said he had kept negatives in various conditions of temperature, from 29° to 97°, and they had had little washing and much washing without any cracking, except in one series, which in that case was clearly due to the quality of the collodion, as all produced with the collodion of one maker at the time cracked, and these only.

The CHAIRMAN called attention to some interesting instantaneous photographs taken some years ago by Mr. Kibble on collodio-albumen plates, and brought out by many hours' development.

Mr. ROGERSON showed a couple of large copying cameras with many novel and useful features.

Mr. BEASLEY showed some fine views of Gibraltar taken on Fothergill plates.

The hour being late, Mr. Dunmore's paper was postponed, and, after an announcement that Mr. Hughes would read his experiences in carbon printing at the next meeting, and some votes of thanks, the proceedings terminated.

Talk in the Studio.

SOIREE AT THE ROYAL SOCIETY.—The annual soiree of the Royal Society was held on Saturday evening last at Burlington House. The rooms of the Society were well filled with an illustrious company, who were personally received by the President, General Sir E. Sabine, K.C.B., and the principal officers. Several matters of unusual interest to photographers were displayed in the rooms, the principal being, without doubt, the photo-collographic process of Mr. Edwards. In this case the whole process of printing was clearly demonstrated, the operations of inking and pulling the prints being shown large numbers of specimens proved the degree to which the method could be made use of, as also the uniform quality of the prints produced. In another room were exhibited the photographic proofs of the eclipse secured by Lord Lindsay's party in Spain, the pictures being upon glass, and carefully illuminated from behind, so as to convey to the spectator as nearly as possible the effect as seen actually at the period of totality. One of these, carefully coloured to show the true character of the protuberances and corona, and exhibited also as a transparency, proved a very effective picture. Mr. Brown's large equatorial telescope, fitted with photographic apparatus, by means of which the pictures were produced, was also shown, and attracted numerous visitors. Photographs from the General Photographic Establishment at Woolwich, and from the Department at Chatham, were shown, as also some very striking portraits of Sir R. Murchison and the late Professor Miller, together with other prints of merit. Mr. Huggin's spectroscope, Dr. Norris's physiological demonstration, and Mr. Cromwell Varley's electric experiments, were much appreciated, as were likewise other matters of a less ambitious nature, the reunion being altogether very interesting and agreeable.

PHOTOGRAPHY AT THE FORTHCOMING INTERNATIONAL EXHIBITION.—The committee appointed to select the photographs for the forthcoming exhibition, consisting of Dr. Diamond, Col. Stuart Wortley, and Mr. Richard Thompson, met a few days ago to examine the contributions sent in. About sixty photographers had sent collections of pictures for exhibition, comprising a very fine display of photographs. The limited space devoted to photography compelled the exercise of a somewhat rigid selection, space being available for not more than half the pictures sent in. The general plan adopted was to select about half of the examples of each exhibitor, the best pictures being, as far as possible, retained. It is doubtful, however, whether the space available will permit the hanging of all the pictures selected. The position chosen for photographs possesses the charm of loftiness, being within the dome, and just over the music gallery.

To Correspondents.

SOUTH DEVON.—As a rule, a somewhat stronger bath is necessary for dry-plate work than for wet. For most dry processes a 40-grain bath is desirable, and for most processes that strength is sufficient. It depends somewhat on circumstances, however. If you use a very highly bronzed collodion, a stronger bath than that may be used with advantage. 2. The object of flooding dry plates with alcohol and water previous to applying water, is to permeate as speedily and perfectly as possible the horny and repellent film. When once a collodion film has been perfectly desiccated, it is very difficult to render it again permeable by water, which is apt to run over its surface without penetrating, and alcohol overcomes this repellent condition much more readily than water.

E. P. (Chester).—Much depends on varying circumstances. As a general rule, however, six cubic feet of each gas, suppose coal gas be used for the hydrogen, will serve for two hours. In all cases the lime cylinder should be turned round from time to time.

E. S. B.—Some samples of paper have a tendency to lose tone in the fixing bath. The best remedy is to tone somewhat deeper than usual, and to use the fixing bath as weak as may be compatible with perfect fixation.

L. C.—An ordinary photographic dish is not suited for boiling a silver solution. A vessel made of earthenware which will stand fire is necessary; one of the ordinary evaporating dishes used by chemists will answer. You can obtain it of any dealer in philosophical apparatus. You may boil over a fire or over a gas flame. 2. A sand bath is a vessel containing sand which is placed on the fire, and a vessel containing the substance to be heated placed amid the sand. The object is to obtain a steady heat free from flame or varying conditions.

YOUNG PHOTOGRAPHER.—The shade around the figure in a vignette is the natural tint of the background against which the figure was taken, which is graduated into white margin by means of vignette glasses, or other means of vignette masking. You will find instructions for producing vignettes in most manuals of instruction.

A PRINTER.—There is no regular rule prevails as to the working hours of photographers, nor as to the time at which they leave off on Saturdays. In some establishments we know that business ceases at two o'clock on Saturdays; in others, continues until evening on that as on other days. The justness or desirability of employers giving a weekly half-holiday to their work-people is a wide one, and involves many considerations. We at all times counsel a liberal and kindly policy amongst employers. We can quite conceive that when a good understanding exists between employers and employed, the latter, by extra energy, care, and effort on other occasions, may compensate employers for giving the half-holiday. On the other hand, assume that the bargain between the parties of so much wages for so many hours of work is a just one, then to ask permission to curtail the number of hours without reducing the wages is equivalent to asking for a gift of so much money. It should further be remembered that even if a half-holiday be granted, Saturday is, for many reasons, not the most convenient time. The fact that city houses and other business establishments close early on that day gives the attendants in such houses leisure to sit for portraits, and hence it is often the very time when the photographer feels the imperative duty of remaining open to oblige customers. Photographers have so much enforced idleness during bad weather, that many of them cannot afford holidays when the sun shines.

F. P.—There are many very effectual methods of cleaning glass plates, and also several effective methods of dispensing with very careful cleaning. Much depends on the condition of the plate to begin with. New glass we should clean simply with alcohol and rotten-stone, or whiting, applied with a tuft of cotton-wool, and rubbed off with a perfectly clean linen. For old plates nitric acid, or strong cyanide, made into a thin paste with whiting, answers well. There are many other methods; but these we have most commonly used. The preliminary coating with dilute albumen, or tunicare, also answers well, and renders care in cleaning the plate of less importance. 2. Gold from old toning baths is easily recovered. The method by the addition of sulphate of iron, which we have often described, is very easily applied. Pyrogallie acid also answers well. Making the solution alkaline, and boiling in a Florence flask, will reduce the gold.

H. BRILL.—Much depends on the kind of experience you have had. The coffee process is, perhaps, the most simple process for keeping a few weeks. The Fothergill process is similar in simplicity and keeping qualities. The gum-gallie process is better where longer keeping qualities are desired. 2. There is no photographic journal issued in Canada.

WILLIE JACKSON.—You need not register an enlargement from a negative to protect, if the proper steps have been taken with the original photograph. 2. You cannot legally copy a copyright picture without the consent of the owner of the copyright, no matter who may desire you. You had better get the gentleman to sit to you direct. 3. You cannot legally copy, in large size or small, a copyright engraving. 4. Glue for mounting prints is the same as that used by joiners, but of the best quality. The material applied to the back of postage stamps is dextrine. 5. There is a fair demand for photographic portraiture at present, but not quite so much as during what was termed the card mania about half-a-dozen years ago.

A. K. K.—There are two methods of fuming: one consists in placing a little ammonia in a saucer at the bottom of an air-tight box, pinning a piece of sensitive paper to the lid, and closing the box for ten minutes; another consists in fuming the pads, which are placed at the back of the paper in the pressure-frame. In this case, the pads are kept previously shut up in a box, with either liquid ammonia or carbonate of ammonia. 2. The paper should be quite dry before fuming. 3. The advantage is, that with weak baths, and little or no free nitrate on the paper, rich vigorous prints are obtained. 4. A porcelain evaporating-dish, made for the purpose, placed over a suitable gas jet, or a clean, hot fire, is best for boiling down a bath.

H. TILLY.—The proportions are generally pretty good, but we should prefer the width 12 feet instead of 10 feet, and the height at ridge 14 feet instead of 13 feet. The glass north side and roof will do well. As direct sunlight is better kept out of the dark room, even through yellow glass, a north window is best.

C. R. W.—Thanks.

Several Correspondents in our next

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M. DE CONSTANT ON DRY PROCESSES.

WE commence, in the present number, a series of papers on dry-plate photography by Mons. A. de Constant, especially in relation to the gum-coffee process, which he has worked out with so much care and success. The remarks and instructions of M. de Constant possess the especial value of being the dicta not only of an ingenious and indefatigable experimentalist, but of a skilful practical worker of very fine taste. It has, unfortunately, happened occasionally, in connection with dry-plate photography, that those who have experimented and written the most have practically effected the least; and when, by chance, their work has been seen, it has been found of a very low standard indeed. Some of the ablest dry-plate workers have, on the other hand, had but little to say in relation to their operations. It is a fortunate conjunction, therefore, to find the indefatigable experimentalist, the skilful worker, and the able writer united in one person. M. de Constant has, for years past, experimented carefully with all the dry processes; and, after mature experience, has come to the conclusion that his combination of coffee and gum unites the largest number of desirable qualities: simplicity, certainty, rapidity, and excellence of result. We have been favoured, from time to time, with many examples of its results, possessing most admirable qualities, some instantaneous street scenes before us equalling the majority of similar subjects we have seen produced by means of wet collodion.

In simplicity, this process leaves little to be desired: a plate is coated, excited, washed, coated with the preservative, and dried. It is then ready for exposure, and will keep a few weeks. The exposure, as estimated by M. de Constant, is about three times that of wet collodion. In saying this, it should be understood that the author gives a thorough exposure, securing detail, softness, and harmony throughout, and not simply the hard, black-and-white pictures too often produced on dry plates; and, judging from the examples before us—for, except experimentally, we have not worked the process to any great extent ourselves—the especial tendency of the method in question is to produce thoroughly harmonious pictures.

In reading M. de Constant's experiences with this process, it is curious to note how nearly they coincide with those of one of the earliest and most successful dry-plate experimentalists, Dr. Hill Norris. The use of a powdery collodion, the necessity of retaining a porous, permeable condition of film, are conditions in the operations of both gentlemen; and there is a close resemblance in the substances employed as preservatives, Dr. Norris having used tannin and gelatine, and M. de Constant coffee and gum. The use of the coffee and gum preservative seems to satisfy, as does the use of its congener gallie acid and gum, two

cardinal conditions of success in dry-plate photography, and meets the chemical and mechanical necessities of the ease. Dr. Vogel, as our readers remember, discovered, a few years ago, that the necessary condition to render iodide of silver sensitive to light was the presence of some body having an affinity for iodine, with which it might combine when separated from the silver. Hence free nitrate of silver was necessary in the wet process, and some body which might perform a similar office in the dry processes. Gallie acid, tannic acid, caffeine, and similar bodies possess such an affinity, and absorb the iodine liberated by the decomposition of the iodide of silver; and these substances preserve the best chemical conditions, whilst the mechanical condition of ready permeability is secured by the use of the gum and sugar added to the solution.

Besides containing fully detailed particulars of all the operations, with comments on their *rationale*, some important points of novelty will be found in M. de Constant's papers, especially in relation to development, to which point he attaches considerable importance. Commencing with alkaline development, he has found that it may be supplemented with great advantage by means of an iron solution, which, in case of short exposure, is invaluable in forcing development. For details of this, and other parts of the process, we must refer the reader to the articles themselves, as our aim is not to epitomise, but to call attention to them, and to the repeated evidence we have had of the excellence of the process, in the charming specimens we have received from time to time, including almost every class of subjects, from instantaneous pictures to reproductions.

GRADUATED BACKGROUNDS.

The value of a graduated tint on the background of a portrait is well known to most photographers. It is not only a valuable adjunct in securing pictorial effect, but it materially adds to the relief and force of the picture, removing the flat inlaid effect which is too common in portraits with a background of one even, unvarying tint. Various modes have been devised of producing this effect, such as painting a graduated tint on the background screen, varying the light and shadow on the screen, moving or revolving the screen, and other methods. We have recently received from our friend Mr. E. L. Wilson an example of the result of another mode of securing this effect, devised by Mr. R. Benecke, of St. Louis. It consists in employing a triangular frame, covered with white or grey paper, to move over the background during the sitting. The background used is a dark one, and the light-coloured triangular screen being kept in motion in front of the part where a lighter tint is required, the effect is produced without any

definite line or edge being produced. The triangular screen must, of course, be furnished with a handle—for convenience, a somewhat long one—and its use entrusted to a second attendant. The light may thus be introduced in any portion of the background where it may be required to produce the desired relief. A screen of dark or black velvet might, in a similar manner, be used to introduce dark tints into the picture, where it may be needed for the purpose of chiaroscuro.

VIGNETTE PORTRAITS: HOW TO LIGHT AND HOW TO PRINT THEM.

BY GEORGE CROUGHTON.

ALTHOUGH the vignette is one of the most pleasing of the many styles of photographic portraiture, and one that is now becoming very popular, I think the consideration of their improvement artistically has almost entirely been overlooked by photographers generally.

It seems to me that the advent of Mons. Salomon's pictures, while stimulating photographers to improve their full and three-quarter portraits, has caused the vignette to be left out in the cold. I know there are many who think that a vignette portrait is the easiest thing in the world to produce, for I have more than once heard it remarked that they would much rather take a vignette, because it was no trouble: there was no posing, or arrangement of accessories wanted. This is true to a certain extent, but there are other things that require thought and taste in almost as great a degree as a full-length. There must be quite as careful a study of the lighting, as in a full-length portrait, and although a bad pose may not be so conspicuous, a graceful and easy pose is one of the chief charms of a good vignette. Then the vignetting in the printing requires great taste and judgment, for it is quite easy for the printer to spoil efforts aimed at by the operator. To a man that uses the so-called vignetting glasses, it may seem an easy thing enough to vignette a portrait; but I contend that such are not vignettes, they are simply ovals, not sharp at the edges. I think there is nothing so abominable in the eyes of an artist as the regular oval these glasses produce.

A vignette head should be lighted in such a way that there should be no strong contrasts of light and shade; the whole should be soft and round, and, at the same time, it should not lack brilliancy, but the whole should be less solid than would be required if it had a dark background behind it.

I have noticed, in the productions of photographers who have aimed at softness, a tendency to flatness and loss of brilliancy; while, on the other hand, the man that aims at brilliancy has a tendency to hardness and strong contrasts. I think this is entirely due to a mistaken idea about the exposure. In both cases, if the photographer aiming at softness gets a soft light upon his model, and gives a full exposure, there must be loss of brilliancy; if, on the other hand, the one aiming at brilliancy lights his model boldly, and does not give a full exposure, he must lose softness. Now, my idea is, that if a head is lighted so that it has a good bold round shadow, with not too dominant a side-light, and a full exposure be given, both softness and brilliancy will be the result. For a vignette, in my opinion, the light should be more evenly distributed, and very strong shadows should be avoided; they should be altogether lighter, softer, and more ethereal (if I may so use the word). Then, again, they should not be too large for the paper they are on. I am led to say this because it has become the fashion to put heads upon cartes that ought rightly to be on 10-8 paper. This is preposterous; you never see artists spoil a head by putting it on too small a paper; on the contrary, they sometimes go to the opposite extreme; but it is far better to see a small head on a large paper than *vice versa*. A one inch head is quite large enough for a carte vignette.

But it is in the background that the chief improvement would be made. The proper distribution of light and shade upon the background of a vignette is its chief charm. It is one of the greatest difficulties an artist has to contend with in the production of a vignette portrait, particularly if it is done in chalk; but the difficulty to the photographer is not nearly so great, for, in the case of the artist, the effect mainly depends upon the freedom of touch and masterly handling of his chalk, the knowing what to do, and how to do it at once, for there must be no supplementary touches; but, on the part of the photographer, it only requires him to know what to do, and the various means of doing it will only require the exercise of ordinary judgment and taste to suggest themselves. On no account should a dark background be used, nor should it be too light; it should be dark enough to relieve the lighted side of the face, and light enough for the shaded side to come forward from it, but it should not be of an even tint—that is, the same one side as the other. I will explain the principle upon which the light and shade upon the background is based, and the application will suggest itself.

We will suppose a head placed before a background of a medium tint, lighted by one direct ray of light, as from a window in an artist's studio; the background would receive that light obliquely. The light that falls upon the face does not reach the background on the side the light comes from, therefore the lighted side of the face is relieved by the shaded part of the background; but, passing behind the head, it lights the background on the shaded side of the head, at once throwing the whole head forward. But left as it is, the picture wants balance; it is all shade one side, and all light the other; but letting the light finish its work, we see the shadow of the head thrown upon the background, just by the shoulders, which gives the balance wanted; so by merely acting upon these principles of light and shade, we have what is wanted, the head relieved, and coming forward from the background, and the background itself playing the most important part in that effect.

I will close this paper with a few words upon the methods to be used for the production of this effect in photographic portraiture. One of the simplest is the use of a card with a proper-shaded opening, and the use of cotton-wool. Another and better method was described by Mr. V. Blanchard at the South London Society some time ago; it consists in the use of flake white on the glass side of the negative, and worked with the fingers into a regular grain in the shape required. But decidedly the best way would be to have a background painted on purpose on a light grey ground, with a little hatching of a darker colour where the cast shadow should fall.

If these few remarks should have the effect of calling the attention of photographers to a style of picture which will pay for trouble spent on its improvement, I shall not have written in vain.

AMERICAN CORRESPONDENCE.

ON TESTING SILVER SOLUTIONS.

On Testing Silver Solutions.—Notwithstanding the amount of instruction there is made accessible to the photographer of the present day in the way of books, periodicals, exhibitions, &c., there is a great deal of walking in the dark; and in no part of his manipulations is the photographer more puzzled and bewildered than in the management of that mysterious mixture, the nitrate of silver bath. The more of a mixture there is made of it the more mysterious it becomes too. I am constantly receiving complaints from parties like the following:—

“What is the matter with my nitrate solution, that I cannot get intensity? I have tested it with the hydrometer, and it indicates 40, 50, or 60 grains strong; and yet, to save my life, I cannot get a proper negative with it.” Another:—“Please examine the prints I send you. They

have every evidence of a weak silvering solution, and yet I habitually keep up the strength of my silver to 10 or 45 grains. Why the trouble? Is my hydrometer probably at fault?"

Now we all know, or we should if we do not, that a bath when new—40 grains strong—will work with perfect satisfaction; but after it has been used for a time it fails to give good results until the hydrometer indicates 45 to 50 grains strength. The reason of this is, that the hydrometer shows only density or specific gravity; and it is a common mistake to suppose that a hydrometer will tell the actual amount of silver in any given solution, no matter what the density of that solution is.

The silver test, or hydrometer, in common use in this country, consists of a sort of beaker glass, for holding a quantity of the solution to be tested, and a mercury bulb with a glass scale attached. We call it the argento-hydrometer. The scale of the argento-hydrometer is prepared in the following manner:—It is first floated in pure water at 60° Fahrenheit, and the point to which it sinks marked; this is the zero of the scale (see fig. 1). It is then placed successively in solutions of the same temperature, containing 10, 20, 30, &c., grains of nitrate of silver to the ounce, and the different points to which it sinks carefully marked. The points are, when the scale is to indicate 1 grain for each degree, the 10, 20, and 30 degrees, &c., of the scale. The intermediate single degrees are put in by simply dividing off into ten equal spaces.

This instrument, thus prepared, can be used to test any other pure solution of a soluble salt; but, as these solutions vary very much in density when containing the same number of grains of the different salts dissolved in them—for example, a solution containing 20 grains of chloride of ammonium does not test the same as one containing 20 grains of hypo soda—a table of corrections is required. Such a table accompanies the argento-hydrometer. The instrument has no discriminating or selecting power; hence, if the two solutions just named were mixed together, no table could be made which would give, from the indication on the stem, the number of grains of the one, and the number of grains of the other, contained in each ounce of it.

When a silver bath is new, the reading of the hydrometer can be relied upon; but in working, as every plate abstracts silver by the formation of iodide and bromide of silver in the collodion film, and adds nitrates of potassa, cadmium, &c., according as iodide and bromide of potassa cadmium, &c., have been used as excipients, we have an impure solution, in which the above salts, as they increase its density, test by the hydrometer as so much silver, and we cannot tell, from its indications, how much nitrate of silver alone it contains. The older the bath, the more impure the solution, and the more unreliable this manner of testing becomes. The reason of this I have given above.

It is well known that different bodies of the same weight are of different sizes; and, again, that bodies of the same size have different weights—as, for instance, a pound of lead is smaller than a pound of wax, and a piece of lead weighs more than a piece of wax of the same size. When the weights of different bodies are compared to the weight of equal volumes of water, we have what is called their specific gravity. The specific gravity of gold is 19.3—that is, 1 cubic inch or foot of gold weighs 19.3 times more than a like bulk of water; and when the specific gravity of an acid is given as 1.4, it means that a cubic inch, or a pint, or any other measure of it, weighs 1.4 times more than an equal measure of water. We have, in the hydrometer, a quick means of finding specific gravities of liquids. If we float it in liquids of different densities, it will sink to different depths in them, but always so far until the weight of the volume of displaced liquid equals the weight of the



Fig. 2. which the above salts, as they increase its density, test by the hydrometer as so much silver, and we cannot tell, from its indications, how much nitrate of silver alone it contains. The older the bath, the more impure the solution, and the more unreliable this manner of testing becomes. The reason of this I have given above.

whole instrument. As the same liquid varies in density, according to its temperature, it is necessary to have a standard, which is usually 60° Fahrenheit, and all solutions should be made of the proper temperature before testing.

There are methods, however, of ascertaining the quantity of silver in any solution, pure or impure; one of the most accurate of which is, the one introduced by Dr. Vogel, and which, I believe, you have described to your readers. If you have not, I hope you will bring it to their attention.

There is also another accurate instrument. Dr. W. H. Pile, of Philadelphia, manufactures a "volumetric silver test," which is much simpler than Dr. Vogel's, as it consists of but a single tube, and is almost as correct. In using it,

it is only necessary to fill the tube A to the point O with the silver solution to be tested; then add the test solution (made by dissolving 140 grains of well-dried rock salt in 1 pint of distilled water at 60° Fah., and adding to the clear solution 2 grains of bichromate of potassa), freely at first, afterwards gradually, closing the tube with the thumb, and shaking well after each addition, until, after allowing the precipitate to settle, no more cloudiness is produced by a drop of the test. The level at which the liquid in the tube stands gives the number of grains of nitrate of silver contained in each ounce of the solution (see fig. 2).

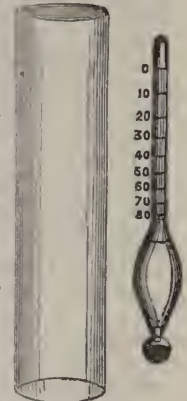


Fig. 1.

There is also an "easy method of testing, which is within the reach of every photographer," for which I am indebted to our eminent Philadelphia chemist, Mr. James F. Magel, as well as for some of the hints above. The only articles required are, an 8-oz. narrow-mouth bottle, a graduate glass, and some common table salt.

The test solution is made by dissolving 55 grains of well-dried salt in 1 pint of water. Measure into the 8-oz bottle $\frac{1}{2}$ oz. of the silver solution, and add to it carefully, from a clean graduate glass, shaking well after each addition, the test solution, until no cloudiness is produced. If it takes 1 oz. of this solution, it contains 10 grains of nitrate of silver to the ounce; if 2, it contains 20 grains; and so also of fractional parts: $3\frac{1}{2}$ oz. shows $31\frac{1}{2}$ grains; $3\frac{1}{2}$ oz. 35 grains, &c. As every 1 oz. of solution used shows 10 grains of nitrate of silver to the ounce, it is only necessary to multiply the number of ounces, and parts of an ounce, by 10, to give the required result. A 2-oz. graduate glass is the best size to use, as it is so graduated as to show $\frac{1}{2}$ oz. readily; and, as every $\frac{1}{2}$ oz. of test solution equals $1\frac{1}{2}$ grains of nitrate of silver, this test is sufficiently accurate for all practical purposes. If about the number of grains in the solution is known, add at once nearly the required quantity of the test, and afterwards small quantities at a time. Supposing it to contain about 40 grains, add $3\frac{1}{2}$ ounces of the salt solution, shake well—and, towards the latter part of the process, it requires hard shaking to get the chloride of silver to precipitate out and leave the liquid clear; then add, from an exact measured ounce, about $\frac{1}{2}$ at a time, until the precipitation is complete. Add the quantity used to the first $3\frac{1}{2}$ ounces, multiply by 10, and we have the number of grains of nitrate of silver.

It frequently happens that, before sufficient of the salt solution has been used, the precipitated chloride of silver is quite hunky; but, when shaken up, after the addition of the last required quantity, it becomes much denser, and settles rapidly to the bottom. This is a good indication of enough solution having been used. One or two trials of this process will give all the experience required to enable any one to do it easily and quickly.

If the silver solution contains ammonia—an ammonia-nitrate solution, as it is termed—after measuring off a $\frac{1}{2}$ oz. of it into the 8-oz. bottle, make acid with a little pure nitric

acid, and then proceed in precisely the same way as above explained.

Dr. Vogel's, Dr. Pile's, and the "easy" methods cannot be used if the solutions contain salts of lead or mercury; but as these salts are not used by photographers, it is not necessary to give processes by which such solutions can be tested, requiring, as they do, some knowledge of chemical manipulation.—Yours truly,
EDWARD L. WILSON.
Philadelphia.

PHOTOGRAPHIC TRANSPARENCIES FOR THE LANTERN.

Our excellent contemporary, the *English Mechanic*, contains a capital series of articles on colouring magic lantern slides. The right to reproduction is reserved, doubtless for separate republication. We venture to extract, however, some remarks on photographic slides, which, whilst we cannot altogether endorse in all respects, will be found suggestive to our readers. Having described his mode of treating outline drawings, he proceeds:—

"Now for the photographs; and here I fear I am intruding on 'Tom Tiddler's ground,' but not 'picking up gold and silver;' so I trust Tiddler and Co. will be merciful, when I affirm that for dissolving views I greatly prefer a highly-finished hand-painted slide; and I entreat my friends to believe, that after some little experience as an exhibitor, I am strengthened in my preference by the opinion of some very excellent connoisseurs. Notwithstanding, I feel strongly with all classes of photographers. Some years ago, when I could not handle my pencil so deftly, I myself was a photographer, and quite enthusiastic; so fascinated was I that I spared neither fingers, personal or house linen, but sacrificed all to the cause, to the intense disgust of the ladies who had the great misfortune to be interested in my belongings. For a long time I encountered a series of awful failures; but as I have a habit of sticking doggedly to anything that promises social enjoyment, if I once take it in hand, as a matter of course I was at length tolerably successful (as every one must be, it head, heart, and hand work well together). At first portraiture seemed to hold out no end of delight; but I soon lost patience with this; not that the bath, the developer, or the light were so often in fault as the sitter. It was *there* the chief bother lay. Often when I had obtained a really good picture, it did not please; something was wrong about the eyes, nose, or mouth; it was 'sour-looking,' and the expression was not good. In a word, it 'wasn't like'; so I determined to devote myself exclusively to landscapes. I began with the memorable folding camera of poor Archer, carrying my bath, solutions, glass, &c., within it; and manipulating inside the camera through sleeves at the sides. Every one now has his own pet method; but, with a few slight improvements, I would work the above against any I have ever seen since. (My pictures were 10in. by 8in.). As I recall the old absorbing amusement and the old companions in it, my heart warms towards the whole brood of photographic artists. But I was not satisfied; the cutting sharpness of the glass negative always impressed my eye unfavourably, so I abandoned glass for French negative paper, and it gave me what I sought. It was light, portable, not subject to breakage; creasing was easily prevented; it required a longer exposure, so that objects in motion were not so great a nuisance as before; and it yielded better *half shades*, greater harmony, and other effects which are so prized by the landscape painter, and which *make* a picture. I advance all this to prove that I do not write at random, and that I have some practical knowledge of the art. The accuracy of photography is beyond all praise; that is its strength; but it is certainly wanting in half lights, more especially when reflected from all shades of green, red, &c., in the shade; that is its weakness. In colouring photographs for the lantern the artist cannot leave the blank masses of foliage and other void tracts in shadow; he must do something

with them, and, for my part, I would rather paint ten pictures first hand than *do* that something. True, they *can* be exhibited uncoloured, but to judge of the effect, place in the slide-holder of the other instrument a first class hand-painted view, and dissolve the uncoloured photo. into it; do this before a good sprinkling of spectators, and take *their* verdict. This is the way in which I have arrived at my conclusions, remembering always that if I exhibited only to please my own eye, it was but a sorry pastime; but I myself like the paintings best. I have been told that some prefer cold marble to warm flesh and blood; if this should be read by any who do, I hope they will not be 'werry down' upon me for declaring that I do *not*.

"I have attempted to reproduce good engravings, mostly small ones, by the aid of photography, to avoid the labour of outlining, particularly that of reducing, but the 'hatching' had a fearful effect on the screen, the picture looking as though some gigantic spider had spun his web over it. However, some tolerable photos. are sold by the houses already mentioned, and I recommend them also to the friends I am now especially addressing. Use the same colours, &c., and lay your tints lightly yet decidedly; do not attempt deep shading, but imitate the colouring of the stereoscopic pictures, and *never* use the knife or etching point.

"To photographers I would say, with all due deference, print your positives on glass with albumen, *not* collodion; if you exhibit with oil, and not the oxyhydrogen light, you will soon discover the vast superiority of the former.

"Another objection to photos. is the protecting varnish; it greatly embarrasses the artist. I prefer the freedom which the pure surface of the glass affords.

"Still, for astronomical and microscopic objects, machinery, statuary, and architectural elevations, photography is, and must ever be, unapproachable by the hand of the draughtsman.

"Note.—Water-colours are said to be most available for tinting photos. I have given the system a fair and patient trial, and cannot recommend it for glass painting; but I have experimented on photos. with Judson's simple dyes, tinting them as the stereoscopic pictures. This is not difficult, and the result, if not acceptable to the painter's eye, is bright and pretty, albeit too closely resembling the colouring of toy books."

PRACTICAL HINTS ON THE PRESERVATION OF NEGATIVES.

BY WM. ENGLAND.*

UNDERSTANDING from Mr. Rejlander's remarks at the January meeting of the Society that he intends inviting discussion on a subject of great interest to photographers (*viz.*, the causes of an occasional form of injury becoming apparent in their negatives, and popularly known as the splitting of the film), I am induced to offer a few suggestions, hoping that other members may likewise be disposed to give us the benefit of their experience on this important question.

Although I have given considerable attention to this subject, I must confess my inability to discover the real cause of these disastrous appearances, and am undecided as to whether the fault lay in the varnish or the collodion. In the majority of cases, I believe it originates in the latter; but the fault may, in some measure, be due to the use of a varnish of non-elastic character. One important cause of injury to the negative I have, however, found to arise from the accumulation of nitrate of silver in the film, as the result of its contact with the sensitized paper during the printing process. When the negative, no longer required in the frame, is put aside, the deliquescent nature of the silver and other salts tends to induce conditions favouring the absorption of moisture, which, without doubt, is one of the immediate causes of splitting of the

* Read before the Photographic Society, March 14.

film. The amount of silver which will thus attach itself to the negative during its continued use may be inferred from the result of the following experiment:—Some time ago, when proceeding to re-varnish some negatives which had become much worn, I poured into a flat dish several ounces of alcohol, for the purpose of dissolving off the old varnish; after immersion of the plates, I dried and re-varnished them in the usual way; but the negatives, on being placed again in the light, in order to obtain further proofs, speedily darkened to such an extent as to become useless.

The cause of this alteration may be readily understood, when we take account of the circumstance that the alcohol had become impregnated with the silver existing in the old varnish; and I was strengthened in this belief by observing that some of the spirit, on being applied to paper, and exposed to sunlight, quickly became discoloured. Since these results were noticed, I have always taken the precaution, whenever negatives are removed from the printing frame, and about to be stored away, to thoroughly clean the face with a soft cloth dipped in water; and, after removing all injurious matters, rub dry again with a clean cloth; and, as a further precaution, apply, with a tuft of cotton-wool, a little encaustic paste, made by dissolving white wax in turpentine to about the consistence of cream. The negative thus treated will be found to withstand the action of moisture from the atmosphere; and another advantage which follows the application of the wax is, that the film does not seem to lose its nature or become rotten. It is, of course, unnecessary to say that negatives should at all times be kept in the *driest* apartment in the house.

Since taking the before-mentioned precautions, I have rarely met with a damaged negative; and the only possible drawback to this method is that, in the event of there being any retouching on the film, this work will have been effaced. The practice of revarnishing an old negative when it has become worn is thus a great protection against the film splitting; and I would recommend that, as often as this is adopted, care be taken to wash the film with *several* applications of alcohol after removing the old varnish, or the darkening already mentioned, on the exposure of the negative to light, will certainly cause its destruction after a few proofs have been obtained.

It may now be asked, What is the best to be done with the negative which has met with the injury under discussion? It is very annoying on taking up a valuable negative which has been carefully stowed away to find that it now presents, on holding it up to the light, a series of reticulated lines of every possible form. Various substances have been proposed with which to fill up the cracks in these broken films—such, for instance, as lampblack, plumbago, &c.; but by far the best substance for this purpose is, in my opinion, Indian ink. This pigment is rubbed up with a little water, and applied with a soft piece of silk, working it well into the fine lines, and, whilst still moist, wiping off the superfluous ink, so that, if properly done, no mark will now be visible to the eye. This method is preferable to the use of lampblack, for the latter, being in the state of fine powder, soon works out of the cracks; but I have seen negatives “doctored” in my way from which upwards of a hundred proofs have been obtained, and which promise to yield hundreds more, without showing any signs of deterioration. This scheme, which is only so far satisfactory as relating to mischief already done, I cannot, however, rest satisfied with; for whilst the original cause remains undiscovered, it is lamentable to think that negatives which may at some future period possess great historical value should be thus perishable. I am inclined to think the fault cannot be altogether in the collodion,—witness the transparencies, which have been in existence for many years; also negatives not varnished seem very durable. I have even now some duplicates taken fourteen years ago,

which are as perfect as on the day they were first taken. An example of the successful application of Indian ink to a cracked negative film is submitted for the inspection of the meeting.

[The illustration consisted of a pair of prints; one with fine black lines apparent, showing the result of printing from the cracked film; and the other, in the restored condition of the negative, after the cracks had been filled up with Indian ink.]

THE FOTHERGILL PROCESS WITH GALLIC ACID.

MR. BEASLEY gives in the Society's Journal the following details of his mode of working the Fothergill process:—

The Collodion and Sensitizing Bath.—I always use patent plate glass cleaned with tripoli and spirits of wine. The collodion should be old (about three months) and porous, giving a creamy film; a new horny collodion is quite unsuited for this process, and fails especially when the acid-pyro development is resorted to. After coating the plate with collodion, the film should be allowed to *set well* before immersion in the silver bath, which may be a 35-grain solution made slightly acid. The sensitized plate is then put into a dish of water (one pint of distilled water being made to serve for two 10 by 8 plates), and gently rocked for a minute or so, and taken out and drained.

The Preservative.—Albumen solution composed of the white of one egg beaten up with one drachm of distilled water and eight minims of ammonia, using a silver fork. I prefer keeping it of this strength, and dilute it for use by adding two ounces of distilled water to one ounce of the stock albumen. Or I proceed as follows:—Add a few drops of glacial acetic acid to the drachm of water and the white of one egg, stir well together for a few minutes, filter through muslin, and render alkaline with twelve minims of ammonia. This plan gives a solution which is at once clear and brilliant.

One or other of these solutions is then applied to the plate, and made to flow evenly over the surface with a gentle motion. After allowing the albumen to remain on for about two minutes, it is washed off under a tap or india-rubber pipe. Three minutes may be sufficient; but the plates cannot be washed too much at this stage of the process. They are then allowed to dry spontaneously in a dark box or cupboard, using a little chloride of calcium to absorb the moisture.

Exposure and Development.—For a well-lighted view I should give about eight minutes, with a single view lens, $\frac{1}{2}$ in. stop, and when away on a three weeks' tour never less than ten minutes. Before proceeding to develop the plates it is advisable to pour on a mixture of alcohol and water, to soften the film, and afterwards to wash this off with water. The developer is composed of—

Pyrogallic acid	...	...	...	2 grains
Citric acid	...	...	...	$\frac{1}{2}$ grain
Water	..	...	...	1 ounce

to each drachm of which is added at the moment of use one drop of acid silver solution, consisting of ten grains of nitrate of silver and twenty grains of citric acid to the ounce of water. The image appears very slowly, being retarded both by the albumen and by the acid in the pyro; but I prefer a gradual development, and to make a separate process of the intensification, which is conducted by gradually increasing the amount of silver present in the developer. If the acid in the pyro be omitted, the image appears more rapidly; but in the event of the full exposure having been given, the picture is liable to be flat, especially when a long-focus lens has been used. The time ordinarily occupied in the process of development is half an hour, and the plate should be kept in motion, for which purpose I am in the habit of using one of Mr. Keene's swinging shelves. Fix with hyposulphite of soda.

Alkaline development may be resorted to when the plates are not more than a fortnight old; and the longest period during which I have succeeded in preserving them by the Fothergill process is six weeks. When I wish to prepare plates for long keeping, I adopt the following slight modification:—Instead of *partially* washing the sensitized plates in distilled water, I wash them thoroughly under a tap (two minutes or longer), and after applying the albumen, wash them again in the same manner. I then pour over the plates a 3-grain solution of gallic acid, which is allowed to soak well in, and after draining off the excess, dried as before. Every dry-plate worker knows the extraordinary degree of permanence which is gained by the use of gallic acid; and the plates taken out by me to Gibraltar were prepared in this manner. They are rather slow; but the exposure may, if desired, be considerably reduced by alkaline development. The longest time that I have ever kept one of these plates was three and a-quarter years between preparation and exposure. When I want a quicker process I adopt another slight modification, viz., that of adding two grains of bromide of cadmium to the ounce of collodion, and leaving the plates for ten minutes immersed in the silver bath. Thoroughly wash, and apply albumen as before; well wash again, and develop with *alkaline* pyro. I have not yet tried the gallic acid on these plates, but fear the sensitiveness would be greatly diminished; they will not keep more than a few weeks without it; but a newer collodion may be used, and they are very rapid. The good effect of the application of albumen can be seen by coating half a sensitized plate, washing off again, exposing, and developing. Albumen may likewise be used advantageously in other dry-plate processes before applying the preservative.

COFFEE AND OTHER DRY-PLATE PROCESSES,

WITH PRACTICAL DETAILS

OF A NEW DEVELOPER GIVING EASE AND CERTAINTY.

BY A. DE CONSTANT.

PRELIMINARY REMARKS.

It is said that a gentleman very distinguished in practical photography—to wit, M. Braun, of Dornach—declared once upon a time that, having expended to no purpose considerable sums of money in the endeavour to find a good dry collodion method, he should henceforth confine himself exclusively to the employment of a wet process.

This statement, made by the head of, perhaps, the largest industrial photographic establishment in the world, is calculated to intimidate seriously the timid disciples of dry processes, and those disposed to join that band; and it really becomes a matter of necessity to decide whether a means so convenient and useful shall be altogether abandoned. In the first place, however, I would express a very grave doubt as to whether M. Braun ever did pronounce so severe a sentence against the use of dry collodion; for, if I am not mistaken, his operators have always worked with wet plates, the choice of this method of operating being imposed upon him rather by the exigencies of his enterprise than from any dislike on his part to a dry process. And, indeed, is not the reason for the practice of wet photography at once accounted for in the Braun establishment by the fact that the numerous employes, who travel to the most distant countries at an enormous outlay, must know immediately the true result of their labours in order that they may repeat, if necessary, their exposures before quitting the spot? for when it is a question of an interesting view, several clichés of different dimensions have frequently to be obtained.

But besides this, the brother of M. Braun—whom I have met on his rounds fortified with rare courage and skill to withstand the disagreeables and inconveniences occasioned by his improvised tent and laboratory—has himself assured me that were he cognizant of a dry process so certain and efficient as the one by means of which my negatives were obtained, he should be happy to avail himself of it very

often. Thus there is yet hope for believing that the dry process is not irrevocably condemned at Dornach.

But another reproach against dry plates has been made by M. Moll, who advocates their banishment by photographers. Without disputing the fact that he has obtained by their aid some very excellent results, this photographer enters into a statement of the tedious and lengthy nature of the preparation of the plates, enumerating, one after the other, the many manipulations which are necessary. M. Moll easily arrives in this manner at a total of time and trouble which he represents to be much greater than that involved in the manipulation of wet plates out of doors. Now we know very well that he who says too much says, indeed, nothing at all; for if one occupies, as in my own case, a couple of hours for the preparation of a dozen dry plates, then their subsequent exposure (even in localities of a most inaccessible character) may be regarded as but a promenade, and a dozen or fifteen views are obtained at the cost of no trouble whatever, the plates, moreover, being capable of development as easily as wet collodion negatives. I should be very sorry, for my own part, if, to do the same amount of work, I were compelled to go forth with an assistant, encumbered by an enormous quantity of baggage requiring to be set up and taken down for each view, and to be inconvenienced, furthermore, by the heat, and other well-known difficulties. And I fully believe that if, in the two cases, I carefully compared the time, labour, and cost expended, the wet process would certainly come off second best.

There is, indeed, only one serious argument that can be maintained against the dry mode of working; viz., the uncertainty of the result. Now, as regards this point, I do not hesitate to affirm that the mode of operating I now employ is so sure and simple as to rival, in these respects, the wet-plate process, and to yield prints of even superior quality to negatives taken in the ordinary manner.

Then, touching the preservation of the dry plates for a long period in good condition. This has already been guaranteed by *bona fide* traders, and affirmed by operators in whom unbounded confidence may be placed; and if to these I may be permitted to add my own experience, I would say that plates produced by the method I advocate may be kept without diminution of sensitiveness, or other alteration, for a period of two months or more. And if I can sufficiently rely upon the experiments which I have made upon the subject, it is upon the nature of the collodion alone that this question depends.

If I were asked to point out from among the many dry processes that which I considered the most efficient, my reply would be to the effect that for some time past photographers have given too much consideration to the question of rapidity, for a long experience of the matter has proved to me that very rapid processes are, as a rule, uncertain, and beset with practical difficulties. If one wants a simple and certain process, it is inadvisable to bargain for a very short exposure, for the artistic effect will certainly not lose by a few seconds more of pose. In general, it is the custom with the greater number of dry processes to calculate the exposure at four or five times that of a wet plate, conditions and circumstances being the same. But, by employing certain preparations, and especially those in which gum plays a part, the period may be reduced by one-third, or even one-half, without jeopardizing the certainty of the result. This reduction appears to me sufficient, and it would be wrong, to my thinking, to press the point of rapidity any further. The great utility of dry collodion for copying pictures and other works of art necessitating long exposures, its superiority over wet plates in the rendering of distance, and certain fineness of detail, ought to compensate for any lack of rapidity, and render it indispensable to every operator if, by simplifying and improving the method, we are enabled to place it within the reach of all. This, indeed, is the task to which I am about to address myself in publishing, in all its details, a process which will, I believe, fulfil to the utmost the conditions I have just pointed out.

In speaking thus, I do not wish in any way to condemn the works of others, but, on the contrary, hold that everybody should practise that which he finds the most successful in his own hands. Since the time—now upwards of a year—that I have exclusively worked with the process to which I have given the name of Coffee-Gum Method, and which I have experimented with in almost every phase, my results have been so exceedingly satisfactory that it is a pleasure to me to place my experience at the disposal of those of my brethren who may feel disposed to give the method a trial. And by way of encouraging such as may desire to follow my practical instructions, I would mention the circumstance that, during the past month, I have used more than a hundred coffee-gum plates in the reproduction of difficult pictures and landscapes of every kind without experiencing a single failure that could be ascribed to the process itself; while, from the whole number, but three or four negatives, at most, had to be put on one side. I doubt very much whether I should have obtained a similar result had I been working with the wet process.

But I will now proceed to the details of my method.

§ I.—THE CLEANING OF THE PLATES.

I have tried many ways of cleaning glass, but none has appeared to me so simple and efficacious as that described by a correspondent in the *PHOTOGRAPHIC NEWS*, which consists in boiling for a certain time both old and new plates, whether varnished or not, in an aqueous solution of soda, made by dissolving half a pound of soda in fifteen litres of water. The plates are easily cleansed; and, as soon as the solution has been allowed to cool, they are taken out one after another, and carefully rinsed under a jet of water; when drained, and the last drops of moisture have been removed by means of blotting-paper, they are packed up, and a simple polishing with alcohol at the moment of employment then suffices to render them ready for use. If one has plates which are somewhat more difficult to clean, I would recommend a mixture of fine Tripoli powder with three parts of water and one of nitric acid. The glass is rubbed on both sides with a pad, and the mixture allowed to dry, and remain upon the plate until the latter is required for use. This preparation, when dry, may be removed very rapidly, the plates being first freed entirely from the dust, and then finally polished with alcohol.

§ II.—THE PRELIMINARY COATING.

It is generally accepted that the application of a preliminary coating renders unnecessary any severe polishing of the plate, and prevents also the rising or detachment of the collodion film, an accident to which dry plates are sometimes prone when again moistened previously to development. In many studios, indeed, the precaution is used even for wet plate manipulations, as an assurance against imperfectly cleaned plates. As I believe it preferable in all instances to work with none but clean plates, the saving of time did not influence my action; but I have found by experience that in any process where gum is used, the application of a preliminary film is indispensable. For this reason I invariably apply a coating of this kind to my plate, selecting for the purpose albumen. I am glad to see that a dilute solution of this substance, which I proposed some time since, has been generally adopted; one part of albumen well beaten, and then allowed to stand, is, after decanting, mixed with twenty-five or thirty parts of water, a few drops of ammonia being subsequently added thereto. Although a solution of this kind may be preserved for some time, still it is better always to employ the mixture freshly prepared. It is best to give the last polish to the glass plate immediately before applying the albumen, as the latter is found to spread more uniformly upon a dry and well-polished surface.

The plate is rested upon a horizontal support, and the well-filtered albumen poured freely thereon across the whole breadth of the glass in sufficient quantity to cover the entire surface, care being taken to pour gently, and not from

too high a point, so that the formation of air-bubbles is avoided. Then, with one sweep of a glass rod held horizontally, the liquid is spread over the plate, the superfluous liquid being removed and allowed to run to waste; if there are any spots near the margin of the plate where the albumen is repelled, the defect is remedied by means of the rod, which must always be kept perfectly clean and free from any previous trace of albumen. To ensure this, it is well to wipe the rod with blotting-paper after every manipulation therewith, and to keep it immersed in a vessel of clean water, which prevents the albumen from coagulating and falling in the form of dust upon a subsequent plate. When coated, the plates are arranged on end upon a sheet of clean filter paper in a locality sheltered from the dust, their position being changed after the first draining has taken place. Prepared in this way, after the expiration of two hours the dried plates are so clear and transparent that it is impossible to distinguish the coating of albumen at all.

The backs and sides of the plates are kept altogether free from any trace of albumen, and no fear need, therefore, be entertained for the welfare of the sensitizing bath. At the same time, the albumen film, notwithstanding its delicate nature, has always, I have found, imparted sufficient solidity to the collodion, while none of those spots and stains with which I was previously familiar when employing gelatine, caoutchouc, or concentrated albumen, have ever of late plagued me.

(To be continued.)

GUM-WATER ON NEGATIVES.

BY M. CAREY LEA.*

A NEGATIVE which, after it has been left to dry, is found to need a redevelopment with pyrogallie acid and silver, is exposed to a certain amount of danger of splitting in drying. Some collodions show this tendency to a much greater extent than others.

To meet this risk, it is commonly advised to flow the plate over with gum-water or with a solution of gelatine. As the solution of gelatine needs to be warmed, the gum-water is the most convenient, and is, I suppose, the most generally used, and it certainly does prevent the splitting.

But it is liable to a very grave objection. The plate must be varnished after gumming, because with the faintest trace of moisture the gum surface would stick to the silvered paper and ruin the negative. It therefore needs varnishing, and there is no difficulty in varnishing it apparently very well. Unfortunately, the varnish does not penetrate the film; the gum renders such penetration impossible, and, consequently, the negative has no sufficient protection. The protection afforded by the gum is very insufficient. Gum holds badly on glass, and is liable to scale off. So that a negative that has been gummed and varnished is in a peculiarly insecure state, and will not bear the least careless handling.

It is difficult to know what to do with negatives that are in danger of splitting. The gum is very objectionable for the reasons just given. It might perhaps answer, as soon as the negative is finished and washed, to flow it with alcohol until the water is well out, then varnish cold, and dry well by heat. This would seem likely to give a good result, and obviate all difficulties.

Recent Patents.

PHOTO-MECHANICAL PRINTING PROCESSES.

BY F. W. WINDOW.

In the following specification Mr. Window describes certain improvements he has devised in photo-mechanical printing processes, an important element in his improvements consisting in a plan of securing several printing plates from

* Philadelphia Photographer.

one negative, each intended to print a certain tint of the picture, a perfect result being obtained by several printings with perfect register. A second improvement consists in producing a photographic image by the action of light through a negative upon a hygrometric substance, as in Joubert's enamel process, and then transferring this image to a lithographic stone to act as a resist. A further improvement consists in a modified photo-collographic process. The specification is as follows:—

It is well known that various processes have been devised for obtaining metallic printing plates or surfaces in intaglio and in relief, and also for obtaining such surfaces upon stone and upon gelatine or other colloids by photography. Many of the printing plates or surfaces so produced yield satisfactory results when the design or subject is in line, or in coarse grain or stipple; but they fail to give satisfactory results when the design or subject is in graduated tints like an ordinary photograph, such proofs being usually deficient in delicacy or perfect gradation in the half-tones, or deficient in strength and vigour in the shadows.

Now, the first part of my invention consists in an improved mode of obtaining proofs or impressions on the plates or surfaces obtained by photographic agency, of whatever kind or nature such plates may be, and by which mode I am enabled to produce a considerable degree of half-tone, combined with great vigour, in the subject to be reproduced.

I carry out the first part of my invention by producing two or more plates instead of one from the same negative, each of which plates has received a sufficient degree of exposure. By this means I divide the subject in graduated tones into an imaginary series of "flat tints"; and if the process be one which merely yields a surface giving a flat tint or impression, I form as many plates as I have assumed the subject to have tints, each of such plates having register marks obtained directly from the negative. These plates are printed in succession in a mere or less transparent ink of a depth calculated to give the requisite tint; and, as each plate contains different portions of the subject—the first containing the whole of the subject, and the last only the dark touches to form only the deepest shadows—the whole subject is ultimately produced with a degree of delicacy proportionate to the number of surfaces employed.

When the process employed is susceptible of yielding surfaces which give a certain degree of half-tone or impression, a smaller number of surfaces is necessary, as each surface furnishes several of the imaginary tints into which the subject is assumed to be divided.

An analogous process is also applicable to the production of proofs in colour by using more surfaces, and stopping out from each, or from the negative which produces them, the colours complementary to the colour that is wished to be produced. Thus, if it be desired to print blue, or colours which contain blue, all the parts of the picture which do not contain this colour must be stopped out, and so on for each elementary colour and its composites.

The second part of my invention consists in an improved mode of obtaining printing surfaces on stone or zinc. I effect this by printing, by means of a negative, a positive image of the subject to be reproduced in a compound which will form a resist upon the stone, and which will absorb moisture from the atmosphere—such, for instance, as a mixture of albumen and honey, or gum and honey, rendered sensitive by a chromate, and spread upon paper. After exposure, I allow this mixture to absorb moisture in the parts not exposed to light, which then become sticky, and adhere to the stone when the exposed proof is laid down upon it and submitted to pressure; or I print a negative image on gelatine, or other analogous colloid, from the subject itself or from a positive obtained from the negative of the subject, and after printing I lay down the insulated proof upon a stone or zinc plate, after wetting it and scraping out the air and superfluous moisture; I then wash away the parts not acted on by light. The stone supporting the image so obtained is washed in a solution of alum and allowed to dry. When dried, it is inked up in the usual way; the gelatine image is removed by water and a sponge, and the fatty image remaining is treated in the usual way for lithographic printing.

I also form a printing surface upon stone or other surface in the following manner, but I lay no claim thereto:—I spread a layer of gelatine, alone or mixed with sugar or some other colloid, upon smooth paper which has previously received a thin,

smooth coating of gum arabic and sugar, or gum arabic and glycerine. The gelatine coating may be composed of—

Gelatine	...	...	...	...	...	3 parts
Sugar	...	...	...	...	...	1 part
Water	...	...	...	...	...	9 parts.

If the paper or other surface so treated have to be used at once, one-half part of bichromate of potash in fine powder may be added, together with twenty drops of glacial acetic acid to each imperial pint of the solution—the object of such addition being to cause the gelatine to assume the insoluble condition without destroying its sensibility and other properties, as is well understood; or the paper may be prepared without the addition of the bichromate and acid, and may be made sensitive when required for use by immersing the paper in a solution of the bichromate and acid, such solution being of the strength of about five per cent. of the solid salts. When dry, the sensitive paper, prepared in either way, may be printed until the subject be seen fully up, and must then be washed in very cold water until all the chrome salts are removed.

At this stage the gelatinous film will have left the paper if prepared, as directed, with a preliminary coating of gum, and will have floated off. It may be re-attached, the printed face being upwards, as directed, for the application of the printed paper in known methods—that is to say, by laying it out upon a porous lithographic stone, and scraping out the water and air from between its surfaces. I prefer, however, to mount it by the same means upon a flat plate of zinc or copper which has been well ground, or upon a finely-grained or pumiced plate which has received a fine coating of India-rubber and gum dammar, or other resinous bodies of the like nature, dissolved in benzole, so as to retain the gelatine film upon the plate during the operation of printing, as is well understood. The surface, when so applied, is ready to receive the ink after being dried by means of blotting-boards.

When in the state containing the proper amount of moisture it will ink up, as in Tessie du Motay's and other analogous processes. By the use of prepared paper I can prepare this surface readily, and without any trouble in drying, and the surface so formed is printed under the negative with greater ease than one upon a rigid support.

IMPROVEMENTS IN PHOTO-ENGRAVING.

BY WALTER B. WOODBURY.

In the following specification Mr. Woodbury describes a method of making photo-relief plates available for ordinary copper-plate printing, by giving them an ink-holding grain; and also a method of producing designs like water-marking in paper.

These improvements consist, firstly, in the preparation of a gelatine relief produced photographically by well-known means from a negative of a sketch, design, or drawing in black and white, the outlines and shading being produced in lines or dots (or both), without washes or half-tints, and the obtaining from such gelatine relief, when dried, a reverse in any soft metal by hydraulic, screw, or other pressure; such plate to be afterwards used as an engraved plate for printing from in fatty opaque inks, as in the present method of printing from ordinary engraved plates. If necessary, an electrotype may afterwards (where large numbers of prints are required) be made from the soft metal plate.

Secondly, in an improved method of obtaining a granular surface, such as would give an ink-holding ground where the photographic negative possesses merely gradations of light and shade, in contradistinction to the mere black and white lines and dots before mentioned. This I accomplish by mixing with the gelatine and bichromate (instead of colour in a fine state of subdivision, as used in the carbon process) a coarse granular substance or powder of the same description—that is to say, a granular substance or powder that will take the place of the colour as now used to prevent too deep an action of light into the bichromatized gelatine. This, when acted upon by light transmitted through the negative, will produce a relief having a granular surface, and possessing the necessary qualities for producing an ink-holding ground. In some cases I partially dry the gelatine relief, and dust over it a coarse powder, such as emery, which, while the relief is in a semi-dried state, will adhere only to the parts representing the dark portions of the design, and will, consequently, give to the soft metal plate produced by pressure therefrom a corresponding granular effects

which is usually wanting in such plates as are now prepared, but which is necessary to a successful result when printing with the fatty opaque ink; or I give the plate two coatings of the granular gelatine mixture—the first holding a fine and the second a finer powder, the latter, after washing, holding only the coarser grains which represent the deeper blacks of the picture.

The third part of my invention consists in an improved method of producing direct from the gelatine relief itself, by pressure in contact with other substances or materials (such as cardboard, leather, papier-mache, paper, &c.), designs on these materials, and in the particular method of preparing such gelatine reliefs, which I effect as follows:—A film of gelatine colour and bichromate is exposed to the action of light under a photographic negative or positive, and the exposed side of the said gelatine film is brought into contact with a sheet of copper, steel, or zinc under water, and the two surfaces are pressed in close contact to exclude the water; the plate, with the gelatine surface adhering to it, is then placed in hot water, which will remove the greater portion of the gelatine, leaving the design in relief on the surface of the plate. It is then dried, and this plate, when passed through a press in contact with the cardboard, leather, or other substance or material, will reproduce the design thereon, and when paper is pressed in contact therewith it will produce, by compressing the fibres, a design similar to that known as a water-mark.

Having now described the nature and object of my said invention, together with the manner in which the said is to be or may be performed or carried into practical effect, I wish it to be distinctly understood that I claim as my invention—

Firstly, the use of metal blocks obtained from gelatine reliefs of subjects in black-and-white, or, where no half-tones exist for the purpose of printing from, in fatty opaque inks, as in the ordinary process of engraving; also in the use of electrotypes from the said blocks, where large numbers are required.

Secondly, the same method of producing a plate for engraving from, but substituting the granular relief, as stated, to produce the half-tone necessary in subjects which are not composed of mere black-and-white lines or dots, but contain what are known as half-tones.

Thirdly, the method hereinbefore described of obtaining such dry granular gelatine reliefs from a subject in half-tone, the effect of the lighter or darker tones being represented by the greater or less quantity of granular material left in the relief after washing.

Fourthly, the use of the gelatine relief itself for the production, by pressure into other materials, of ornamental designs thereon.

And, lastly, the use of the metal plates bearing the gelatine relief attached, as above described, to roll or press in contact with paper to produce a design similar to that known as a water-mark.

Correspondence.

CARBONATE OF SILVER IN THE BATH.

DEAR SIR,—At the foot of the letter of "A. W. H.," in your number for the 10th inst., you invite contributions of experiences. I have just had an experience which seems somewhat analogous.

Three weeks ago I had occasion to go through the usual process of diluting, alkalizing with carbonate of soda, and sunning my silver bath; and, having filtered it, and strengthened, and rectified in the usual way, I filled the bath up for use (a whole-plate glass one). I sensitized some half-dozen quarter-plates, all which worked well; but having, in the course of the work, detached the heel of my dipper, I took out the silver solution to get out the piece, when I found that it had acquired a slight purple tint similar to that from permanganate of potash—or, perhaps, more like the tint an old gold bath sometimes acquires. A filtration removed the colour; and the excess of the first operation, which was bottled, shows no such colour.

Mr. Gill, on the same page, appears not to have seen the late make of cometless collodion bottles, in which the carrying down of the pouring stopper appears to me to produce the end he aims at, more neatly and effectually than his two half bottles do.—I am, dear sir, yours obediently,
J. L.

Rotherham, March 16th, 1871.

[When silver is reduced by the action of light, the solution

generally acquires a purple tint from fine particles of reduced silver, the colour disappearing on perfect subsidence. The peculiarity in the case of "A. W. H." was, that he obtained not simply the purple tint of reduced silver in subdivision, but a crop of purple crystals.—ED.]

DEAR SIR,—I beg to say that the old bath solution I operated on (in the attempt to revive by the carbonate of soda plan) had never been doctored in any way. The bath was originally composed of 35 grains of nitrate of silver to the ounce of water, slightly iodized, and acidified with nitric acid, and had done, in its time, good work.

I followed the instruction given by Mr. Brooks with the greatest care. The carbonate of silver dissolved entirely, and the solution was colourless, but was rather too acid, and was neutralized, sunned, and then faintly acidified with nitric acid. The result was, on trying a plate, as I described in my former letter.

The baths reduced to carbonate of silver had never been treated with permanganate of potash, so that the crystals can hardly consist of that substance. Moreover, these crystals formed in the bath appear to be quite insoluble in water, and we know that permanganate is readily soluble.

In my first letter it should have been "80 ounces of bath," not "80 grains of bath."

I enclose a rough print to show how the plate is covered with pinholes.—I remain, dear sir, yours truly,
A. W. H.

Dublin, March 20th, 1871.

[The supposition in connection with permanganate in the bath was not that it contained permanganate of soda, but that the addition of that substance had produced permanganate of silver, which is very slightly soluble, and crystallizes out in fine purple crystals.—ED.]

PAPER IMPERVIOUS TO MOISTURE.

DEAR SIR,—If Mr. Herve had read my letter with a little more care, I think he would not have made the mistake of stating that I had given a recipe for "sizing the backs of photographs," but for a "size to be applied to prints on plate-paper, so that they may be coloured."

In a previous letter I had given an opinion that, from my experience of its use, possibly by some similar application paper might be made impervious to water. Of course, it would have to be done either by the paper manufacturer, or by the albuminizer passing the paper through the solution so as to size both sides previously to its being albuminized; and, consequently, the photographer would have no more to do than at present.—Yours truly,
WM. MONKHOUSE.

York, March 20th, 1871.

PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

DEAR SIR,—The method that the Committee of Selection for photographs at Albert Hall intend to adopt appears, at first sight, to be most equitable and just towards all candidates for exhibition; but if we look beyond the surface I think you will admit that it is most unfair.

To illustrate what I mean, we will suppose the three usual classes of exhibitors A, B, C. A, who usually sends a large quantity of rubbish—say fifty frames; B, who sends a moderate number of fair, average good work—say twenty frames; and C, the cleverest and, as a rule, the most modest, sends a few gems—say four frames. The Committee intend to select half of each candidate's works. What follows? A, the greatest muff, gets twenty-five frames hung; and C (who, if merit received its reward—which, at exhibitions, unless it has a friend at court, seldom does—should have had all his pictures well placed) has two returned. Comment is unnecessary.—I remain, dear sir, in great haste, yours faithfully,
A CONSTANT SUBSCRIBER.

[Does not our correspondent base his case for comment solely on assumption? We have no reason to believe that any one sent in a large quantity of rubbish in the hope that some would be retained; nor have we reason to believe where the contributions were bad that any were retained. As we are informed, where other things were equal, about half the examples of each contributor were selected, excellence obtaining the preference; and, where this was adjudged to be quite wanting, contributions were rejected altogether.—ED.]

MOONSHINE PICTURES, ETC.

SIR,—If M. Ogier, Mr. Turnbull, and others would give us a little of their *practical* experience in getting effects by moonlight, instead of theory, we might all become rivals to Mr. Robinson. I cannot, however, agree with Mr. Turnbull in the opinion that Mr. Robinson's seascapes are compositions. There are difficulties to be overcome in composition photographs that are not, I think, appreciated by those who have not attempted them. For my own part, I confess to dislike to such things. The art is always too visible. From this opinion I would, in justice, exclude the works of Mr. Rejlander. That gentleman's efforts are to me the most delightful photographs I meet with, which I attribute partly to the fact that he never attempts *too much*. His efforts never exceed his means. Hence his art is less visible than in most works of the kind. The only thing that *looked* artificial in Mr. Robinson's seascapes was the moon. I do not appreciate the doubt and difficulties suggested by this gentleman's works. His titles do not affirm that his pictures are taken at or near midnight. I have myself, many years back, with simply iodized collodion and pyro, and such other appliances as were then in use, taken landscapes in the vicinity of the sea, at late hours on summer evenings, with cloud effects included. I was not then trying to obtain rapid exposures, and rather avoided those views in which much water was visible. But if, with the imperfect means then at my disposal, this could be done, I do not see why, with the more perfect chemical and optical means now to be obtained, there should be so many suggestions of "dodging." Many, who have never worked near the southern sea coast, are not aware of the superior quality of the light, and some, as in the "Gull" controversy, argue without having seen the works in question, which is more amusing than instructive. We must remember that most seascapes that have come before the public have been taken when the sun was high; but in Mr. Robinson's case his titles affirm that they are taken much later in the day, and in this lies much of the difference in effects.—Yours respectfully,

AN ARTIST AND OLD PHOTOGRAPHER.

CRACKING OF NEGATIVES.

MY DEAR SIR,—I shall feel obliged by your contradicting an assertion imputed to me in the journal of the 17th inst., on the subject of crackings in negatives, in which appears this remark, that "negatives on green glass escaped, whilst those on white suffered."

You must, therefore, have misunderstood me, or else it was a slip of my tongue, as I intended to have said, in answer to a question of Mr. Gordon's, who asked if the glass might not be the cause, that happily this was not, in my case, a point of difficulty.

In a small collection of negatives taken whilst at Constantinople, I first discovered these crackings, and these, singularly, are upon two sorts of glass, one bought at Constantinople, which is Vienna glass of a dark green tint, and the other taken out with me from a firm in Soho Square, both alike being subject to these crackings or splittings. I have only met with these markings in the Constantinople negatives, which were taken with a particularly sensitive collodion, bought there.

I should not trouble you at such length, only it is a curious fact that in a period of ten or twelve years I have never met with it before, and I have taken some thousands of negatives in Europe, Asia, Africa, and America, under all the trying and varying circumstances to which out-door photographers are subject.—I am, dear sir, yours truly,

FRANK MASON GOOD.

Hartley Wintney, Hants, March 21st, 1871.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

We append the following additional details of proceedings at the meeting of this Society held March 14th, containing details of interest connected with the cracking of negatives. In the course of the discussion,

The SECRETARY read a letter from Mr. Grant as follows:—

"Abergavenny, Feb. 22, 1871.

"DEAR SIR,—Seeing in the last *Photographic Journal* that you invite absent members to say what they know about the

splitting of films, I beg leave to give my experience (though I am glad to say it has not been much) as to the cause.

"Of course, there may be, and *are*, other causes, but no doubt the commonest fault is not washing the film enough after fixing.

"The facts are these:—Three years ago, I went on a wet-plate trip up the river Dart, in Devonshire, and took about thirty negatives on small-sized plates. Owing to a scarcity of water at the time, I used to wash my plates when I came back (at the end of each day) with comparatively very little water; the result of which was that, at the end of about a fortnight after they had been varnished, they began one by one to be covered with vermicular cracks, chiefly *in the sky*; in fact, all began to crack in the sky, and I then spread more or less over the entire surface of the plate. When I found some of them beginning to crack, I did all in my power to stop the rest, by keeping them in a dry cupboard, &c.: but to no purpose, for at the end of six weeks there was not a single plate that was not destroyed. The cracks were very fine, mostly resembling fine hairs, and some of them could be filled up by rubbing in lampblack or soot.

"After this I took a few negatives, and washed them slightly, and the same thing happened. I used the same varnish throughout. Since then I have had but two plates cracked in this way, and these also had been but very slightly washed. I used the same varnish as on the thirty plates that cracked. I have never seen a dry plate crack in this way, though, from other causes, have frequently had the film fly to pieces on drying.—I am, dear sir, yours truly,

W. J. A. GRANT."

The SECRETARY also read a letter from Mr. Blair as follows:—

"I have never had any experience of the splitting of negative films taken on *glass*, although I have used a considerable variety of collodions; but the varnish I have chiefly adhered to is common shellac dissolved in methylated alcohol, and applied under moderate heat. I have had some collodions, however, that blistered and cracked on the application of heat in the process of varnishing. This evidently arose from the sudden contraction of the collodion in those parts where there was a very slight deposit of silver, and the collodion had no firm hold of the glass. I have seen collodion negatives on paper crack whilst drying them too hastily at the fire, particularly when mounted on a surface of rubber varnish, which softened under the heat."

Towards the close of the discussion,

The SECRETARY referred to two previous occasions when the subject of the cracking of negative films had come under the notice of the Society. At the meeting held in December, 1863, he had himself brought forward the subject by showing some negatives which had become covered with honeycombed markings whilst in his possession at the Royal Military Repository; and later (in August, 1864) he had pointed out a mode of restoring these plates by exposure to the vapour of alcohol, which will be found described in the *Journal**. At the May meeting, 1869, Mrs. Cameron again introduced the subject by showing some large-sized negatives (portraits of the Poet Laureate and Sir John Herschel) which had become injured by the formation of an innumerable number of vermicular cracks; and in the discussion which followed some valuable observations were recorded, particularly the use of paper wrappers for protecting the negatives, instead of storing them in the ordinary plate-boxes. Evidence was then given by Mr. Thomas, Mr. F. C. Eliot, and Mr. Hooper, in favour of this recommendation, which had since been amply endorsed by the experience of Mr. Jabez Hughes, Mr. Foxlee, and others. Mr. T. R. Williams was, two years ago, in the habit of keeping his negatives in plate-boxes; but these were always stored in a warm room, and kept away from the outer walls. Mr. Gordon had been particularly fortunate in escaping this kind of injury; and his success was probably due to the care with which his negatives were preserved in a cabinet placed in one of the warmest rooms of his house. It could not be doubted that the greatest enemies to the safe preservation of negatives were insufficient washing and exposure to cold and damp. The severity of the past winter, and abnormal fluctuations of temperature occurring within this period, seemed to have been the proximate cause of many disasters which had come to his knowledge. He had received intelligence from various quarters of injuries to negatives amounting

* See PHOTOGRAPHIC NEWS, Vol. VIII.

in the aggregate to upwards of 200 plates. Some of these might be due to insufficient washing, or to the use of impure water containing deliquescent chlorides; but many failures appeared to be attributable to an imperfect appreciation of the dangers arising from bad storage; and it was to be hoped that these past experiences would serve as a warning, and suggest the adoption of better precautions in the care of negatives for the future. A very striking illustration of the effects of severe atmospheric influences upon varnished surfaces might now be seen in the tablets of "Rules and Bye-laws" displayed at the Canbury and Highbury Stations of the North London Railway. These printed notices were of paper pasted upon iron plates and varnished in front; and whilst they exhibited on a grand scale the vermicular markings with which photographers were familiar, other tablets placed close beside them, but of millboard, had not suffered any injury to their varnished surfaces. The difference observed might be accounted for by assuming that there was an outlet for the escape of water by evaporation in the latter case, but not in the former, which approached the conditions of, and was much in the same state as, a varnished photographic negative.

In the course of last year the Berlin Society had appointed a Commission for the special examination of this question, and of the varnishes which appeared most suitable for the protection of negatives. The Report, as printed in Dr. Vogel's *Mittheilungen* of September last, might be summed up as follows:—

1. The use of a not too highly polished quality of glass, the Rhenish manufacture, for this reason, being preferred.
2. The application of a clear aqueous solution of yellow dextrine (one part of dextrine to eight of water) to serve as a preliminary coating especially suitable for retouching, if desired. The use of gum-arabic was condemned.
3. The temperature of 40° Reaumur (122° Fahrenheit) was not to be exceeded in drying the collodion film and varnishing the plates.
4. The use of alcohol of not less than 86 per cent. as a solvent in the preparation of the varnish.
5. The gums most suitable were found to be a mixture of mastic with orange shellac (avoiding the use of the bleached white lac), and the addition of a little boiled oil to make them tougher and more elastic.
6. Amber-varnish (solution in chloroform) might be used instead of dextrine as a preliminary coating, but could not be depended upon for giving by itself a varnished film of the requisite degree of hardness.

A valuable suggestion had also been given by H. Kruger, of Schwerin, in a paper "On the Splitting of Varnished Films; its Cause and Prevention," published in *Licht* of November last. The author recommended the addition of a small proportion of castor oil (which was freely soluble in alcohol) to the lac or sandrac used in making the varnish, and stated that by its use the brittle character of these gum-resins was entirely overcome, and a surface especially suitable for retouching secured. M. Kruger preferred a varnish made by dissolving one ounce of sandrac in eight ounces of alcohol, to which was to be added, after filtration, one drachm of castor oil. Negatives so varnished were said to bear exposure to sun and rain for many weeks without injury; no information, however, was given as to the possibility of being affected by frost; but there was every reason to anticipate a great degree of protection from the use of such a varnish.

Talk in the Studio.

HELIOGRAPHY.—On Thursday, the 16th instant, an interesting lecture on *Helio-graphy* was delivered by the inventor, Mr. Ernest Edwards, B.A., before the members of the Society for the Encouragement of the Fine Arts, in the Architectural Gallery, Conduit Street. The lecture was illustrated by a large number of fine examples of the process, in which the audience were much interested.

LANDSCAPE WORK.—We have been favoured by Mr. C. A. Fernely, of Melton Mowbray, with some pretty views in Bradgate Park, near Leicester. This place, which contains much good scenery, was the birthplace of Lady Jane Grey. It seems to offer many attractions to the photographic tourist, being easily accessible from Leicester, the distance being six miles

and, as our correspondent adds, there is a capital little inn within a quarter of a mile of the park.

BALLOON POST LETTERS.—Messrs. Letts and Son have issued, as mementoes of the war, lithographic facsimiles of a balloon post received in London during the early days of the siege. The letter is an interesting one in itself, and rendered more so as a complete facsimile, even to the stamps with the republican head, of the most eventful period of this century. We may here add that the same firm has sent us examples of a new well penholder, which permits any steel pen to take up and retain without inconvenience sufficient ink to write a letter covering four sides of paper. To persons having much writing this is a real boon.

INDECENT PHOTOGRAPHS.—At the March adjourned sessions at Clerkenwell, William Henry Payne, 41, Alfred Gollop, 29, William Miller, 27, Edwin Dresch, 21, and George White, 16, either pleaded guilty or were convicted of selling indecent books, photographs, and pictures. Sir W. Bodkin said the Court had hoped to put a stop to this disgusting traffic, but it seemed to be too profitable. They could only use the power which the law gave them to punish severely those who were guilty participators in it. Miller and Gollop, who had been often cautioned, must be imprisoned and kept at hard labour for 18 months, Payne and Dresch for 12 months, and White for six months, and then pay a fine to the Queen of £20. The Society for the Suppression of Vice were entitled to the cordial thanks of the public for instituting these prosecutions.

RENDERING THE INVISIBLE VISIBLE.—In the recent eclipse expedition, an excellent photograph was taken of the corona which is seen streaming forth all round the sun during totality. On subsequent examination of this photograph, the image of the planet Venus has been discovered among its rays; and in this we have an example of the power of photography in representing objects which the eye has not seen and could not see. Another example has been recently described by Mr. C. F. Varley. He was making experiments by passing a current of electricity through a vacuum tube, the results of which were indicated by strong or faint touches of light about the poles. In one instance, although the experiment was carried on in a dark room, the light was so feeble that it could not be seen, and the operators doubted if the current were passing. But, at the same time, photography was at work, and in thirty minutes a very good picture was produced of what had taken place. This is a remarkable fact. Indeed, it borders on the wonderful that a phenomenon invisible to the human eye should have been, so to speak, seen by the photographic lens, and a record thereof taken by chemical agency. It is highly suggestive, and we may anticipate that it will be turned to good account by practical philosophers.—*Chambers' Journal*.

BOTTLED HEAT.—A singular discovery is announced by the *Echo Rochelais* as having been made by a French professor at the College of Saintes, in Charente Inferieure. It consists of the singular fact of actually bottling the sun's rays and utilizing them at pleasure. The writer describes the operation as follows:—"The professor takes a vase—the material is not mentioned—and exposes it in a certain position to the direct action of the sun's rays. After it has thus absorbed the heat for the space of a quarter of an hour, it is closed with a cork and hermetically sealed, a small aperture being left in the cork. Affixing a powerful lens to the vase, he causes the solar rays to converge to a point upon the wick of a common candle, placed on a table at a distance of one yard from the vase. In less than three seconds the wick ignites and lights the candle, which burns steadily." The writer states that the experiment was tried several times, and was equally successful on each occasion.

TESTING THE GENUINENESS OF SILVER PLATING ON METALS.—Dr. Bottger says:—"A cold saturated solution of bichromate of potassa in nitric acid (sp. gr. 1.2) is taken, and applied to the metallic surface to be tested, after having been previously cleaned with strong alcohol, in order to remove dirt, fatty matter, and especially any varnish. A drop of the test fluid is then applied to the metallic surface by means of a glass rod, and immediately afterwards washed off with some cold water. If pure silver is present (as regards silver coins, these are left in contact with the test fluid for a greater length of time) there will appear clearly a blood-red coloured mark (chromate of silver). Upon German silver the test liquid appears brown, but after washing with water the blood-red

coloured mark does not appear; the so-called Britannia-metal is coloured black; on platinum no action is visible; metallic surfaces coated with an amalgam of mercury yield a reddish speck, which, however, is entirely washed off by water; on lead and bismuth the test liquid forms a yellow coloured precipitate; zinc and tin are both strongly acted upon by this test liquid, which, as regards the former metal, is entirely removed by water, while, as regards the latter, the test liquid is coloured brownish, and addition of water produces a yellow precipitate, which somewhat adheres to the fin.—*Chemical News.*

To Correspondents.

D. R. EVEREST.—We believe that Mr. Solomon, of Red Lion Square, keeps studio accessories made of composition or *carton pierre*.

GILCHRIST.—The tendency of acid additions to collodion is to destroy limpidity, and produce a gelatinous condition. The tendency of water is similar. Hence, if your collodion was originally made with spirits containing a full proportion of water, then a very slight addition of water with the nitrate of silver would produce this result. Unless the collodion be made with anhydrous solvents, we prefer to dissolve the silver salt in the collodion, as recently recommended by Dr. Liesegang. 2. The tendency of gold toning, when applied to collodion prints, is to bleach; and, if acid, to slightly destroy the finer half-tones around the high lights. The remedy consists in using the gold solution neutral, and in allowing for the bleaching in development. The mercury toning is very untrustworthy. 3. Your card lens will serve for enlarging well.

ANATOLE PERSIGNY.—The yellow spots on the cartes hung in your studio are examples of one of the forms of fading to which, unfortunately, silver prints are liable, which the damp and saline atmosphere probably tends to hasten. Great care in the production of the prints, and care in keeping them in a dry and pure atmosphere, are the only preventive means we know. Any carelessness in the original production of the print, in either fixing or washing, or any impurity in the mounting material, shows sooner or later, either in the form of yellow spots, or general discolouration and fading.

DOCTOR.—It is illegal to make any kind of copy from a copyright picture. 2. To prevent cards from curling after mounting, damp the cards previous to applying the pasted print. Also place them under a weight immediately after mounting, and allow them to dry under it.

A. BELL.—It appears that the necessities of your position compel you to adopt the proportions and general arrangements you describe, hence there is little room for suggestion or modification. But you must be fully prepared for endless trouble in making your principal light facing the south, on account of the constantly changing conditions of sunshine and shade. The length, 28 feet, is good; two or three extra feet in width would be an advantage if you could get it. The amount of glass is very good, and, if you could have had it on the north side, it would have been admirable. 2. The Salomon above background will aid you materially, but only experience will determine whether, in such a room, it will need to be supplemented by blinds. 3. Any quiet neutral tint of a grey character will answer for the interior. 4. Rollers for the blinds are better placed at the ridge than the eaves. 5. Let the panes have a good overlap and sufficient pitch, and they will not leak.

ELWOOD TERRY.—There are no medals at the American Exhibition. So far as we know, the contributions to the last Paris Exhibition are in Paris still. The sudden opening of the war closed the exhibition, and the specimens were hastily thrust aside, as the room was required for another purpose. We have never heard details of the fate of the pictures.

MARS.—The fact that the print forwarded is saturated with wax or varnish of some kind modifies the colour somewhat, but the chief cause of its tendency to drab instead of a definite black, purple, or brown, is probably due to the character of the negative, which seems to be somewhat weak. When a negative is too weak to permit vigorous and deep printing, the print retains a drab tint if a warm tone be aimed at, and soon runs to a slate tint if black be aimed at. 2. We do not quite understand your question as to a method of burning-in by heating metal. 3. We have but little experience with drying-boxes suited for carbon tissue. Local circumstances must determine the best method of applying heat. A double perforated top, with the perforations not coincident, will be necessary to permit the egress of moisture, but, at the same time, exclude light.

PYRO.—We scarcely understand what you mean by a black granular deposit. Is it fog? Or is it a coarse metallic image? Pyrogallic acid generally produces a finer and less crystalline looking deposit than iron.

SPOTS.—The mottled, irregular colour your cards assume in printing is due to irregular and imperfect sensitizing of the paper. Your printing bath is getting somewhat weak, and you have had a small quantity only in the dish. Possibly, also, the dish was not standing level, so that a very small portion of solution indeed was under that portion of the paper where the mottling chiefly occurs. At any rate, you will find that by strengthening your solution, and using a greater quantity in the dish, you will avoid this irregularity. It is well, also, to agitate the solution after sensitizing a few sheets, because the silver, being rapidly abstracted from the top layer, agitation is necessary to equalize the strength. 2. You will find the mode of adding alum described in an article by Mr. Anthony in a recent number. 3. The addition of a little sugar or gelatine to the developer increases intensity. You will find many recipes for such developers in our *YEAR-BOOKS*; but the question of whether a negative will need intensifying is as much dependent on collodion, lighting, and manipulations as on the developer.

T. S. REEVES.—We will bear the matter in mind.

E. J.—An ordinary boiler will not serve to boil down a bath in. A porcelain evaporating dish is the proper thing. 2. The chief cause of pinholes is supersaturation with iodide of silver. 3. It is safer to use recrystallized nitrate of silver for a negative bath. 4. You can only sue the person. But this is a question upon which a lawyer can best advise you.

E. D.—The proper course is to obtain from Stationers' Hall some blank forms, which require properly filling up with the title and other particulars relating to the photograph. These must be personally deposited at Stationers' Hall, and one shilling paid with each. If you send stamps to our publisher he will get you some forms, and if you then fill them up and return them to him with one shilling and sixpence each, he will personally superintend the entry.

DANE.—As a rule, where acetic acid is mentioned in formulæ, glacial acetic acid is meant. In the 15-grain iron solution you mention, for instance, glacial acetic acid is intended. Glacial acetic acid is said to be solid at 60°, but, as a rule, you will find it liquefy at a temperature over 50°.

BELMONT.—Your negatives arrived broken; but we find a piece of the background sufficiently large in each to show a cloudy irregular transparent mark, which appears to us to be caused by the pouring on of the developer, which is sometimes a cause of such marks. The remedy consists in pouring on the solution gently with a sweeping motion, and also to use the developer freshly made. The portrait of the child is pretty. You want a more efficient means of masking, so as to secure sharp perfect edges to your oval.

W. W.—As a rule, you may keep a gold solution neutralized with carbonate of lime safely, provided it be kept in the dark. We generally keep a concentrated gold solution in alcohol, in which case, although quite neutral, there is no risk of decomposition or precipitation of the gold. The solution not turning blue litmus red is fair test of its neutrality; but in neutralizing with carbonate of lime there is little danger of adding more than will neutralize the acid present, as it is not soluble in water.

F. STONE.—Acetate and citrate of ammonia may be made by neutralizing carbonate of ammonia by means of acetic acid and citric acid. 2. Unless you mention a specific formula in which they are used, we cannot very well tell you the purpose they are intended to serve. The action of acetate of ammonia in the toning bath would be similar to that of acetate of soda, and we see no object in substituting the ammonia salt for the soda salt. The action of citrate of ammonia in the silver bath would be to precipitate a little of the silver in the form of a citrate. It would remove the brownness from a discoloured bath.

J. GIRAULT.—By thirty drops thirty minims are meant. The use of the term "drops" is inexact, as drops of different liquids vary in size; but it is a somewhat common error in this country to use drops in place of minims. 2. The combining weight of strontium is 43.8, and that of calcium 20, so that in a grain of chloride of calcium there is really twice as much chlorine as in a grain of chloride of strontium; half the quantity, therefore, will be required.

AMATEUR.—Your question is not sufficiently definite. You ask for instructions in "the process of heliotype to produce a gelatinous positive to transfer to stone for lithographic printing." Heliotype and photolithography are two distinct processes; but we have repeatedly described both. You will find details of the heliotype process, which it is we think you want, in our last volume, and also on p. 101 of our last *YEAR-BOOK*.

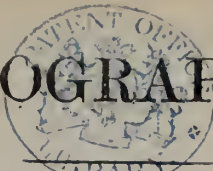
M. B.—We regret that we do not know of any firm which undertakes carbon printing from the negatives of others, now that the Autotype Company have given up that branch.

J. WADE.—Thanks. We will make use of the paragraph.

R. TUDOR WILLIAMS.—Received. Many thanks.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



Vol. XV. No. 656.—March 31, 1871.

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THE AMERICAN PHOTOGRAPHIC EXHIBITION.

We have pleasure in announcing to intending contributors to the exhibition to be held in Philadelphia, in connection with the meeting of the American National Photographic Association, that arrangements have been made whereby they will be relieved of much trouble and expense. Instead of packing their cases to stand a voyage, and paying the freight, they will simply have to pack their frames in ordinary cases, and forward them to Messrs. Joseph Green and Co., the well known fine-art packers, 14, Charles Street, Middlesex Hospital, who will provide a proper case for the voyage, and despatch the whole together. The National Photographic Association will pay the freight in America, and the only charges which the exhibitors will incur will be that of transmitting to Messrs. Green and Co., and the share of cost of packing. The sooner the cases are forwarded for packing the better, and none should reach the packers later than April 8th. When the whole are received, Messrs. Green and Co. will inform each contributor of the amount of his share of the packing, and this must be paid at once, as no picture will be packed or sent until the share of the packing is paid for, and Messrs. Green must despatch the case by April 14th. Each package sent should have the sender's name and address outside, and an intimation that it is for the American Photographic exhibition. It would be well, also, to send a note to Messrs. Green at the same time, notifying them of the matter. The proper communication must also be sent to Mr. Wilsou, in Philadelphia, as before announced. We trust that these increased facilities will increase the number of contributions, and that all English photographers who have good pictures to send will aid in maintaining the honour of their country, and gratify their American brethren by aiding in securing a good display of the photography of the world in the exhibition to be opened in Philadelphia next June.

CRACKED NEGATIVES: RENTS, RIDGES, AND RUPTURES.

The deep interest evinced in the recent discussion of this question, fully as it has been ventilated before, strikingly illustrated the wide-spread prevalence of the evil, and the uncertainty still existing as to both causes and remedy. Unfortunately, the value of the discussion was slightly marred by the presence of a little confusion as to the terminology employed. In all discussions, it is of vital importance to commence by defining terms. Mr. Rejlander evidently recognized this necessity, and divided the two classes of disruption to which the negative film is subject, as *cracking* and *splitting*; and if the distinction had been fully recognized and observed, the terms would have served as well as any other. Unfortunately, however, they did not seem to be recognized

as sufficiently descriptive, and hence they began to be confounded with each other, and used indifferently for either form of defect.

Those who are familiar with this most dire of the defects to which negatives are subject, know that the two forms of cracking of the film are quite distinct in character; and, whatever may be their remote source, their proximate causes are directly opposite to each other. As Mr. Hughes very clearly put the case, one series of cracks is evidently caused by contraction of the film; it is torn asunder, leaving fine transparent lines between, which run over the plate in an excentric net-work. The other series of cracks is clearly caused by expansion of the film, which first rises up in honeycomb-like ridges, causing an intermediate form of evil, and, eventually being disrupted, these ridges form wide cracks beyond redemption or cure. These two terms (*contraction* and *expansion*) describe accurately both immediate causes and result, but they are too cumbersome for general use as descriptive or distinctive terms. We propose terms which, whilst sufficiently distinctive, and not easily confounded, are sufficiently terse and expressive for general use. We shall call the two—or, rather, three—forms of evil, *rents*, *ridges*, and *ruptures*. The *rent* consists in an actually splitting or tearing asunder of the film by contraction; the *ridge*, as will at once be understood, is the result of expansion, the film rising in ridges at times like honeycomb cells, and at other times running over the plate like the branches of a tree; the *rupture* is caused by the breaking of the ridge, leaving a wide opening in the film. These terms are sufficiently descriptive and distinctive, we think, to clearly indicate each form of the evil in question.

The discussion at the Photographic Society threw some light on the question, although it left much in obscurity. The cause of the fine, hair-like *rents* in the film is least understood. The suggestion of Mr. Blanchard, that they are generally due to the use of a special contractile collodion, seems to present the most probable solution. His conviction was, that they occur in a collision with well known characteristics, which we may here repeat. It sets rapidly when poured on the plate, giving a glossy and horny film; is often a very sensitive, excellent collodion, and shows, in the finished negative, a tendency to pull away from the edges of the glass. Most photographers are familiar with this quality of collodion, and, as it generally yields a good negative, it is often a favourite. But if it have an especial liability to this splitting tendency, it is evident it should be shunned. It becomes important, however, that the facts should be verified, and that the characteristics which indicate the special class of collodion should be well defined; and, as the testing process of time and wear cannot be readily and efficiently anticipated by improvised tests, the investigation must necessarily be slow and tedious.

Fortunately, a tolerably simple and effective remedy for

this form of the evil exists. The fine cracks or fissures in the film, which, of course, print as black lines, are easily filled up by rubbing the film with a tuft of cotton charged with finely powdered plumbago or carbon, or, as Mr. England finds better still, with Indian ink rubbed up with a little water. At first sight it would seem as if the material rubbed into the fissures in this way must inevitably make opaque lines in the transparent parts of the negative, which, printing as fine white lines, would require touching out in the print. But this is not so: the fissures in the more transparent parts of the negative are very shallow, and when filled up with carbon are only of an equal density with the surrounding semi-transparent parts; whilst the fissures in dense parts of the negative, being deeper, take a thicker layer of the carbon to fill them up, and this thicker layer gives a density corresponding to that of the part in which the rent or fissure occurs.

The cause of the *ridges* was clearly traced to damp, or, rather, to transitions from dry to damp conditions, and, further, to confinement in boxes under those circumstances. Mr. Frank God having recently moved from a dry residence to a very damp one, found his negatives rapidly going to destruction in the ridge-form defect. Moving the negatives from the boxes in which they had been carefully kept, wrapping them in paper, and placing them in open pigeon-holes, at once arrested the destructive process. Mr. Hughes related an instance in which a box of negatives in good condition were placed in a studio beside a stove, where they got hot; a cold, damp night followed, and in the morning they were all covered with honeycomb ridges. A case we heard of at the close of the meeting was more striking still. An operator called at a printing establishment for a valuable negative which had been given out to print, and, according to instructions, he examined it to find that it was in perfect condition. It was, when he received it, still warm, having recently been printed by the electric light. He wrapped it carefully up, and took it to his employer, who opened the parcel at once to see that the negative was uninjured, and, to his horror, found it covered with the honeycomb ridges. This had occurred during the half hour the parcel was carried in the street during a damp day.

But whilst damp and transition of temperature seem undoubtedly to constitute the proximate cause of the honeycomb and arborescent ridges, there a.c. we think, predisposing causes to be considered. Not all the negatives in the same batch will suffer when subjected to the same damp and transitional conditions, and there must be a cause for the difference. A very curious example of the exceptional occurrence of the ridges came within our own experience. Some winters ago, in the course of some experiments, we were desirous of working with a variety of negatives of different qualities and characteristics, and so borrowed some of two or three friends. The room in use as a printing room is a somewhat damp one, and some scores of negatives stand on shelves in it without any especial protection. We have never had a single negative cracked of our own, nor, despite the exposure, did those of our friends crack except in one instance. One morning we found one, and one only, covered with honeycomb ridges. There were at least a dozen negatives by the same gentleman—a singularly neat and careful amateur—and scores by others, all kept in the same conditions; but one only was injured. It is clear, then, that some predisposing conditions existed in that negative which were absent in the others. Whether these conditions arose out of the quality of the collodion, the quality of the varnish, or imperfect washing of the film, we cannot with certainty say.

The remedy for the ridge form defect, if taken before the ridges have become ruptured, is simple. It was first proposed in our pages (p 81 Vol VII) by Mr. Nichols, and subsequently verified by Mr. Spiller, who describes his operations also in our pages. The remedy consists in submitting the injured negative to the vapour of alcohol, which

causes the complete disappearance of the defects. Mr. Whiting has got rid of similar defects by simply re-varnishing.

The general impression with many photographers is, that in most cases of cracking the varnish is chiefly in fault. Certain it is that varnished pictures often crack in the same way, and that an unvarnished negative has never been known to crack. Hard friable varnishes sometimes crack when applied on the surface of glass only: witness the black varnish which used to be applied to the backs of glass positives, and which frequently cracked. Copal is known to have an especial tendency to crack, as may be seen at times on paintings and coach panels. Mastic, on the other hand, and similar resins, rarely, if ever, crack; but these are an insufficient protection to a negative. Lac is not given to cracking; we never saw a French-polished surface cracked, nor any Japanese lacquer work. As a rule, no matter what the tendency of the varnish itself, cracking rarely occurs without some want of harmony between the varnish and the surface to which it is applied. If a painting be varnished within a few months after it is finished, it will almost certainly crack. Exposure to the direct action of the sun will cause many varnishes to crack, and hence it may be that direct sun-printing is injurious.

The preventives which the discussion at the Society suggested seem to be the use of collodion which is not too contractile and horny; the avoidance of damp, and especially of sudden transitions of atmospheric conditions; the storing of negatives wrapped in paper in open pigeon-holes, rather than in boxes; the cleaning of the face of the negative, and covering it with a paste of wax and turpentine when put away. To these we may add the careful use of clean plates; full exposure, so as to avoid forcing in development; the use of varnish with a few drops of castor oil in it; the avoidance of varnishes containing copal and similar resins; and the avoidance, as far as possible, of direct sun-printing.

LIABILITY OF PHOTOGRAPHERS FOR INJURY TO PHOTOGRAPHS LEFT IN THEIR HANDS TO COPY.

A QUESTION of somewhat vital interest to professional photographers has recently been brought under our attention by Mr. Ernest Edwards. The question is, to what extent is a photographer responsible for the safety of objects left in his hands to copy? A recent County Court decision seems to render him responsible to a degree certainly not commonly imagined. By this decision, he is rendered liable, not simply for the actual value of a photograph left to be copied, but for the expense of replacing it by something superior, and much more costly, obtained at the caprice of the owner. We will quote Mr. Edwards' narrative:—

MY DEAR SIR,—I have had a county court experience which, I think, will interest photographers.

Some years since I photographed for Miss Eyre a *cast* (note this) of a bust of her brother Sir James Eyre, at a cost of 10s., and supplied her with at least nine copies. At the end of last year Miss Eyre required another copy, but the negative had, in the meantime, been crased. An agreement was made that she should supply us with one of the original copies, which we were then to re-copy, and a proof was to be supplied to her for 5s. Unfortunately, an accident happened to this copy supplied by her. I wrote to her, expressing my regret, but intimating that if another copy were lent, it (the destroyed copy) should be replaced, and the additional copy she required supplied, all without charge. She intimated, then, that she had not another copy, and should not lend it if she had; but that she should send down to Hereford where the bust itself (not the cast) is placed in the Town Hall, and have it photographed at my expense. Accordingly, after a time, I was sued in the Marylebone County Court for £1 5s. 6s. paid by her. I contended that I had taken every reasonable care, that no negligence was shown, that at least it was only a question of a shilling for actual damage, which was the value of the photograph des-

troys; then that I could not be called on to pay more than 5s., the agreed price for the additional copy, and that, to obtain this, she only had to take another copy to another photographer if she would not entrust it to me, to which she swore she had never had more than one copy, so that was impossible. I then contended that she should have gone to the *cast* which I had photographed, which was still with the sculptor in the Euston Road, and not to the bust itself, whereby she obtained a better article than that destroyed; and, finally, I pleaded the custom of the trade: that it was always understood, in such cases, photographers were responsible only where negligence could be shown, and not in case of accident.

To this Miss Eyre pleaded that Mr. Kidd, to whom she had given the order, undertook to be responsible. However, the judge, throughout, would hardly listen to the defence, distinctly saying, in such a case, he should not regard the custom of the trade, and gave the plaintiff a verdict amounting, with costs, to £1 18s. 3d.

I found, however, that the barristers and solicitors in court expressed such a very strong opinion that the judge was wrong that I determined on applying for a new trial.

On a subsequent day this application was made, on the ground of the absence of Mr. Kidd, and that my books would show that a number of copies had been supplied, and a new trial was granted, which came on last Wednesday. Mr. Kidd then proved that he had distinctly guarded himself against being responsible; that he had only undertaken every possible care; and my books proved the sale to Miss Eyre of nine copies of the original negative. Otherwise, the same arguments and the same evidence was given, and the same result followed: a verdict for the plaintiff for the full amount claimed, with costs.

I may as well say that I had informally taken counsel's opinion from a friend, a barrister of high standing, who said decidedly nothing could be recovered beyond a shilling, the value of the photograph destroyed. This friend was in the court during the hearing, and his opinion remained as before: that the judge was wrong.

It seems to me that this is a very important matter for us. By this decision, if any trumpety article entrusted to us is destroyed, whether by accident or negligence—whether negligence is proved or not—we are liable to the cost of replacing it at any expense at the mercy of the owner, if that owner chooses to send to the ends of the world to do so. And the glory of the County Court is, that there is no appeal against such a decision, which, therefore, establishes a precedent.

For ourselves, we can only say *experto crede*. We shall take care, in such cases, to have a written understanding that we will only be responsible in case of negligence, and for intrinsic value.

I hope you will agree with me, that it will be well to publish this matter of experience for the benefit of others.—Yours very truly,
ERNEST EDWARDS.

The soundness of the law in the decision we cannot pretend to determine. One of the greatest legal commentators defines law to be "the perfection of reason," and, if the definition be good, few people will have much hesitation in styling the law in question as bad; but, at any rate, it behoves photographers to have a proper understanding with crotchety customers as to the amount of liability they undertake when objects are entrusted to their care for purpose of copying.

Critical Notices.

PHOTOGRAPHIC MOSAICS: an Annual Record of Photographic Progress for 1871. Edited by E. L. WILSON. (Philadelphia: Bennerman and Wilson.)

PHOTOGRAPHISCHES JAHRBUCH für 1871. Herausgegeben von der Redaction der Photographischen Correspondenz. (Vienna: Dr. Hornig.)

Our readers are familiar with Mr. Wilson's *Mosaics* of former years through the quotations which have appeared from time to time in our pages. If possible, this year's issue exceeds in excellence any which has preceded it. Besides a most judicious selection of the most valuable and practical papers which have appeared in the journals during

the year, it contains an admirable array of original articles by the most able practical men in the States, on subjects to which they have given special attention, and upon which they can speak with authority. Altogether, the work is one upon which we can heartily congratulate our friend Mr. Wilson and his readers: as reflecting the highest credit on one, and possessing the highest possible value to the others.

Dr. Hornig's *Jahrbuch* is another of the valuable little photographic annuals which it was our good fortune to initiate nearly a dozen years ago, and which, we note with pleasure, have become recognized necessities in the photographer's studio all over the world since then. The *Jahrbuch* chiefly devotes itself to condensed information for reference, in the form of a pocket-book, and contains space for memoranda. It is illustrated with a fine specimen of Lichtdruck by Julius Leth.

SIGN WRITING AND GLASS EMBOSsing: A Complete Practical Illustrated Manual of the Art. By JAMES CALLINGHAM. (London: Simpkin, Marshall, and Co.)

We have rarely met with a book so inadequately represented by its title as the valuable volume before us. It is undoubtedly a complete practical manual of the arts of which it treats, but it is also much more. It is a complete history of the various forms of written and printed characters used in the English language, and a treatise upon their varied possibilities of shape and design as a branch of decorative art, written with a fullness of knowledge, and a thoroughness of relish and appreciation of the subjects, which never fails to give a peculiar charm to any volume. The work is one which possesses so many points of interest to any interested in the graphic arts, that we should feel pleasure on that ground alone in commending it to the attention of our readers; but besides this, they will find in the chapters on glass embossing and gilding many details and suggestions of a technical character, which may possibly be utilized in their own practice.

RETOUCHING NEGATIVES.

We have before us a little work—published in the United States at a dollar and a half, equivalent to about six shillings—on retouching negatives and positives. It is by John Wolfgang Morgeneier, who addresses it to the "artists of the world," and states that the book has cost him many years of labour and experiment, and that he is assured that it is "superior to anything yet before the artistic world." As the instructions are comprised in about half a dozen small pages, and the book is not published in this country, we propose to place them before our readers. After describing the virtues of a matt varnish, which the author has invented, but the preparation of which is not described, the work proceeds as follows:—

Negative Retouching (Contact).—In order to retouch a negative properly and speedily, it is only necessary to procure a retouching frame, which can be procured at any photographic stock house. The materials used by me for retouching are, one box of Faber's polygrade lead pencils, from No. 1 to No. 7, one middling sized, round camel's hair brush, used for brushing off superfluous lead during the operation, two small pointed camel's hair brushes for applying indian ink and dry colours, and one two and a half inch magnifying glass. Secure the negative in the frame, place opposite a window and exclude all or as much light as possible, from the sides and overhead, leaving only the light showing from the window on the negative. The reason why the light must be excluded from sides and top is, because the negative presents a ground surface, and should the light reflect the face, the lights and shades could not be so readily discerned. The negative must be covered with a piece of dark-coloured soft paper, with a hole cut in large enough to show the head of the portrait that is to be retouched; the

purpose is to preserve the negative and cut off superfluous light. After retouching the face of the portrait, the paper may be removed to retouch any imperfections in the drapery or background. The polygrade pencils used have such a degree of grades that you can produce any light or shade desired. The retouching can be done either by stippling or sketching, or both. In retouching the drapery, I often apply the dry ambrotype colours, to wit: light blue, white, purple, &c. The application of dry colours should be very light, as it adheres to the varnish, and can easily be made to show a dauby thick appearance. If any part of the negative should be retouched too intense, it can readily be removed with a soft, round, camel's hair brush, dipped in rain-water, without injuring the film. Ever since the foundation of the photographic art there have been objections made in regard to pictures, objections founded upon the imperfect working of chemicals; this difficulty has now been overcome by this new retouching process, which enables the artist to remove any imperfections arising, from whatever cause they may come, and thus enables him to give the public such improved work as will satisfy the most fastidious. The principal points in the features of the negative to be retouched are, the forehead, nose, eyes and surroundings, cheeks, mouth, jaw, chin, and neck. These points being properly retouched, modulating the lights and shades adds materially to the beauty of the photograph. This comprehends the matter of retouching the negative. At first I retouch away all specks and pinholes, or any imperfections in the negative, background, or portrait, which often occurs. After this, commence the features, one at a time; first the freckles, moles, warts, scars, &c., which being removed is sufficient to give satisfaction in almost every case, excepting in very old or middle aged persons. I wish now to call the artist's attention to the following instructions in retouching negatives:—

Forehead, No. 1.—The upper and lower forehead being the principal features of the face of the portrait, invariably takes plain, excepting the wrinkles immediately over the eyes and on the lower forehead, which must be retouched so as to smooth down; not, however, entirely removing them, as that would mar the natural appearance of the portrait. But the cross wrinkles running up and down the forehead greatly mar the beauty of the picture, and may be entirely removed, excepting the two principal ones running directly up between the eyebrows, which should be only slightly retouched. The eyebrows, although different in all persons, invariably follow the course of the eye, and should they be large and bushy, they must be retouched so as to make them appear smooth, encircling the eye properly. Should the eyebrows meet upon the forehead, as they often do, they must be entirely retouched away, as they will, if left, give the expression a surly appearance. The natural shade between the eyes only need remain, as that will be sufficient to make a natural appearance. The above instructions must be followed more or less according to the age or sex of the subject. In a profile or a side view position of a portrait, if there is an over-abundance and a superfluous amount of hair about the head, or an excess of drapery, it can be readily retouched away, or should deficiencies appear they can as easily be added. Blonde hair, which usually takes dark, can be lighted by sketching with the pencil on the negative. Dark beards, or any other under-exposed colours of hair, may be treated in like manner.

The Nose, No. 2.—The nose runs parallel with the face, and presents a flat, sharp, or rounded appearance. The ridge of the nose should always be retouched, simply by drawing a line along the same to part the ridge from the side of the nose. In persons who have Roman noses a dark shade appears on each side, which should be retouched enough to soften the shades; this will appear more especially in dark brunette or sunburnt complexions, and they may be retouched to a higher or lower degree without injuring the expression. The shades can be reduced should they appear too dark. In a front face or profile position crooked

noses may be very much improved in this manner: the shades of the nostrils should not be absolutely dark, and the shade of the point of the nose should not be as dark as those of the nostrils. Intensifying the point of the nose with the pencil gives it a classical appearance. In the profile of the nose the ridge should never be retouched, as it will change the whole expression of the face.

The Eyes, No. 3.—The eye is one of the most important parts of the portrait, and especial care should be taken in posing the subject in order to give the eye a natural appearance or expression. After all the care that can be taken, the helping hand of the retouching operator will be necessary to perfect the work in almost every instance. I will describe several points of special importance. By exposure the usual sharp glance or clear look of the eye becomes dim, the lids and pupils become blurred or hazy; this can be relieved by retouching the *Iris* of the eye, and by subsiding the high lights in the pupil. It often occurs that the high lights in the shaded eye are stronger than those of the light shaded one; it should be retouched so as to perfectly correspond. Blue or very light coloured eyes often take almost white. To procure a nice, natural appearance, it is only necessary to pierce a small hole in the sight of the eye, using a sharp steel needle, and requiring but a moment of time, and is easily performed on the negative. This is especially necessary in small photographs. The veins in the white of the eye of aged persons will show to a certain extent, especially in large prints, and should be entirely removed, but the white should not be retouched. The projection of the forehead immediately between the eye and the eyebrow usually takes too dark, and should be retouched enough to give it a soft shade. The so-called fleshy under-eyelids, producing dark and unharmonious shades under the eyes, should be retouched considerably. In aged persons the cross wrinkles in the fleshy under-lid should be entirely removed; by retouching in the manner described the eyes are greatly improved, and the features or look of age remains unchanged. The crow-foot wrinkles running from the corners of the eyes are very characteristic, and should not be entirely removed.

The Cheeks, No. 4.—The dark shades upon the back part of the cheeks where it meets upon the forehead should be retouched so as to blend the two together in harmony. Retouch the dark shades of thin, sunken cheeks, which show leanness and homeliness, so as to make the cheeks appear full, giving a pleasant expression. Negatives taken from brunette subjects require more intense retouching.

The Chin, No. 5.—In corpulent subjects the chin shows a double form, appearing as part of the neck, giving it an unnatural appearance. A part of the double chin can, or should be, retouched, so as to make it appear as part of the neck, which can be done by retouching away one or more of the small wrinkles under the natural chin, thus improving the appearance of the chin very much. The dimple of the chin should be softened, as it often appears as a cut or dark spot. It will be necessary to retouch the full, fleshy portion of the face more than any other. The shades of the neck immediately under the chin should connect with the shade of the chin. The rough or corded appearance of the neck caused by the showing of large wrinkles or veins should be carefully retouched away.

The Mouth, No. 6.—The mouth through the easy motion of the raising up or down of the corners, is the principal sign of intense emotion, and this can be changed without trouble. The form of the mouth may be easily and very much changed or improved by drawing and retouching the outlines of the lips. Retouch away all the ugly-looking scars or wrinkles that appear on the lips. In aged persons the corners of the mouth run downward; these may be retouched so as to show with the outlines of the under lips in an even line. The upper lip in aged persons sinks inwards from the loss of the teeth, showing a dark shade above the upper lip, which, if unretouched, shows like an unshaven beard, but if retouched it gives the mouth a

natural expression. But care should be taken to retouch it in such a manner as not to change the natural expression between the nose and lip. The outlines of the lips are quite different; large, full lips being more exposed, produce a more harmonious effect than thin, close ones. In aged persons the corners of the mouth are apt to be drawn down, causing the mouth to seem long; this can be easily remedied by retouching so as to shorten their appearance, but the shades should not be entirely removed. Should the wrinkles turn up instead of down, they should not be retouched away as much as those running down, as the downward ones have a tendency to make the expression sorrowful or dejected. Should the subject have teeth that prevent the closing of the mouth, causing them to show, they may be retouched before varnishing the negative, using a small-pointed ambrotype brush, care being taken in stippling the intense spots, so as to harmonize with the shade of the lips.

The Drapery, No. 7.—I will now make some special descriptions of draperies, and give instruction in regard to retouching or changing to suit the taste. I have done, and am now doing, a great deal of retouching unvarnished negatives in the following manner: using only the common ambrotype brushes as aforesaid, flowers, ribbons, neckties, and other draperies that often take too intense can be changed or removed, according to taste, causing the drapery to show plainly and harmoniously, leaving the effect entirely with the artist. Should these directions and observations be followed, many gross imperfections may be removed from the negative, and many beauties added thereto, which can be easily done by any other process. Since the negative retouching process has been practised for some time back, and as it is gaining day by day, I think any artist, strictly obeying the instructions laid down in this little *Book*, and using my *Patent Varnish*, will be rewarded in the shortest space of time by entire success in his profession.

Foreign Miscellanea.

A NOVEL method of engaging the attention of children during the period of their being photographed is that of setting up a parrot, which, on the removal of the cover from the lens, commences to flap its wings.

Licht gives a recipe for a substitute for tunicare, to be applied to the plate previously to its being coated with collodion:—

Distilled water	2 ounces
Spirits of wine	1 ounce
Glacial acetic acid... ..	3 drops
White of one egg beaten to a froth.	

After allowing the solution to stand for a night, it is filtered, and mixed with three ounces of distilled water. This, it will be seen, is precisely the formula of one of our correspondents, which we published a few months ago.

In the *Correspondenz*, M. Schaarwachter gives the following receipt for preparing ink rollers suitable for Lichtdruck processes. Three parts of good brown glue are allowed to soak in cold water for two days, and are then melted over a slow fire, one part of boiled treacle being subsequently added, and the whole brought to the boiling point; the mixture is poured into a cylindrical mould of copper, of which the interior is greased, and in the centre of which runs the wooden handle. When cold, the roller is washed with spirit, dried in the open air, and finally immersed in a solution of tannic acid, and washed and dried. This resembles the ordinary printer's roller, and would, it is to be feared, pull too much for a printing surface of gelatine, and so risk its destruction.

The mechanical printing process of M. Obernetter, of Munich, is rapidly progressing. The grain noticeable, especially in the smaller productions, has been now completely done away with. A copy from one of Mieczkowski's negatives printed by this process will be given as a presen-

tation print with the next issue of the *Archiv*. Many of Obernetter's employes are just now engaged upon military service, and, therefore, operations have come almost to a standstill; but from one plate, a reproduction measuring some thirty by forty centimetres, as many as 40,000 copies have been struck off.

M. A. de Constant has made a statement to the effect that, as the final result of his experiments with light in the camera, he finds it best not to tamper with the blackened inside of his apparatus, but, instead, to introduce a red, or rather rose-coloured, light into his studio; this improves and softens the portraits.

A very perfect specimen of Albert's Lichtdruck process has been issued with the Dresden journal *Helios*. It is a bust portrait of a lady, and proves that very considerable progress has lately been made in the art.

M. Krone, of Dresden, has also perfected his Lichtdruck process, and exhibited copies of the same at a recent meeting of the Dresden Photographic Society.

Some discussion took place at the last meeting of the Berlin Photographic Society on the subject of gutta-percha baths used for photographic purposes. M. Kruger stated that he had examined analytically some pieces of a bath which had become quite brittle and rotten, and found the same to contain an appreciable quantity of silver.

The German photographers engaged in the recent war are making good use of their opportunities. M. Petsch is at Thionville, where he has secured some large photographs of the walls and fastnesses of the place; and MM. Schwier and Quidde are busily engaged in depicting the Paris forts from different points of view, as also in securing pictures of such spots around the capital which are of historical interest.

An art exhibition, to include photography, will be held at Dresden this year. Specimens must be forwarded to their destination not later than the 15th April.

The recent cold weather has yielded some experiences to photographers. The idea that a frozen silver bath cannot be subsequently employed after being thawed is proved to be erroneous. One observation worthy of note is the fact that upon the freezing of a gold toning bath the chloride separates at the top, and remains in a liquid condition.

M. Meuwssen, of Wipperfurth, has made trial of rose-coloured light for portraiture, in the manner suggested some time since by M. de Constant. He places the sitter in a recess illuminated by a glow of red light, by the aid of rose-coloured tissue-paper, which is stretched over a frame. The portraits thus produced are said to be very clear and soft.

No French photographic journals have been received from Paris since the siege. The back numbers of many of them—among which is the *Comptes Rendus*—are being rapidly printed and circulated. It has not been stated whether this course will be taken with the *Bulletin* and *Moniteur de la Photographie*.

The *Photographische Archiv* contains a suggestion with reference to the use of blue light in studios. Instead of employing blue glass for glazing the building, a saturated solution of Glauber salts in beer is used, to which as much Prussian blue is added as will secure the proper tint. The mixture is applied to the glass in a warm condition, and, on cooling, it crystallizes. If it is desired, at any time, to remove the tint—as, for instance, in winter, when there is great lack of illumination—the colour is easily rubbed from the glass surface by means of a wet sponge.

The subject of faded albuminized prints received considerable attention at a recent gathering of the Berlin Society. Some prints were exhibited which had been exposed for upwards of three years, in a show-case, to direct sunlight without showing any traces whatever of fading, thus proving that decay was more the cause of noxious vapours in the atmosphere than the action of the sun. Bad cardboard, or acid mounting materials, were cited as frequent causes of fading.

A paper on the reduction of chloride of silver by a

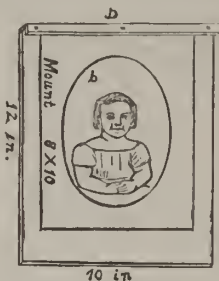
wet the metal is communicated to *Licht* by Dr. Gräger. Zinc is the method employed to effect the reduction.

The *Photographische Zeitung* calls attention to the employment of hydrate of chloral as a useful reducing agent, capable of employment by photographers for treatment of gold solutions. For waste silver solutions, its use is not recommended, as the production of chloride of silver ensues.

AMERICAN CORRESPONDENCE.

METHOD OF MOUNTING PRINTS—THE WOODBURY PROCESS IN AMERICA—RESTORING FADED PICTURES—VARNISHING THE NEGATIVE—TESTIMONIAL TO MR. NOTMAN—NEGATIVE RETOUCHING VARNISH.

Method of Mounting Prints—Here is another little practical idea which may be of service to those who have large pictures to mount. With our larger pictures are generally mounted on a card with an oval line lithographed in the centre, and the proper registration of the print, with the line, is sometimes difficult. Here is a means of overcoming the difficulty:—It consists of a plain board, ten by twelve inches (or any size you wish), with a flange (*a*) high enough to let under two card mounts, one of them fastened to the board, and the different square and oval patterns marked on it, at the right distance from the end (*b*), to suit the different sizes you have to mount, either square or oval.



Suppose we are mounting oval prints. (*b*) Is the print cut to the proper size, pasted, and laid face down on the oval pattern; now take the mount, slip it under the flange (*a*), to correspond with the pattern, and press it gradually down. Then pass the hand over the back a few times, and you have the print mounted perfectly true. Of course, it is of no use for anything smaller than a cabinet card, but I think if any one tries it for large prints they will like it.

The Woodbury Process in America.—The Woodbury process is now in successful operation in this country under the superintendence of Mr. J. Carbutt, and you have, no doubt, seen one of the first results in the picture in the first number of the *Photographic World*. The "works" are located at No. 1002, Arch Street, in the centre of our city, and every facility is secured for the successful working of the process. Let those who would try the process, however, beware of the hydrostatic presses "made specially for the process" in Paris. They are absolute trash. The one Mr. Carbutt got there burst without even making a decent mould. I will have more to say about the works here, and send you specimens soon.

Restoring Faded Pictures.—A photographer is very often called upon to reproduce old photographs which are not only badly faded, but which are of such a dingy yellow colour that they almost baffle him in his efforts to get anything like even a tolerable copy therefrom. The colour of the picture is even a worse drawback than the weakness of the image.

The matter was discussed at considerable length at the last meeting of the German Photographic Society in New York.

An almost entirely faded out photograph was shown by one member, which was given him to be copied, and he wanted to know how to accomplish it. One suggested to

lay it between two panes of glass and treat it like a transparent positive, and copy it by transmitted light. Another to restore the photograph by the aid of chloride of gold.

A weak gold bath, from two to three grains to twenty ounces of water, will be strong enough. Immerse the picture in this bath, but perform it in the dark room. After a few minutes, the picture will assume a darker colour, and appear more and more so after some time. When dark enough, it may be put in the fixing bath for about one-half minute, after which it must be carefully washed. The picture will keep now for a good while longer, and be found much easier to reproduce with better results.

Varnishing the Negative.—The subject of varnish was also brought up at the same meeting. It is a subject, too, of a great deal more importance than it is generally thought to be, and it ought to be considered just as much as the introduction of a proper background in the picture. There are a great many varnishes in the American market, and none of them are really bad, though some are superior to others.

The members of the Society present who devote their time to negative retouching, all expressed their opinion that there was no varnish in the market which possessed all the qualities required, and would very much like to see an improvement made in that direction.

Mr. Nagel, of Hoboken, said he had experimented for several years in preparing a varnish that would satisfy every requirement, and that at some future meeting he would lay before the Society samples of his production for investigation, and that he would give his recipe for publication. When he does so, I will gladly communicate it to you.

The receipts recommended by different members were as follows:—

1. Gum benzoin, one ounce; ten ounces alcohol.
2. Copal varnish, as ordinarily sold, mixed with two parts of benzine.

Another was recommended as the best:—

Dissolve melted amber in benzine to the thickness required.

The negative needs not much warming before coating. It gives a hard surface, and the heat to which our negatives are sometimes exposed during printing has no effect on this varnish.

Testimonial to Mr. Notman.—I clip the following from the *Montreal Daily Witness*, and as you know it relates to one of the most talented in our profession, you will be glad to give it place:—

"We are glad to learn that Mr. Wm. Notman has several times since Prince Arthur's return to England received large orders from his Royal Highness for his photographs, which are much admired in the old country. This week's mail brings an order from Her Majesty the Queen, who desires Colonel Elphinstone, in transmitting the order, to express her approval of these pictures."

This is a deserved tribute to a worthy photographer, and it should cheer us all to know that photography is appreciated and honoured by the patronage of royalty. Let us all honour our profession, and it will assuredly bring honour upon us.

Negative Retouching Varnish.—A few weeks ago, I gave you the formula for making Morgencier's Patent Varnish for giving a surface to negatives suitable for retouching. A little hint or two in using it may help along those who are trying it. If you intensify, use only pyrogallie acid, and do not intensify much, as the varnish tends to increase the density of the negative. A spotted appearance is the result of over-intensification. Cyanide is the best fixing agent. The plate must invariably be cool when varnished, though the drying may be hastened by heat if necessary, though spontaneous drying is best. An artist friend told me to-day that this is the best varnish of the kind known.—

Yours truly,
Philadelphia.

EDWARD L. WILSON,

GERMAN CORRESPONDENCE.

MORGENEIER'S INSTRUCTIONS IN RETOUCHING NEGATIVE AND POSITIVE PHOTOGRAPHS—SPLITTING OF THE FILM.

It is sometimes the case that excellent articles of highest practical value, published in any photographic or scientific journal, calls, at first, no attention at all; they are overlooked, whilst less important things are read, discussed, translated, &c. In this manner valuable hints are sometimes lost wholly, sometimes discovered by some cunning fellow, who knows to make somewhat from them.

This is, for instance, the case with the article of Mr. Hartmann, "On the Purpose and the Limits of Retouching," published in the July issue, p. 87, and August issue, p. 116, of the *Mittheilungen*, 1870; certainly one of the most excellent articles ever printed in this newspaper, though never republished in any other photographic journal. I guessed that that article would be overlooked wholly, and I got some days ago a very little American book, small shape, twelve pages long, entitled, "Morgeneier's Book of Instructions in Retouching Negative and Positive Photographs," and sold in America for one dollar and a-half. It is illustrated with two prints, carte-de-visite size, from the same negative, one touched up, and one not, in the negative. From the twelve pages of this one and a-half dollars book, two pages contain the preface and index, one page some recommending remarks over a new varnish (formula not given) invented by the author; of the remaining nine pages, four are filled with already known hints on retouching materials (among which is recommended again the new patent varnish of the author), drapery, landscape retouching (the last discussed in nine lines); the rest of the small book, five pages, and the chief part of it, gives instructions for retouching forehead, nose, eyes, cheeks, mouth, jaw, chin, and their chapters are nothing else than a merely verbal reproduction of the practical part of the above-mentioned Hartmann's article.

The only difference is an unimportant variation in the arrangement. In Hartmann's paper the chapters are arranged in the following manner: forehead, nose, mouth, eyes, cheeks, chin, mouth, neck. In Morgeneier's book is the arrangement: forehead, nose, eyes, cheeks, chin, mouth; but in each chapter Hartmann's paper is easily recognized, sentence for sentence; even his sentences follow with very little variation in the same order as in the original.

As I know that your valuable journal is much in circulation in the United States, I beg you to reproduce Hartmann's article in it; you can save in this manner for a good many of your American readers one and a-half dollars.

I have read, with great interest, the discussion in the London Photographic Society over cracking of the film, its causes and remedies. As I have been occupied with experiments over this point for a long time, allow me to give here some remarks on it.

It is ascertained by our photographers here that the failure easily occurs on plate glass, but very seldom on sheet glass. I have till now only observed it on plate glass. For determining whether insufficient washing will cause the failure, I took two pictures on sheet glass, fixed with cyanide, washed very imperfectly, and varnished. The two I brought in the dampest room at my laboratory, and sometimes I moistened them by putting on a piece of wet filter-paper. The plates are now nine months old, and in perfect order, without any trace of cracking. I am repeating now the experiment with plate glass.

In regard to the cracking of the film, I mention that the fine transparent lines are not fissures, as very often supposed; they are ridges more elevated than the other parts of the film, as I observed under the microscope.* The only difference between honeycomb cracking and splitting is, therefore, that the former is larger and easily visible in

* That the fine cracks described in a leader on another page as *rents* are really fissures is demonstrated by the fact that they are filled up when a fine powder or paste is rubbed over them.—Ed.

reflected light, the latter not; that the former disappears in alcohol vapour, the latter not. If the cracked film is rubbed in any way, even with a pure leather or the pure finger, without any colour, the film ridges are pressed down and disappear. The same is sometimes the case if the plate is gently heated, but, in the latter case, the cracks appear again by-and-bye.

If the cracked film is rubbed strongly, the film ridges are partially destroyed, and, afterwards, any colour is useful to fill out the fissures arising by rubbing. In regard to the proposed plan of Mr. England, to rub the cracked film with indian ink, I mention the curious fact I have published in the November issue, 1870, of my *Mittheilungen*, under the title "A Means for Avoiding Cracking of the Film," and reproduced in your News, Dec. 9, 1870, p. 582, that a plate touched partially on the varnished side with indian ink did not show any deterioration under the so inked parts, whilst the other parts cracked everywhere. I supposed that the gum contained in the indian ink had acted in this favourable manner on the plate; and, indeed, I succeeded perfectly in coating a plate with gum as indicated in the above-mentioned article. All parts covered with gum kept perfectly, whilst, in the other parts of the plate, the splitting of the film had gone on uninterruptedly. Even the gum must be employed in a very dilute solution, and applied with an almost dry brush, which, after dipping in the gum solution, is well pressed out.

All other water colours containing gum work in the same manner as indian ink; and it is only the presence of gum which acts so favourably in employing indian ink, as Mr. England advised recently.

I mention, lastly, that the presence of glycerine in colours acts very unfavourably, and causes splitting.

Berlin, March 25, 1871.

DR. H. VOGEL.

COFFEE AND OTHER DRY-PLATE PROCESSES, WITH PRACTICAL DETAILS

OF A NEW DEVELOPER GIVING EASE AND CERTAINTY.

BY A. DE CONSTANT.*

§ III.—THE COLLODION.

MANY distinguished chemists and operators have recognized and proved the fact that only a collodion of a powdery nature is applicable for the preparation of dry collodion plates. I have myself also published some experiments confirmatory of this view, and have indicated that Mawson's collodion (for iron development) appeared to fulfil all the conditions necessary to the successful working of dry plates; at the same time, I expressed a hope that manufacturers of collodion would supply a material specially suited for dry work, which could be always demanded under a certain name or number, so that photographers would always be certain of receiving a product of uniform and known quality.

Messrs. Mawson and Swan, acting upon this idea, have been good enough to forward me three samples of collodion which they believed especially suited for the purpose, and of those chosen, they contemplated preparing a supply for commercial purposes.

The comparative experiments made with these three samples of collodion again convinced me of the great importance of selecting an appropriate material for dry-plate work; all three samples were of excellent quality for ordinary purposes, but when employed in the preparation of dry plates, two of them exhibited a tendency to rise from the glass, and to become spotted with peculiar opaque rays, and only the third was sufficiently rapid in its action, and well suited for the special use for which it was required. This collodion, I may mention, can be obtained from Messrs. Mawson and Swan, under the designation of New No. 2, at a cost of ten shillings per pint. Although the iodizer supplied with the material answers its purpose very

* Continued from p. 139.

well in the ordinary way, I find it best to follow the advice of M. Gordon, and add thereto two grains of bromide of cadmium per ounce.

To those who would prepare their own collodion, I must recommend particular attention to the question of the pyroxyline; the advice of Dr. Monckhoven should be followed, viz., to choose a material which has been prepared at a high temperature, and which, known by its yellowish tint, is found to separate in hard rather than in fibrous particles, and is, moreover, full of dust. The Monckhoven collodion yields intense images which nitric acid fails to dissolve entirely.

If the photographer decide to renounce the preparation of collodion himself (which is wise), and it is desired to find out whether a material purchased is suitable for dry plates, it is sufficient to pour a small quantity thereof upon a glass surface, and, after setting, to rub the film with one's finger. If the collodion is rubbed into small particles, it will answer well for dry manipulation; whereas, if, on the contrary, it tears and separates from the plate in the form of ribbon, it is not fit for the purpose. In the first instance, a slight friction will reduce the film to powder, while in the second the finger will glide over the surface without injury. Finally, a suitable collodion, when sensitized and developed, will yield a hard and intense image, in which the shadows appear rapidly, and are extremely vigorous.

If I lay particular stress on this point, it is because I am fully persuaded that the greater number of failures experienced in dry-plate work result from the employment of a collodion unsuitable for the purpose. It is only, indeed, in this way that I can explain the cause of many difficulties which have come under my notice, when, for instance, pupils working with my process, who in my studio have executed most excellent *épreuves*, have on their return failed most unaccountably with their own collodion, which, nevertheless, gave with wet plates exceedingly good results. And if any other proof were wanting, it is to be found in my own experience, when by merely effecting a change in the collodion, I am able either to produce plates endowed with the most perfect preservative qualities, or, on the other hand, a film which readily loses its virtue at the end of a few days.

§ IV.—PREPARATION OF THE PLATES.

The plate, having been coated with collodion, and the film allowed to set, is immersed in an eight per cent. silver bath freely acidified with pure nitric acid. On its entry into the solution, it is moved to and fro at the bottom of the bath for a few moments, and then allowed to remain therein for four or five minutes. It is then removed, and, having been well drained, is placed in a bath of rain-water while a second plate is put into the sensitizing solution.

The first is then carefully washed in ordinary spring water (if the same can be obtained of good quality) under a tap covered up with a small linen bag to serve as filter; when the plate is freed from all appearance of greasiness, the washing operation may be considered to have gone far enough, and it is placed in a second bath containing rain-water, where it can remain until the time arrives to drain it and apply the preservative solution to its surface.

§ V.—THE PRESERVATIVE SOLUTION.

The designation of preservative is applied to numerous substances and mixtures which have been proposed from time to time for coating collodion films after having been sensitized and washed. At the same time it appears to me that the role attributed to such substances is by no means so important as generally imagined, for it is certain that the collodion film which we may desire to keep in a dry condition will only remain sensitive as long as it is in a porous and relaxed condition, and its molecules perform the function of tiny reservoirs, in which the iodide of silver may be stored up to be revived on development. This is, in fact, so true, that by means of a collodion endowed with a particularly favourable porous nature, dry plates may be

obtained by a simple washing of the film, and without the employment of any coating whatever; whereas, on the other hand, a horny collodion, in which the pores are so close that, on drying, an exceedingly hard and compact film is formed, the sensitive virtue of the plate is soon lost, whatever may be the nature of the preservative solution employed.

The best agent for the conservation of sensitiveness is, therefore, a suitable collodion; the subsequent coating of the plate should, nevertheless, be considered as an excellent aid in the matter, from the fact that saccharine, gummy, or viscid substances, which are generally employed in this capacity, act mechanically upon the porosity of the collodion, and thus there result more certainty and regularity in the preservation of the plates. It may be here asked, however, why, if the preservative only exerts a mechanical action upon the plate, there should have been so many modifications of the formulæ proposed. To this we would reply, that many of the various mixtures have been suggested for the main purpose of adding to the preservative solution some chemical agent possessed of a developing action which should have the effect of shortening the exposure or of softening the image; and it is with this design that new suggestions are made every day. Without in any way wishing at the present moment to deliver a course of chemistry, I propose to discuss a few of these questions which bear so much to the point.

Why is it that albumen processes always yield very clear results, but of a slow and hard nature, while those methods in which gum plays a part are to be distinguished, as a rule, by their rapidity, and the soft nature of their productions? Why are negatives prepared with coffee, tannin, and gum, although all of them developed in the same manner, with pyrogallie acid, of different colours, assuming a brown, red, green, or grey tint? I am told, in reply to these questions, it is probably the acid or alkaline re-action that produces the difference, and that a chemical analysis of the substances employed for coating would probably furnish an explanation. I admit the force of this answer, and believe that it would undoubtedly be a good thing to study the reaction and analysis of the solution to be employed as preservative, because that is the only right way to attain the end of one's purpose.

I will here describe a curious circumstance connected with this matter. Before I was well acquainted with the coffee process, it was my custom always to employ in the preparation of my preservative fluid just any coffee which I might have by me, until one day Dr. Liesegang informed me that Mocha was best adapted to the purpose. This led me on to institute a series of experiments with all the different kinds of coffees, and also to study their analysis, and the consequence was that I arrived at the conclusion that caffeine must be the active principle, from the fact that Mocha and Martinique, which contain the most, give the greatest rapidity, more delicacy and half-tone in the image, and, indeed, far superior results to St. Dominique, and certain Java coffees containing a quarter less of caffeine. I found, moreover, that a well-burnt coffee gave vigorous images of a dark brown character, while that roasted to a less degree yielded images of a greenish colour. It is to the caramel developed by roasting, which removes the chlorogenic acid, that the effect of the under-burnt coffee must be attributed.

When, some time ago, I first tried acetate of morphine recommended by M. Bartholomew, I found its action impeded the sensitiveness of the plate, while now Messrs. Gordon and England allude to it as a powerful accelerator. While endeavouring to reconcile two opinions so opposed to one another, I discovered that acetate of morphine is one of those pharmaceutical products which presents great variation in its preparation, being some times alkaline, and sometimes acid, in its character; and here, probably, is the explanation of the difficulty.

It was only after some consideration, therefore, that I

decided upon the combination of coffee and gum as a preservative, such as I employ at present; both of these agents have their special qualities, and profit by their association with one another to remedy mutual defects. And it is curious to find in what extraordinarily exact proportions it is necessary to use these substances in order to establish a favourable equilibrium. Thus, for example, by diminishing the proportion of gum, the harmonious softness, as likewise the rapidity of the plate, becomes impaired, while if more than half the quantity of gum is used, rising of the film and blisters are to be remarked.

The following is the mixture which I employ:—

No. 1. 150 cubic centimetres of distilled water, while in a boiling condition, are poured upon 15 grammes of Mocha coffee and 6 grammes of white sugar, both of the latter having been previously reduced to a fine powder.*

No. 2. 150 cubic centimetres of distilled water are used for dissolving 6 grammes of gum-arabic and 1·2 grammes of sugar-candy.*

The coffee extract is allowed to cool in a well-corked bottle, and both liquids are then filtered and mixed, forming together a clear brown liquid of a certain density, which will remain in good condition for several days. The quantity destined for each plate should be filtered and poured on like collodion; a second application of the liquid is made to the same plate, care being taken to prevent the formation of bubbles, and the solution should not then be further used. The coated plate is placed on end upon a sheet of filter paper to drain before being put into the drying closet which we shall presently describe.

Many operators apply the preservative by the aid of a horizontal bath, which is, perhaps, the easiest mode of proceeding; but in this way a larger quantity of solution is always necessary, and, moreover, the entire surface of the glass is soiled, so that the back thereof must afterwards be cleaned. For this reason the first method is recommended, which has, in my hands, always proved successful.

(To be continued.)

SKETCHES OF THE INTERNATIONAL EXHIBITION, 1871.

No. 2.—How I FETTERED MY PICTURES HOME AGAIN. BY THEOPHILUS THIDDLEMIDTCH.

THE Commissioners have no taste. I renounce them all. Not only have they rejected my pictures; not only have they informed me, with their usual polite sarcasm, that "the Committee of Selection did not recommend my pictures for exhibition," but, as if to add a purposeless injury to a senseless insult, the Committee has retained *one* of my pictures; the only one, I flatter myself, that any other photographer could have produced. This, sir, this is how I am to be represented; all the pictures on which I prided myself, all the pictures in which skill has been displayed, all the pictures which were compared in the *Times*, the *Telegraph*, the *Standard*, the *Daily News*, the *Court Circular*, the *Morning Post*, *Punch*, the *Record*, and—Oh! I beg pardon, I meant to put the *NEWS* first (if last, it is not least), as comparing favourably with the pictures of such men as Col. Stuart Wortley, have *not been recommended*. All the pictures in which the "one-eyed camera" has been supplemented in its mechanical action by every artistic faculty which I possess, have been returned, and the only one which has been recommended is a small portrait done by an assistant during my Christmas holidays, and sent to the Exhibition only to encourage its author, and not at all to represent my work.

* Stated in English terms about—

No. 1.—Distilled water...	...	...	...	5½ ounces
Mocha coffee...	...	...	...	¼ ounce
White sugar...	...	...	...	90 grains
No. 2.—Distilled water...	...	...	...	5½ ounces
Gum arabic...	...	...	...	90 grains
Sugar-candy...	...	...	...	20 "

It is hardly necessary for me to say that the impartiality shown in the rejection of my works of art has been accompanied with the most abject politeness; sarcasm was, no doubt, the basis and the root, but the fruit of the tree was sweet to the taste. The menials of lesser office had been ordered to *smile* and *bow* as my assistant went to bring home the pictures. They offered him string and brown paper, and even helped to tie the pictures up in a bundle! Then they ordered a cab to be brought, and saying unto him, "Good bye!" they seemed to suggest, "Please don't come here again; or, if you do, don't bring such good pictures."

So ends for me all interest in the Exhibition of 1871. I wonder if other photographers have been served the same! If so, there will be a nice little chorus join in to heave a gentle blessing on the Committee of Selection. By the way, I wonder if any of the *Committee* are photographers, and if they are going to exhibit their own works, and, if so, how many, or who is to *select them!*

Correspondence.

PICTURES RETURNED FROM THE INTERNATIONAL EXHIBITION.

SIR,—We have been recently informed that a great many exceedingly fine pictures have been returned from the Exhibition by the committee of selection. In some cases, we have heard the *best pictures sent* have been returned.

It is not easy to understand on what principle this has been done. It is not easy to suppose that all is not fair, but we think the public could best judge of this point themselves, if those photographers who have had some of their *best things* returned would give a list of them in the *News*. As there has been scarcely any photographic weather since last November, we may fairly suppose that the bulk of the photographs sent for selection were taken before the exhibition held in Conduit Street in November last, and many of the best may, therefore, be quite familiar to your readers and the public generally.

If several photographers would join the discussion which we invite, some opinion might be formed of the general style of the pictures turned out, and we should be then able to judge if the selection has been fairly impartial, such as would arise from simple limitation of space, or whether any one class of pictures has been eliminated in a way calculated to serve the private ends of individuals in authority. Without hinting at the slightest unfairness in the judges, we simply give a list of our pictures which have been rejected.

The following of our pictures—which, if we may judge their popularity, are not unknown to the public—have been returned: Returning Home—Sleep—The Foaming Shore—The Entomologists—Southborough Wood—The Edge of the Wood—Sunset on Culverden Down—The First Hour of Night—The Last Hour of Day—On the Common.

It is rather curious to notice that this list comprises our *best sunset and sea effects*, while of the others the two greatest favourites have been rejected.

We sincerely hope that other photographers will also publish their lists of rejected pictures.—Yours truly,

ROBINSON AND CHERRILL.

SIR,—As curious rumours are circulating as to the class of pictures rejected at the International Exhibition, I send for publication in the *News* a list of the pictures sent by me, which have been rejected, the rejections consisting, as you see, all of large figure studies, which, in the Photographic Exhibition, were fortunate enough to win high praise from critics.

1. A portrait study.—2. Lady in white fur jacket.—3. Lady in white silk (full length).—4. Italian girl.—5. A gentleman in Spanish costume.—6. A lady in white.

All those having been specially commended by the press being thus rejected, I think I may fairly ask, "What does it mean?"—I am, yours truly,

VALENTINE BLANCHARD.

48, Piccadilly.

SIR,—If the reports which are freely repeated in photographic circles be true, photography will present a very sorry show at the International Exhibition. I hear in all directions

that the best pictures are rejected, and the worst retained, and, what is worse, motives are suggested which I am afraid you would not print, even were I to repeat them. My object in asking you to publish this letter is to prevent photographers, if these rumours be true, submitting to a degradation. Exhibitors generally well know if the story be true, and if so, would it not be wise for them to combine and withdraw their pictures from the Exhibition altogether? It would be better that photography should not be represented at all than that it should be misrepresented.

It is reported that large instantaneous pictures of sea and cloud, and large figure studies, are generally rejected, and, amongst other things, the exquisite little genre picture which won universal admiration, "Stolen Moments," by Mr. Hubbard, who only sent besides two little things, 5 by 4, and one 12 by 10. The absence of that picture alone would make the Exhibition incomplete.—Yours,
NEMO.

[Surely the rumours to which our correspondent refers must be erroneous. The idea that the Committee should of intention keep the worst and reject the best is incredible.—Ed.]

PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

DEAR SIR,—You have, I see, taken exception to the weak point in my illustration, which was an extreme one, I admit, assumed to give force to my argument. But I still think the spirit of what I have said holds good. Even if A, B, and C send pictures of equal merit, though, perhaps, of different styles of art, is it fair to hang only two of C's examples, and twenty-five of A's, simply because C is the most moderate, thereby giving (frames being equal) A twelve times the space allowed to C?—I remain, with apologies for thus troubling you, dear sir, yours faithfully,
A CONSTANT SUBSCRIBER.

[The merit and interest being equal, it would not be fair to devote twelve times as much space to one contributor as that devoted to another, simply because the latter had been modest in his demands, nor do we think that the space has been apportioned in such a ratio. We doubt very much if any one has twenty-five frames hung. But supposing A send twenty pictures all of great excellence, and including varied styles, such as landscapes, portraits, &c., and B send ten pictures, all of one kind, and some of them, in the opinions of the committee, of moderate merit, we think they would be justified in hanging ten of the contributions of A, and only five of those of B. We simply suppose one possible example to show how many circumstances may exist to influence the decision of a committee, and how difficult it is to judge a committee placed under such circumstances until its reasons, as well as its decisions, are before the public.—Ed.]

TESTING SILVER SOLUTIONS.

DEAR SIR,—On reading over the "American Correspondence" in the News of last week, whilst thanking our transatlantic friends for many valuable hints and improvements, I consider that it would be acting unfairly to a large number of photographers, and also most unjustly towards one individual, did I not say a few words about F. W. Hart's volumetric apparatus. It is cheap, simple, and most effectual. It only costs 10s. 6d., to begin with, in a neat mahogany box. I have used mine for six years, and it is as good as ever, and, no matter what is in the bath, you can easily, in a very few minutes, test its strength to a grain. When I say no matter what is in your bath, I mean, of course, any such ingredients as are usually put in in common use. Whether it would be useful in case of lead or mercury I cannot say; but I am certain Mr. Hart can at once supply the information. It might be useful even to know this, for by accident something of the kind might get in. Some years ago I had engaged an assistant from London; in fact, that assistant brought with him, at my desire, from Mr. Hart, the apparatus. It so happened that I was one day from home, and the assistant commenced to tone, as he supposed, with the toning bath; but it chanced to be the sensitizing bath, and, finding that it did not tone, he added gold, and it was some time before he discovered the mistake. Of course, a considerable quantity of the silver was precipitated, but I did not know how much; but the volumetric apparatus soon put all right, and after strengthening the bath—after filtering, of course—I found that it was as good as over. I mention the above to show how simply an accident may occur. The baths were not near each other, nor was it ignorance, but gross carelessness.

I hesitate not to say that no photographer should be without one. Of course an experienced printer can at once tell by the appearance of his prints whether or not his bath is strong enough or too strong, but he may sometimes be deceived. I remember about two years ago I was very busy, and did not attend to my printing bath. I usually work it about 40 grains, and I supposed it to be then about 35 grains. I was getting splendid prints—if anything, too brilliant; but all at once they began to bronzo very much in the shadows. I tested, and found it only 26 grains. I strengthened to 40 grains, and all was right again. I have since used the volumetric apparatus more than ever, and with my negative bath I have had the same comfort in using it.

I have, however, said far more than I intended, but the subject is an important one, and I trust to your well known desire to let everyone say their say.—I am, yours truly,
Newry, Ireland, March 27th, 1871. D. WELCH.

P.S.—I forgot to say that with the apparatus for testing nitrate of silver solutions, at above price, is also included apparatus for testing the quantity of silver in chloride of silver residues, and I can also say that it is most efficient. D. W.

A SIMPLE PRINTING FRAME FOR OPAL GLASS.

SIR.—A simple plan for printing opalotypes without a special frame is as follows:—

Take a strip of paper five-eighths of an inch wide and the length of your plate, and gum a quarter of an inch on the plain side of the negative, and a quarter of an inch on the plain side of the opal glass; it can be then printed in an ordinary frame, and examined without any fear of putting out of place.—Yours truly,
A. HARRISON.

Proceedings of Societies.

AMATEUR PHOTOGRAPHIC ASSOCIATION.

A COUNCIL meeting of this Society was held March 2, at 12, York Place, Portman Square, ARTHUR FARRE, esq., M.D., in the chair.

The minutes of the last meeting having been read and confirmed, the following candidates were elected members:—Miss Bayly-Williams, S. Samuinn, esq., and J. H. Fetherston-II., esq.

The SECRETARY then laid before the meeting the pictures of the current year, and Mr. GLAISHER read the annual report, of which the following is an abstract:—

It has been my agreeable task, every year since the foundation of this Society, to congratulate the council, not only on the excellence, but also on the improvement in the negatives contributed, compared with those of the previous year; but this time, I am sorry to say, the pictures do not quite reach the point of excellence which was attained last year; the number of pictures are about the same, but, in the matter of excellence, we have, if anything, retrograded. Some of our members who have regularly sent in a large number of continental views of the highest excellence have been prevented this year by the war from sending any, and the tremendous events which have happened during the summer and autumn of the past year, riveting the attention of every intelligent observer, do more than account for this slight check in the progress of the Society. Mr. F. G. Lloyd, who exhibits this year for the first time, and Mr. Schwabe, merit high commendation. Capt. Bankart and Major Gresley, although always good, are below their usually high standard of excellence; in Mr. Murray's dry plates we perceive an improvement which should not pass unnoticed. Mr. T. W. Richardson has sent a number of fine plates, but, owing to some defect in the varnish, they have 'spidered,' so as to become useless. From Capt. Allen we have a large series of well-chosen pictures, which, had they been a little more exposed, would have ranked in the highest class. Dr. Sinclair Holden, too, has sent some cleverly-arranged pictures, which, but for injudicious lighting, would also have ranked high.

The number of pictures in class 1 is 63, in class 2 is 84, in class 3 is 197, in class 4 is 257, in class 5 is 203, class 6 comprises the remainder.

Class 1 contains 63 pictures as follows:—

Capt. Bankart, 9; Capt. H. White, 9; F. G. Lloyd, esq., 6; G. Bevington, esq., 3; Rev. T. Hervey, 3; F. P. Barlow, esq., 3; W. Baily, esq., 3; F. Bensley, esq., 2; R. Murray, esq., 2; F. S. Schwabe, esq., 2; B. Green, esq., 2; T. Higgin, esq., 2; Capt. F. M. Allen, 2; W. J. A. Grant, esq., 2; Capt. J. C. A. Lewis, 2; R. C. de la Coudamine, esq., 1; W. L. Bauks, esq., F.S.A., 1; F.

K. Barelay, esq., 1; W. S. Hobson, esq., 1; Rev. H. Holden, D.D. 1; H. Day, esq., M.D., 1; A. R. Hunt, esq., 1; J. W. H. Watling, esq., 1; T. Samuels, esq., 1.

Class 2 contains 84 pictures, as follows:—
 Capt. Bankart, 17; Capt. H. White, 7; F. Beasley, esq., 4; W. S. Hobson, esq., 4; F. G. Lloyd, esq., 4; J. McAndrew, esq., 4; Major Gresley, 3; G. Bevington, esq., 3; T. Brownrigg, esq., 3; J. W. Richardson, esq., 3; Rev. H. Holden, 2; Capt. J. C. A. Lewis, 2; B. Greene, esq., 2; T. Higgin, esq., 2; W. M. Chamby, esq., 2; Col. Sir H. Halford, bart., 2; W. J. A. Grant, esq., 2; W. L. Banks, esq., 1; R. Murray, esq., 1; Rev. J. Freke, 1; H. Day, esq., M.D., 1; W. Baily, esq., 1; F. S. Schwabe, esq., 1; R. C. Walker, esq., 1; A. R. Hunt, esq., 1; Capt. F. M. Allen, 1; J. Caldwell, esq., 1; J. W. H. Watling, esq., 1; S. Samuels, esq., 1.

Class 3 contains 197 pictures, as follows:—
 Capt. H. White, 17; A. R. Hunt, esq., 12; Capt. Bankart, 10; H. Day, esq., M.D., 9; G. Hutchinson, esq., 8; C. Stephens, esq., 7; F. Beasley, esq., 8; W. M. Chamby, esq., 7; F. K. Barclay, esq., 6; Capt. F. M. Allen, 6; J. G. Lloyd, esq., 6; W. S. Hobson, esq., 5; R. Browne, esq., 5; Col. Sir H. Halford, bart., 5; W. J. A. Grant, esq., 5; Lt.-Col. Biggs, 4; Rev. S. Hervey, 4; T. Higgin, esq., 4; J. Caldwell, esq., 4; R. Murray, esq., 3; T. Pryce, esq., 3; J. W. Richardson, esq., 3; Capt. J. C. A. Lewis, 3; J. S. Holden, esq., 3; W. M. Wemyss, esq., 3; Miss Cumby, 3; Major Gresley, 2; R. C. de la Condamine, esq., 2; W. L. Banks, esq., F.S.A., 2; W. H. Pryce, esq., 2; J. S. K. Moss, esq., 2; T. Brownrigg, esq., 2; Rev. H. Holden, D.D., 2; W. S. T. Sinclair, esq., 2; J. H. Craigie, esq., 2; W. Baily, esq., 2; R. C. Walker, esq., 2; T. W. Parker, esq., 2; J. S. Livesey, esq., 2; G. Bevington, esq., 1; Sir J. J. Coghlin, bart., 1; F. E. Curry, esq., 1; L. Ashburner, esq., 1; F. P. Barlow, esq., 1; T. Bags, esq., 1; Capt. Foster, 1; G. Dundas, esq., 1; B. Greene, esq., 1; J. W. H. Watling, esq., 1; J. McAndrew, esq., 1; R. Meade, esq., 1; T. Samuels, esq., 1.

Class 4 contains 237 pictures, as follows:—
 Capt. H. White, 27; A. R. Hunt, esq., 17; R. C. de la Condamine, esq., 12; W. H. Pryce, esq., 11; C. Stephens, esq., 9; W. L. Banks, esq., 8; H. Day, esq., M.D., 8; W. J. A. Grant, esq., 8; R. Murray, esq., 7; J. W. Richardson, esq., 7; Capt. W. Foster, 7; J. Caldwell, esq., 7; F. G. Lloyd, esq., 7; J. McAndrew, esq., 6; F. Beasley, jun., esq., 5; T. Pryce, esq., 5; Capt. F. M. Allen, 5; G. Bevington, esq., 4; F. E. Curry, esq., 4; F. K. Barclay, esq., 4; A. Gray, esq., 4; L. Ashburner, esq., 4; F. P. Barlow, esq., 4; F. J. McLaren, esq., 4; A. Booty, esq., 3; J. S. K. Moss, esq., 3; W. G. Hunter, esq., 3; Rev. H. Holden, D.D., 3; W. Adcock, esq., 3; R. Brown, esq., 3; Miss Cumby, 3; T. Higgin, esq., 3; T. W. Parker, esq., 3; J. W. H. Watling, esq., 3; Rev. T. P. Ravenshaw, 2; Col. Biggs, 2; Capt. Bankart, 2; W. S. Hobson, esq., 2; T. R. Lane, esq., 2; J. S. Holden, esq., 2; B. Greene, esq., 2; Col. Sir H. Halford, bart., 2; G. Hutchinson, esq., 2; J. S. Livesey, esq., 2; Sir J. J. Coghlin, bart., 1; T. Brownrigg, esq., 1; Rev. T. Hervey, 1; J. Guyton, esq., 1; Rev. J. Freke, 1; J. H. Craigie, esq., 1; J. H. Ritchie, esq., 1; W. M. Wemyss, esq., 1; Capt. Arbuckle, 1; R. C. Walker, esq., 1; G. Dundas, esq., 1.

Classes 5 and 6 contain the rest of the pictures.
 The following prizes were awarded by the council:—
 F. G. Lloyd, esq., for Nos. 1, 20, and 28—a silver goblet.
 F. S. Schwabe, esq., for Nos. 18 and 19—a silver goblet.
 Capt. Bankart, for Nos. 175 and 179—a silver goblet.
 W. J. A. Grant, esq., for Nos. 11 and 24—an oil painting in gilt frame, by C. Frisch, esq.
 Rev. T. Hervey, for Nos. 86, 87, and 89—an oil painting, in gilt frame, by C. Frisch, esq.
 T. Higgin, esq., for Nos. 20 and 21—a large album, elegantly bound in morocco.
 W. Baily, esq., for Nos. 21 and 22—an oil painting, in gilt frame, by C. Frisch, esq.
 J. H. Watling, esq., for No. 4—an album, elegantly bound in morocco.
 Capt. H. White, for Nos. 18 and 51—an album, elegantly bound in morocco.
 F. P. Barlow, jun., esq., for Nos. 131 and 138—an album, elegantly bound in morocco.
 G. Bevington, esq., for No. 7a—an album, elegantly bound in morocco.
 W. H. Chamby, esq., for Nos. 2 and 11—an album, elegantly bound in morocco.
 Capt. Lewis, for Nos. 32 and 31—an album, elegantly bound in morocco.
 B. Greene, esq., for Nos. 22 and 28—an album, elegantly bound in morocco.

DRY-PLATE PRIZES.

R. Murray, esq., for Nos. 38 and 41—an oil painting, in gilt frame, by C. Frisch, esq.
 F. Beasley, jun., esq., for Nos. 131 and 132, a large album, elegantly bound in morocco.

Certificates of honourable mention were awarded to the following members:—
 R. C. de la Condamine, esq.; W. L. Banks, esq.; F. K. Barclay, esq.; W. S. Hobson, esq.; Rev. H. Holden; H. Day, esq., M.D.; R. Hunt, esq.; Capt. F. M. Allen; S. Samuels, esq.

A vote of thanks was passed by the meeting to Mr. Glaisher for the time and attention which he had bestowed upon the examination and arrangement of the pictures, and for his very able report.
 A. J. MELNITSIN, Hon. Sec.

Talk in the Studio.

WHERE TO GO WITH THE CAMERA.—A correspondent suggests that at this season of the year, when amateurs are beginning to anticipate pleasant summer tours and photographic reminiscences of them, photographers might aid each other much by forwarding for publication in our pages suggestions and information regarding places they have visited, and which provide inducements for men and cameras. We shall have pleasure in receiving and publishing the hints of any of our correspondents.

THE "PHOTOGRAPHIC TIMES."—Another new photographic journal has just been issued in America. Like the *Photographic Bulletin*, it is avowedly intended as an advertising medium, being issued by the Scovill Manufacturing Company for gratuitous circulation. It is not solely devoted to advertisements, however, but contains much interesting readable matter, which will make it welcome to all photographers. It is also well printed, and in all ways creditably got up. The Scovill Manufacturing Company is not solely devoted to photography, but is the great American head-quarters for most kinds of fancy metallic goods, buttons, plated wares, &c.; but we understand that the photographic department alone is larger than any other single photographic warehouse in the world. When this is remembered, it can be better understood how such an establishment can send out a gratuitous journal for advertising purposes.

COMPENSATION TO A PHOTOGRAPHER.—At the recent Assizes held at Hereford, Mr. Beechervaise, a photographer, residing at Pembroke Dock, South Wales, brought an action against the Great Western Railway Company for injuries received in a collision. Mr. Kenealy, Q.C., and Mr. Cleave were for the plaintiff; Mr. Huddleston, Q.C., Mr. Hill, Q.C., and Mr. J. O. Griffiths were for the defendants. The plaintiff was a third-class passenger by the defendants' line from Malvern to Milford on the 25th of November, 1869. When the train had just left the Hereford station, and had got about 150 yards, it ran into a carriage which had been left on the line. The negligence of the signalman was the cause of the accident. The plaintiff was thrown forward against a passenger sitting opposite to him. When he got to Newport he got the station master to send him to an hotel, and to procure a surgeon for him. On the 27th of November he continued his journey to Pembroke. His eyes had been affected as well as his spine, and he had not been able to earn anything as a photographer since. He had previously earned about £3 a week, and he had been put to expense in seeing doctors. He was severely cross-examined as to his antecedents. The jury found a verdict for the plaintiff—damages, £400.

PHOTOGRAPHY AIDING ART.—We understand that the belt of designs in mosaic by great modern artists which runs round the Albert Hall was indebted to photography for a part of its production. The belt of mosaic work is 6ft. 6in. wide, and more than 800ft. long. The drawings of the artists were first enlarged by photography; the mosaic work was put together at the Kensington Museum by the lady students of the Arts Schools; and the slabs thus produced were fixed in Portland cement to the wall.

PHOTOGRAPHING THE INVISIBLE.—In an article on photographic miracles, *Licht* mentions some curious cases in which objects invisible to the human eye are practically visible to the photographic lens, and make a visible impression on the sensitive tablet. "Letters which have been written with the

colourless solution of the sulphate of quinine on white paper are to the human eye perfectly invisible. When the photographic camera is directed upon a sheet of paper covered with such writing, the negative will show the characters transparent on a dark ground, and a print would show them black on a white ground. We remember a case where, in copying an old map, all the negatives were covered with transparent spots, the origin of which could not be traced to any fault in the photographic process. A story is told of a lady who had her portrait taken; the print showed the face covered with spots, the origin of which could not be traced. A few days later the lady took the small-pox; the invisible spots had impressed themselves upon the plate. Of all these cases, we can only call the first one as wonderful, because we have to be satisfied with the fact, without being able to state the reason why the salt of quinine absorbs the chemical rays. In the second case the spots could be observed by inspecting the map very closely, and this might possibly have been the case also with the face of the lady, supposing that the story is true."

"EUROPEAN STYLE."—A correspondent sends us a cutting from a Boston (U.S.) paper, in which a photographer announces his scale of prices. Although the phraseology is quaint, it is gratifying to note that the prices, described as "medium between extremes," are at a remunerative rate, card portraits in the "European style" being charged about two guineas a dozen. The advertisement runs thus:—"Photographs—Best American style cards, \$3 25 per dozen; European style cards from retouched negatives, \$10 per dozen; cabinet cards, \$3 for three; four card Ferrotypes (large size), \$1. I make the best pictures that are made in Boston, because I make all sittings myself. No boy's work. The prices are medium between extremes."

THE CASE OF MR. EVANS.—Mrs. Evans writes as follows in the *Standard*:—"Sir,—The kindness with which you, in last October, opened your columns to me for an appeal for consideration of the case of Henry Evans, emboldens me again to trouble you. That appeal, supported by facts, attested by the signatures of 300 gentlemen connected with art, failed of its effect at the Home Office. Since that date, the sad effects of imprisonment and anxiety on the health, bodily and mental, of the prisoner, induced me, though indeed reluctantly, to make a fresh appeal, this time *ad misericordiam*, and I ask you, sir, to place before Mr. Evans's numerous friends and the public this simple record of the tender mercies of the Home Office. I visited Mr. Evans on March 1, 2, 3, and 18, and found him in a state of fearful depression, unable to converse, and, indeed, scarcely capable of sustained recognition; he had altogether lost the sight of one of his eyes, and was almost unable to walk. Mr. Evans's former medical attendant also visited him, and his opinion is given as follows:—(Copy No. 1.) '40, Endell Street, W.C. March 3. I hereby certify that I have this day visited Henry Evans, a prisoner in Coldbath Square, and that he is suffering from extreme debility, calculated to bring on softening of the brain, &c. He has also lost the use of one of his eyes, and, in other respects, is suffering from the effects of his imprisonment. Having professionally attended him for several years past, I am of opinion that a further detention will have the most disastrous consequences to his general health, and therefore strongly recommend his case to consideration.—WILLIAM FAULKNER, M.R.C.S., Registrar, St. Giles, &c.' On two different occasions two old friends also visited Mr. Evans, and their own words best convey their impressions:—(Copy No. 2.) 'On the 2nd of March 1871, I visited Henry Evans in the infirmary of Coldbath-Fields Prison, and, having known him seventeen years, I was grieved to find the great change the year's incarceration has made in him. He was unable to sustain any connected conversation, almost an imbecile, hardly able to walk, so that I could with difficulty recognise him.—RICHARD REEVES. March 20.' (Copy No. 3.) 'I saw Henry Evans at Coldbath Prison on the 18th inst., and was shocked to find a man whom I had known for twenty-three years as an intellectual being so prostrated mentally and bodily. In answer to questions put to him, he replied either in monosyllables, or more frequently gave such strange answers, that I cannot think he is in his right mind.—BRUCE MORRINE. March 20, 1871.' In deep distress, I forwarded a petition to the Home Office, stating the present condition of Mr. Evans, as shown by the medical certificate. The answer came in the stereotyped form:—'Mr. Secretary Bruce having carefully considered your application, I am to express to you his regret that there is not sufficient ground on which to grant your petition.' Thus, it seems

but too probable that Mr. Evans is only to exchange Coldbath Fields for a lunatic asylum or the grave.—I am, sir, your obedient servant, MATILDA EVANS, 14, Castle Street, and 1A, Endell Street, Long Acre, W.C., March 22."

To Correspondents.

TO AGENTS AND ADVERTISERS.—Next Friday being Good Friday, the *PHOTOGRAPHIC NEWS* will be published on Thursday, April 6th. Advertisers should send in their Announcements not later than Wednesday, the 5th.

SOUTH DEVON.—The addition of gum to the coffee solution increases the sensitiveness of the plate. 2. It is probable that it will somewhat decrease its keeping qualities; but of that we cannot speak with practical certainty. 3. So much depends on individual necessities and proclivities, it is impossible to advise you which to adopt. If we contemplated devoting ourselves to either, we should try both first.

J. MALEB.—You must copy a glass positive in the same way in which you would copy any other picture, but with certain precautions. The positive must be placed so as to avoid false reflections from its polished surface. In fact, it should be treated, in copying, much in the same manner as a Daguerreotype. Read Mr. Hughes's article on copying Daguerreotypes in our last YEAR-BOOK. Or if the positive be a fully exposed one, obtain a transparency on wet collodion in the camera from it, and from the transparency produce the required negative. 2. The object of a cone is to lengthen the camera, and enable it to be extended sufficiently for copying without reducing the size of the copy. 2. American cloth may be used for the body of a bellows camera, but it is not so good as leather, being more liable to crack in the corners. 4. Collodio-albumen plates are developed first with a solution of pyrogallie acid without any addition, and when the image is out, with ordinary pyro solution containing acetic or citric acid and a little silver solution.

A. B.—The building which intercepts your light should decidedly be white-washed, it will then give you reflected light.

CALEBERG.—Details of M. de Constant's mode of developing will be found in the articles of that gentleman, which we are now publishing.

EX UNO DISCE OMNES.—A transfer albuminized paper for permitting the albuminized film to be transferred after printing, used to be prepared in Berlin; but we do not know whether any one now keeps it in this country. Try Mr. Hughes's warehouse, or that of Mr. Solomon. The latter gentleman keeps collodio-chloride transfer-paper for a similar purpose.

J. R. TANNER (Australia).—It was a large continental portrait lens, but we do not know the maker nor the cost. 2. We do not usually undertake such duties, but we will, in your case, make a selection of prints for you when you remit, as your remote isolation affords so little opportunity of knowing what progress is made in the art. Your specimens have many good qualities, being soft, delicate, and harmonious; but they lack force a little, the light being too uniform and diffused. A little more intense light from one side, and a little less front light, will give more relief and brilliancy to the pictures.

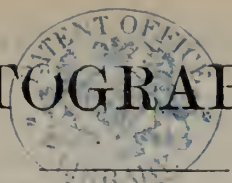
A. BELL.—We think that the modification giving you north light in the roof is decidedly an improvement. 2. The south light through tracing-linen will often be useful. 3. In dull weather you may use the direct south light. 4. For children, both lights may be useful.

JOHN STONE.—It is difficult to state what is the best box for drying plates. Most dry-plate workers improvise something for themselves. We have seen an old chest made light-tight, and heated by means of one or two hot bricks, made available. We use, ourselves, a deal box with a funnel-shaped tube running up the centre, at the bottom of which, outside the chest, we can either place a gas jet or a spirit-lamp. Two or three conditions should always be observed in making a drying-box: it should be light-tight, but not air-tight, as damp air is required to escape. It is well, therefore, to have a double top, each portion being perforated, but the perforations not occurring in the same place. Glass rods, or small glass tumblers, are better to rest the plate on than blotting-paper.

JAMES SUGG.—The numbers you require are procurable, and can be sent at once on receipt of the stamps.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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ORGANIC ADDITIONS TO THE IRON DEVELOPER.

From the general tendency of the bulk of the evidence which reaches us, we have noticed a prevalent recurrence amongst photographers to the use of the simple iron developer, and the abandonment of the various forms of the gelatinic addition which were so extensively used for a short time after they were first proposed by Mr. Carey Lea. In the course of some recent experiments, we took occasion to re-test our former conclusions on the subject, and in each instance found former experience verified. Where great intensity was desirable, as in copying subjects in black and white, we found that the addition of a trace of glycocine to the iron developer was most valuable, but it unquestionably prolonged the exposure. Molasses retarded most, and sugar or honey least. We do not intend here to enter upon a detailed statements of these experiments, but to refer to some recently made by Dr. Stolze, and described in *Licht*, of which he is the editor; and in mentioning the details and results of his experiments, we may state that in almost every instance they are confirmed by our own experiences. Believing that many of the opinions published on the subject were not the result of systematic and comparative experiment, he resolved to make a series of experiments with six developers of different composition. In all the experiments an ordinary iron developer served as the normal solution, and a certain quantity of different kinds of organic matter was added to each.

The proportion of the organic matter was equal to one-sixth part of the quantity of sulphate of iron.

The developers were—

1. The ordinary iron developer.
2. The ordinary iron developer with loaf-sugar added.
3. The ordinary iron developer with milk-sugar added.
4. The ordinary iron developer with caramel added.
5. The ordinary iron developer with gelatine added.
6. The ordinary iron developer with glycocine added.

In all the experiments, in order to make the different tests under exactly similar circumstances, a large plate was exposed in the camera, and cut with a diamond in six parts; each part was developed with one of the developers above described.

The result was, that the solution with loaf-sugar permitted the shortest exposure, the ordinary developer came next, then followed the developer with gelatine, which gave a very vigorous picture. The glycocine developer gave only traces of a picture, and those with caramel and milk-sugar made hardly any impression on the plate. The latter would only with a very long exposure produce a similar result to developers Nos. 1, 2, and 5.

The experiments were subsequently repeated. The pattern of a carpet was photographed on a large piece of

plate-glass. The plate was divided in six zones. Each zone was developed with a separate developer. The developers had not been freshly prepared, but were two weeks old. The temperature of all of them was exactly alike. The result was surprising, for it showed that the organic matter in the developer becomes changed in a short time, and exceptionally in such a manner that the freshly prepared developers are more effective than the old ones.

The result was the following:—

- No. 1. Develops most rapidly, but has a tendency to fog.
- No. 2. Develops a little more slowly, but very brilliant; the shadows are perfectly clear.
- No. 3. Develops still stronger; brilliant, and free from veil and fog.
- No. 4. A little slower than No. 3; weak, and decided fog.
- No. 5. Very slow, weak, and very foggy.
6. Still slower, and completely fogged.

While with the freshly prepared developer No. 2 worked most rapidly, and the others followed in the following order—1, 5, 6, 4, 3—it will be noticed that the older developers, so far as rapidity of work was concerned, stood in the following numerical order: 1, 2, 3, 4, 5, 6; but No. 2 was decidedly preferable to No. 1, on account of the great brilliancy and the clearness of the shadows. No. 5, which, when freshly prepared, worked clear, brilliant, and vigorous, became, after having been kept for two weeks, utterly useless. No. 3, which, when fresh, gave the worst results, follows, when old, directly after 1 and 2.

The conclusion of Dr. Stolze is similar to that we have often expressed, that the addition of loaf-sugar is an advantage to the developer, but that, except for intensifying purposes, most of the organic additions which have been proposed are undesirable.

AMERICAN CORRESPONDENCE.

HOW TO VIEW STEREOGRAPHS WITHOUT A STEREOSCOPE—A PATENT FOR THE USE OF HYPOSULPHITE OF SODA IN PHOTOGRAPHY.

How to View Stereographs without a Stereoscope.—To say the least, it is very convenient to be able to secure the solid or stereoscopic relief without the aid of the "scope." Those who are extensively engaged in the manufacture of stereographs, and others, will appreciate this. Pictures often get separated, and are mismounted in spite of care taken to prevent it; whereas, if the mounter possessed the above-mentioned faculty, no mismounting would occur. A "scope" is not always at hand; and, if it were, time would be lost in adjusting it, &c.

I will endeavour, in as few words as possible, to explain

bow any one may acquire the habit. It will be of great service to all who have anything to do with selling, mounting, or enjoying stereoscopic pictures. There are several ways of accomplishing the thing, but the simplest and easiest is the following, which has been communicated to me by Mr. C. S. Zimmerman, an accomplished landscape photographer in St. Paul, Minnesota:—

"Hold a stereograph before you, as near as possible level, about the height of the eye, and (say) fifteen or twenty inches distant; now glance immediately over the centre of the card at an object beyond—on the wall, for instance. You will see not only the object on the wall, but you will perceive that the 'right' and 'left' of the stereo have slid together, and partially overlap; then slowly lower the eyes to the centre of the card, and the two pictures will entirely overlap; you see, instead of two pictures, three, the centre one of which presents the stereoscopic relief. By placing a dividing card against, and at right angles to, the stereo, only one picture will be seen, and that having good relief. After a little practice, you will be able to secure the effect as readily as with a 'scope,' and with much less fatigue to the eyes."

When once acquired, this little accomplishment will be found of immense value.

Patent for the Use of Hyposulphite of Soda in Photography.—It has often been jocularly remarked, in this country of ridiculous patent claims in photography, that the next demand made upon photographers would be for royalty for the use of "hypo." Sure enough it comes sooner than we expected. A couple of enterprising Rip Van Winkles, down in "My Maryland," have obtained a patent for the use of equal parts of hypo and bicarb. soda as a "detergent." They see a "big thing" for them among the photographers, and have made the attack. It is my notion, however, that they will be repulsed.—Yours truly,
Philadelphia. EDWARD L. WILSON.

PRINTING ON IMPERMEABLE PAPER.

BY WILLIAM BLAIR.

THE recent remarks by Mr. Stokes and others on the desirability of obtaining a paper for photographic purposes that will be impervious to moisture may, perhaps, be a sufficient apology for me to notice one or two things that have come under my own observation in attempting to use this sort of paper for silver printing. Being desirous to turn india-rubber paper to some account for printing either negatives or positives on its surface by means of chlorized albumen, and afterwards transferring these to another support, I met with failure and disappointment. I coated the rubber surface with salted albumen, and some of it got a double coating; then sensitized by floating on a 40-grain bath in the usual way, and exposed in the pressure-frame, both under negatives and positives. My first papers darkened in patches, leaving whitish blanks of considerable size, and many small blanks. I blamed the cold weather, and too short flotation, &c., and tried again, heating the bath, and floating for half an hour and more; but still, on exposure, the surface darkened irregularly, and with a marked degree of granularity, although the large blank patches seen in the first papers had now disappeared.

I tried common paper prepared at the same time with the same albumen, and found no such defects. I was thus induced to think that the india-rubber, or traces of its solvent, still in the paper, must have induced an electric repelling action in the silver bath, preventing the regular formation of the chloride of silver in the albumen. At the same time it appeared possible that the impermeability of the paper may have prevented the bath from displacing the air in the albumen, and so opposed the admission of the silver in sufficient quantity when the usual mode of flotation was adopted; and that, in order to get such paper sensitized

properly, it should either be immersed in the bath face upwards, or a brush used to spread the sensitizing fluid over its surface. I tried the latter method, and found that I could succeed in this way much better than by floating.

Having now got a tolerable expression on this paper, I tried to lift it from the paper by coating it with gelatine, and, when dry, using benzole to effect the separation; but I did not succeed satisfactorily. In the first place, there seemed to be a difficulty in fixing the print in the hypo; some prints that I thought sufficiently fixed at the time, and, indeed, had to be withdrawn in consequence of being over-reduced, afterwards darkened in patches on continued exposure to light; and I thus found that the pictorial impression had not confined itself to the albumen, but had affected the india-rubber, and entered it to an extent that the hypo had failed to reach. I had, moreover, a difficulty in separating the albumen print from the paper, and in so far as I did succeed, it was a mere phantom impression that came away with the gelatine, the body of the impression remaining on the paper or on the rubber.

I went through a similar process with waxed paper. I found no difficulty in sensitizing the albuminized surface of waxed paper by flotation, showing that the wax is more absorbent than india-rubber, and has not the same tendency to disturb the chemical affinity of the sensitive salts. Neither did there seem to be any difficulty in fixing the print. But again, on attempting to remove the print from the waxed paper by means of gelatine, I found that only a mere phantom print came away with the gelatine, and that the impression left on or in the waxed paper was by far the denser of the two.

These simple trials seem to support the remarks that have been made, that for ordinary silver printing it is very difficult to get a substance that will entirely exclude the admission into it of the silver salts; and if such a substance be got, the albumen would be required to be laid on in considerable thickness, in order to get a forcible picture. Probably waxed glass might be used, from which the picture could be afterwards separated; but if waxed or rubber paper be used, I think it will be found necessary to give it a preliminary coating of collodion. Alumed gelatine would, doubtless, make a very good surface for albuminizing; but the print in that case could not be separated from the paper. The alumed gelatine would not exclude the silver, and would hold the hyposulphate as firmly as ordinary paper.

If I were to venture a suggestion in these circumstances, it would be merely to repeat what has been suggested before, that if anything like permanent silver printing is desired, albumen should be abandoned, and collodion substituted. Indeed, considering the ease with which collodio-chloride prints may be produced, and the facilities that exist for lifting them from the support on which they are prepared to another substance free from hypo or other contamination, and the beauty of the result, it appears to me surprising that this method of printing has not long ere now become much more common than it is, especially for small pictures. If I were to return to silver printing at all, this is the process which I would adopt. The extra expense of the collodion should hardly stand in the way, considering the rapidity with which the prints might be finished; and even should a small additional charge be necessary for such prints, it is nevertheless likely that they would commend themselves to the general public if good specimens were shown.

I lately saw some prints of this description produced by a firm in this town, superior in delicacy and tone to the generality of silver prints, and, no doubt, superior in permanency. These were produced by ordinary negative collodion, and transferred to albuminized paper; but I should imagine that alumed gelatine would be a safer coating for the transfer paper than albumen. It would also be more suitable for the application of any protecting varnish.

Bridgend, Perth, March 31, 1871.

REDUCTION OF NITRATE OF SILVER BY CHARCOAL.

BY C. E. CHANDLER.*

WHEN solid nitrate of silver, either in crystals or sticks, is placed upon glowing charcoal, deflagration takes place, the silver being left in the metallic state, while binoxide of nitrogen and carbonic acid are evolved. The nitrate is fused by the heat of the reaction, and sinks into the pores of the charcoal, and as each particle of charcoal is replaced by metallic silver, the structure of the original wood is preserved. With proper management, pieces of silver of any desired size can be prepared, showing the exact structure of the wood. A crystal of nitrate is placed on the end of a piece of charcoal, and the blowpipe flame is directed upon the coal near the crystal to start the reaction. When deflagration begins, crystal after crystal may be added. The nitrate fuses, passes down through the porous metal already reduced until it reaches the glowing coal, where it is reduced. I have prepared in this manner lumps of silver weighing an ounce or more, which exhibit most beautifully the rings of the wood.

THE PREPARATION OF COLLODIO-CHLORIDE OF SILVER.

BY JULIUS KRUGER.†

I HAVE compared the many and various formulæ which have been given for the preparation of this description of collodion, and am convinced that the cause why this material so very suitable for many purposes, is employed to so limited a degree, is simply because one is generally brought to a standstill at the first unsuccessful result obtained. For this reason, a process which is certainly deserving of much better treatment has frequently been abandoned, and, on this account, I have resolved to come forward once more to point out the manner of proceeding which has ensured me the best results.

I.—THE NORMAL COLLODION.

If, under ordinary circumstances, particular attention is necessary in the selection of a proper description of pyroxyline, precautions are doubly necessary when the gun-cotton is required for the preparation of collodion for the purpose under discussion. It is not enough that the gun-cotton should be capable of entire dissolution, but it is particularly necessary that the film, when removed from the glass, should be of an exceedingly uniform character, without any unevenness, and of peculiar elasticity. It must not possess the hardness of parchment, but should appear more like a piece of human skin.

As I have been able to prove, by recent experimental results, the chemical nature of the iodine and bromine salts are of very notable influence upon the consistence of the collodion film, and, for this reason, it is important to pay particular attention to them.

One great evil of normal collodion lies in its disposition to contract and to split away from any surface to which it may have been transferred—as, for instance, paper, metal, porcelain, and the like—when subjected to slight friction, on which account transferred positives are, as a rule, soon destroyed or injured. All risk of damage of this kind is, however, avoided by the institution of certain modifications.

Castor oil, which has been recommended for the purpose, does not possess the necessary advantages, but, on the contrary, gives rise to further defects. It does not dry, and, therefore, imparts to the collodion a certain degree of toughness; but, from the fact that the oil hermetically locks up the ether and alcohol atoms, the collodion remains for a long time gelatinous, and never yields a brilliant film. On close inspection, the film is invariably opalescent, and occasionally there will be found iridescent markings upon its surface. Moreover, a durable elasticity is not imparted to

the collodion by the presence of the oil, and a pure film of normal collodion will be found much more permanent than one containing castor oil. For these reasons, therefore, the addition of castor oil to the collodion cannot be recommended. It is true, the quantity of oil added may be reduced to a minimum, and the defects thus, to a certain degree, obviated; but I have found that when the collodion contains but two to four drops of oil per pound, the result is quite inappreciable.

On this account, I made search for another material which should possess the requisite advantages without being saddled with the defects inherent to castor oil. The most promising appeared to me to be glycerine; but, although this was capable of imparting pliability to the collodion, it disappeared altogether from the film as soon as this was placed in water or any solution of an aqueous character. It is, therefore, a deception to think that glycerine renders collodion more tough and durable. Irrespective of its easy solubility, it has, in fact, no other influence upon the dry collodion film beyond that of rendering the same more porous, and, for this reason, might be of benefit in dry processes. Pure glycerine is, therefore, as we see, less suitable to our purpose than castor oil.

There remained nothing but to discover a compound which should unite in itself the two qualities of elasticity and durability, together with a certain capacity to resist external influences from friction, &c. An addition of some of the colourless gum resins struck me as suitable, and indeed, as far as my experience has gone, I am in a position to recommend this modification of the collodion. The gum resin must never be employed alone, but always in conjunction with glycerine or castor oil, for every description of resin renders the dry film hard and brittle, so that removal from the glass becomes almost impossible; and this latter point is one of great importance, for upon it depends almost entirely the success of the whole process.

Further experiments were made with linseed oil, linseed oil varnish, copai-balsam, and Venetian turpentine. All of these materials have suitable qualifications, and are well fitted for the purpose, but my researches have not yet sufficiently progressed to enable me to point out the one best adapted for use in this connection. At any rate, I would recommend their trial by experienced photographers.

I will now proceed to describe the manner of preparing the collodion.

II.—COLLODION WITH RESIN, GLYCERINE, AND CASTOR OIL.

To manufacture one pound of normal collodion take:—

Alcohol ..	$\frac{1}{2}$ pound or	180 grammes
Ether ...	$\frac{1}{2}$ " or	180 "
Pyroxyline	85 to 90 grains or	5.03 to 5.5 "

Add to this, of the resin compound, 12 to 16 grains, or from 72 to 100 centigrammes, or, in lieu, a like proportion of linseed oil, turpentine, &c.

The resin compound is prepared separately by mixing together the following:—

Castor oil	1 part
Glycerine	4 parts
Gum sandarac dissolved in absolute alcohol	2 "

The proportions for the preparation of the last-named are, 1 part of gum to 3 parts of alcohol.

Before I add to this collodion the chlorides or nitrate of silver, I test it in regard to its cohesive qualities, its consistence, and its capacity for leaving the glass, taking care to remember that the prepared collodio-chloride is apt to lose some of these qualities in a certain degree. By altering in one way or another the proportion of the components, such as the normal collodion, pyroxyline, and the alcohol and resin mixture, it is easy to secure the required qualities, it being often found desirable to add to the prepared collodion a few drops of linseed oil.

The collodion, after standing for some eight days in a moderately warm locality, is carefully decanted and weighed. If the pyroxyline was of good quality, but very little residue

* American Chemist.

† Licht.

will be found, which can either be thrown away, or mixed with a little alcohol-ether mixture and filtered again, the same being added to the previously decanted collodion.

For every pound of normal collodion should now be added:—

Chloride of calcium 3.25 grammes
Chloride of magnesium ... 1.25 ..

the above being in the first place ground to a fine powder, and dissolved in an ounce of alcohol.

When introduced into the collodion the latter should remain unchanged; it is well after considerable agitation to allow the mixture to stand for twenty-four hours.

Meanwhile 200 grains or 11.25 grammes of nitrate of silver are finely powdered, and 10 drops of pure nitric acid added to the same; gradually half an ounce of dilute alcohol (half water and half alcohol) is also added.

The mortar, if necessary, is warmed in order to facilitate the solution of the nitrate of silver, and the latter is then added to the collodion. Thorough agitation of the mixture is now imperatively necessary, but the operation, as also that of mixing in the silver, should be conducted in obscurity. The shaking of the liquid may be carried on for an hour, and at the end of this time 30 to 40 drops of a saturated solution of pure citric acid are added.

In this manner is the collodio-chloride prepared, and as regards the best method of employing it I will say a few words on a future occasion.

The quantity of nitrate of silver specified for addition to the collodion is in no way an arbitrary one, but is calculated upon the equivalent numbers of each of the bodies employed. Eighty parts by weight of the chloride salts require 155.65 parts by weight of nitrate of silver in order to be completely decomposed. But as a notable excess of free nitrate of silver is required in the mixture in order to ensure sufficient vigour and depth in the pictures, it is necessary that a further quantity of 44.35 grains be added.

To avoid the crystallizing out of this excess of nitrate of silver in the prepared collodion, it is necessary that the proportion of citric acid which has hitherto been recommended for use should be considerably diminished, which may be safely done in the presence of free nitric acid.

ON SOME NEW DERIVATIVES OF ALBUMEN.

BY O. LOEW.*

In regard to those derivatives or products of substitution of albumen, which stand nearly related to albumen, our knowledge is as yet very imperfect, and the principal radical complexes of the proximate constituents of albumen are not known at all. The difficulty of obtaining some insight into the composition of albumen is chiefly due to the facility with which albumen is split up, by different chemical agencies, into many simpler substances, as tyrosine, leucine, benzoic and caproic acids, or even uncrystallizable so-called extractive matters, of which it is difficult to obtain an exact chemical formula.

Some time ago I endeavoured to obtain products of substitution of albumen, and at last succeeded in forming several derivatives, among them a nitro-product hitherto unknown. As regards the action of fuming nitric acid upon albumen, we only know that the latter is oxidized to an acid, called by Mulder xanthoproteic acid, for which, however, no exact formula has been given. In my experiments, a mixture of one volume of fuming nitric and three volumes concentrated sulphuric acid were employed. If less of the latter was used, an oxidation, in addition to the substitution, would occur.

Thirty grms. of finely-powdered albumen were gradually added to a cool mixture of 90 c.c. fuming nitric acid and 270 c.c. concentrated sulphuric acid, shaking well after each addition, and taking care that the mixture remained cool. The albumen was slowly dissolved to a clear solution without

* Read before the Lyceum of Natural History of the City of New York.

any disengagement of vitrous acid fumes, and the solution, contained in a vessel surrounded by cold water, was, after a lapse of ten hours, poured into about fifteen times its volume of water. The voluminous flocculent precipitate resulting was immediately filtered, washed, lastly, with hot water, and dried with care. The quantity obtained amounted to nearly two-thirds of the albumen employed; another part of the albumen is converted into a soluble product, which, after neutralization of the acid filtrate, gives a precipitate with tannin.

The powder thus obtained is of a light-yellow colour and a slightly bitter taste. It is insoluble in water, dilute acids, and alcohol, but is soluble in dilute alkalies, forming a reddish solution. On heating these alkaline solutions, a decomposition begins, and new products are formed, which I have not thus far examined. On heating the powder in a dry test-tube, it behaves like the original albumen, empyreumatic vapours being developed, accompanied by cyanogen, and carbon remaining behind.

On analysis, this new derivative yielded the following figures:—

I. 0.680 grms. gave 0.144 barium sulphate (determined by Kolbe's method) = 2.92 per cent. sulphur.

II. 0.912 grms. gave 0.200 barium sulphate = 3.03 per cent. sulphur.

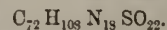
1. 0.269 grms. gave 2.40 c.c. nitrogen at 741.5 m.m. barometer, and 9° C. = 17.20 per cent. nitrogen.

II. 0.268 grms. gave 2.37 c.c. nitrogen at 742 m.m. barometer, and 9° C. = 17.00 per cent. nitrogen.

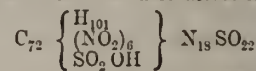
I. 0.366 grms. gave 0.184 grms. water and 0.594 grms. carbonic acid = 5.57 per cent. hydrogen and 44.26 per cent. carbon.

II. 0.380 grms. gave 0.184 grms. water and 0.614 grms. carbonic acid = 5.58 per cent. hydrogen and 44.01 per cent. carbon.

These figures correspond to an albumen in which 6 atoms of hydrogen are replaced by 6 atoms of the nitro-group, and 1 atom of hydrogen by 1 atom of the sulph-oxyl group. The generally adopted formula of albumen is:—



(Lieberkuhn has in his formula four more atoms of hydrogen.) The formula of the new derivatives is therefore:—



	Theory.	Experiment.	
		I.	II.
C ₇₂	864 ...	44.13 ...	44.01
H ₁₀₂	102 ...	5.21 ...	5.57 ...
S ₂	64 ...	3.27 ...	2.92 ...
N ₂₄	336 ...	17.16 ...	17.20 ...

The rational name of this compound is, therefore, hexanitro-albumen-sulphonic acid. We know two different classes of nitro-bodies; the one class yields, by treatment with reducing agents, the original substance, as nitro-cellulose and nitro-glycerine; the other class yields amidated products, as in the case of nitro-benzoic acid. The cause of this difference in behaviour is, that in the first case the hydrogen of an hydroxyl is replaced by the nitro-group, while in the second case the hydrogen in combination with the carbon is replaced by the nitro-group. To decide to which class the hexanitro-albumen-sulphonic acid belongs, it was treated with sulphide or ammonium, and a new amorphous body thus obtained, which bears no resemblance to albumen nor to albumen-sulphonic acid, which latter I shall describe below. This new body seems to combine with acids, as well as with bases, but does not appear to form any crystalline compounds. I intend to further study this body; it is possible that we have here the corresponding hexamido-albumen-sulphonic acid.

Another Derivative of Albumen with Concentrated Sulphuric Acid.—It is well known that albumen swells up considerably in concentrated sulphuric acid, but no investigation has been made as to what this product really is. I mixed in a mortar 1 part of albumen gradually with 10-15

parts of concentrated sulphuric acid, and allowed it to stand in the cold for one day; the mass was then treated with cold water till the free SO_4H_2 was all removed; the flocculent mass was placed in a dilute potassa solution (1 to 6-8), stirred sometimes, allowed to stand in the cold for one day, filtered, precipitated by acetic acid, the precipitate washed and dried. Analysis showed that it is albumen-sulphonic acid. It contains twice as much sulphur as the albumen itself, is insoluble in water, alcohol, and dilute acids, but soluble in alkalis, wherein it swells up considerably before the real solution slowly takes place. On boiling these solutions, decomposition takes place. I shall make further investigations on this subject.

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COFFEE AND OTHER DRY-PLATE PROCESSES,
WITH PRACTICAL DETAILS
OF A NEW DEVELOPER GIVING EASE AND CERTAINTY.
BY A. DE CONSTANT.*

§ VI. DESICCATION OF THE PLATES.

This operation may be considered as one of the most important manipulations connected with the preparation of dry plates. It is, I believe, the general custom to dry them in a closed box or chest, placed upon the floor in a corner of the laboratory, a vessel of hot water or some such apparatus being enclosed therein to accelerate the drying of the plates. In a mode of proceeding like this, there are several dangers to be feared which I will here enumerate:—

1. If one does not take care to change the filter-paper upon which the plates stand, at least twice, there is formed at the foot of them a pool of liquid which, more or less befouled by contact with the paper, is subsequently attracted up the sides of the plates as soon as these have dried, and produces stains and spots of various kinds, ordinarily of an elliptical shape, which, on the application of the development, are at once made apparent, and destroy some portion of the cliché.

2. The source of artificial heat introduced into a box of small dimensions, being too near the surface of the plates, precipitates the desiccation thereof in an unequal manner, acting more vigorously upon the lower portion than upon the upper.

3. The box being closed, the moisture escaping from the glass remains suspended in the enclosed atmosphere, and thus seriously retards the desiccation of the plates. To remedy this defect, M. Carey Lea, always an ingenious practician, proposed the introduction of a vessel of sulphuric acid (which largely absorbs moisture); but this makes matters more complicated, for the liquid is a disagreeable one to manipulate.

4. A last inconvenience of the closed box lies in the fact that, being placed upon the floor, it contains always a temperature of a sensibly different nature to that of the room, so that when a plate is taken out to be placed in the frame, the change of atmosphere produces upon the surface of the glass a slight vapour scarcely visible to the eye, but which is not the less persistent or dangerous. For if put into the frame in this condition, the vapour will materially interfere with the virtues of the plate, and cause partial, if not complete, insensitiveness, a circumstance one would scarcely attribute to so insignificant a cause.

To remedy these inconveniences, which a long experience has taught me to respect, I have adopted an arrangement which may be described as follows:—

The plate, coated and finished, is stood on end upon filter paper to drain, in the first instance, and then removed to the drying closet, where it rests upon a wood support cut almost to a knife edge. The plate is in a sloping position, with its back resting against a wooden peg or support, of which several are fitted to the back of the closet, four or five inches apart. In this way the moisture which runs towards the bottom of the plate is not arrested in any way,

but flows to the lower corner, where it is absorbed by a small band of filter paper placed there for the purpose. When the whole number of plates are finished, the draining papers are carefully removed, and the closet closed, a small shutter in the door being, at the same time, opened. This opening is covered with yellow calico to prevent all ingress of light, so that the moisture can readily escape, and a good equilibrium is maintained between the atmosphere in the closet and that in the dark room. If I have the room warmed, as is usually the case, a slight current of warm air is in this way established in the closet, and the plates dry gently and uniformly without any serious change of atmosphere or the possibility of injury when transferred to the printing-frame.

It should always be borne in mind never to place a plate in the frame without previously examining it in a horizontal position. If the surface is very brilliant (like that of glass), and exhibits, by transparence, no trace of fog or stain, the plate may be put into the dark slide with implicit confidence. If at all troubled with a cloudy aspect, it is best to warm the plate before a hot iron surface until it reassumes its brilliant aspect.

In drying, the plates generally become of a very transparent nature, which is, indeed, one of the inconveniences of the dry process, reflections caused by the thickness of the glass being often caused on the exposure of the plate. To remedy this defect, it has been recommended to coat the back of the glass with a dark tint of some kind; but, apart from the inconvenience of this proceeding, the removal of the pigment is also a matter of some trouble, and for this reason I employ a piece of black matt paper, placed accurately at the back of the cliché. The brown tint imparted by the coffee serves also to mitigate the evil when proceeding, as in the tinting by a turnsol, as proposed by Mr. Lea.

§ VII.—EXPOSURE.

As I have already stated, dry plates prepared by the coffee-gum method require an exposure of but three times that necessary for the wet process, with the same lens and same light. In operating, it is desirable to understand thoroughly the capabilities of the lens with which one works, as likewise the effect of the diaphragms, and also to make a trial of a wet plate every time that a change is made in the collodion or the silver bath. As a rule, very short exposures should be avoided, for one is much more certain of a fine result by giving full exposure, because the development is thus facilitated, and it is always better to moderate rather than force the action of the developing solution.

Although it may appear somewhat paradoxical, I may state that a long exposure is more necessary during bright sunshine, from the presence of great contrasts, arising from the intensity of the shadows. I believe, indeed, that it is impossible to secure a fine landscape negative endowed with harmony and full effect of distance during full sunshine, although, from the fact of many of my brethren choosing very bright days for their work, it would appear that there are not many of my way of thinking.

§ VIII.—THE DEVELOPMENT.

As a general rule, I believe it to be the best plan to develop one's plate immediately. The operator is generally anxious to know at once the nature of his result, and it is very seldom indeed, even on a distant tour, that arrangements cannot be made to proceed with the development. At the same time, it may always happen that the postponement of this operation is indispensable, and it is therefore always well to employ a process which allows of such a proceeding. With the coffee-gum method I have made but few experiments on this point, but it may be safely taken for granted that no inconvenience will be experienced when developing twenty-four hours after exposure.

In employing the alkaline development I do not use bromide of potassium, and I moreover alter the order of application with the ammoniacal solution, commencing my operations with that agent *à l'one*. After all that has been

* Continued from p. 153.

written on this matter, my mode of proceeding may appear an extraordinary one, but I have a very good excuse for it, in the fact that my results are always excellent, and, therefore, I follow no other plan. I will describe in a few words my method of proceeding.

The exposed plate having been covered with rain-water, or immersed for three or four minutes in a bath of that liquid, is drained and placed in a horizontal position; over it is then poured sufficient distilled water to cover the plate to which six to ten drops of a saturated solution of carbonate of ammonia have been added. This liquid, which is kept upon the plate and moved to and fro over the surface, restores to the dry film its original permeability, and commences, indeed, the action of development, for, if sufficiently exposed, the sky and high lights begin forthwith to appear. If the exposure has been too short, the effect is hardly, if at all, visible; but the operator need not despair on this account, for with a little time and patience it is possible, with the aid of the agents I shall indicate, to triumph over the most obstinate development. In any case, as soon as the aqueous solution of ammonia ceases to act upon the film, it is poured back into the developing glass, and a few drops (from one to three, according to the progress of development) of pyrogallie acid dissolved in alcohol are added; this pyrogallie solution is prepared by simply dissolving six grammes of pyrogallie acid in one ounce of alcohol. The mixture is not poured upon the plate from one spot, but applied over the whole of the surface at once, as the effect is frequently so rapid that spots or stains are otherwise produced.

The image now fully appears, but it is seen only by reflected light, and is scarcely visible when the plate is viewed as a transparency. Nevertheless, the action of the solution is continued until every possible detail in the shadows has been brought out. You can scarcely develop too much, for it is these details which give rise to the half-tones, and produce that harmony and softness which impart so much charm to the picture. I have also been successful in elaborating a means of completing, or even forcing, the development if necessary, in the case of under-exposure; this method, which is a new one, consists in using a solution of iron after the application of the alkaline pyrogallie developer. Many experiments were necessary before I was able to fix upon the elements and proportions of the same for this novel developing agent, and at last I have determined upon the following formula:—

Water	100 cub. cents.
Ammonia-sulphate of iron ...	3 grammes
Sulphate of copper	3 „
Citric acid	3 „

This compound, which may be preserved pure and in good condition for a very considerable period, is poured upon the well washed plate, and sometimes produces by itself sufficient action. Generally, however, it is necessary to complete its action by adding a little silver, when details will at once appear, which otherwise would never have been brought to light; and it is, indeed, but very rarely that with the aid of this solution a satisfactory result is not attained, even in very unpromising instances. The negatives treated in this manner become more opaque, and assume in general the ordinary grey tint of wet plates, instead of the brownish red colour usually possessed by them. In every case a more or less complete intensification is necessary. I do this with an ordinary citric and pyrogallie solution thus compounded:

Water	300 cub. cents.
Pyrogallie acid	2 grammes
Citric acid	1 gramme

This mixture is in the first place applied alone to the plate, and subsequently one or two drops of a three per cent. silver solution are added to the solution.

This intensification must be conducted with very great precaution, for it is difficult to judge of its effect, and frequently the action is allowed to go too far. The image soon acquires vigour, while preserving its softness and trans-

parency. At the same time there are some descriptions of collodion (very excellent for general use), which, when exposed to the sun or very bright light, soon become solarized, and are thus incapable of attaining sufficient vigour, and when finished are possessed of a dull rose colour. As negatives of this kind print very badly, the operation of intensifying must be stopped and postponed until after the plate has been fixed, care being taken to wash thoroughly between the two manipulations. In this way the details of the image are rapidly brought out, and the negative passes from a rose colour to that of a dark purple, a very favourable tint for printing purposes.

This last method of intensifying requires at least as much care as the preceding one, and it is necessary forthwith to pass the plate into the hyposulphite bath. In following the directions I have indicated, the operator has at his disposal a series of methods by means of which, with a little skill and discretion, he will be enabled almost invariably to secure a satisfactory result.

I cannot leave this subject without a recommendation to the operator as to the way of manipulating the plate during development. He should never hold the negatives in his fingers, as the result is always injured corners or dirty spots. The pneumatic holder being inconvenient to use in this case, it may be acceptable to know of another kind of plate-holder, which I have found very useful, and which I had in the first place from the brother of M. Braun. This instrument is light, always clean, serves for plates of all sizes, is strong, and, moreover, costs but little. I here give a sketch of it.



This very light instrument is made of hard wood; it is studded with notches or pegs corresponding with the sizes of the plates, which are thereby fixed upon the rest. The developing liquid can be made to flow over the whole surface of the plate very readily, and the ends of the negative being free, the solution is easily poured back into the developing cup.

In recommending the operator to commence the development with the ammoniacal solution in a cup or glass, I have sought to simplify, as much as possible, the necessary utensils; but when working in the laboratory, I think it is better to add the ammonia at once to the water bath in which the plate is first immersed for moistening the film, as the preliminary operation is thus carried out with more uniformity, and the subsequent developing action rendered more active. As a matter of course, in this case it is necessary to add the ammonia in a suitable proportion to the quantity of water contained in the bath—say about thirty or forty drops of ammonia to a utensil of ordinary size. If, as I have before said, the exposure has been well-timed, the high lights will be already rendered visible by this treatment, and the plate is then placed upon the support above-mentioned, and the development continued with some more ammoniacal water, to which a few drops of pyrogallie acid solution have been added as previously described.

(To be continued.)

UPON THE SENSITIVENESS TO LIGHT OF IODIDE, BROMIDE, AND CHLORIDE OF SILVER.

BY DR. SCHULTZ SELLACK.*

THE photographic sensitiveness of the several salts of silver, respecting which some very contradictory opinions have been given, may be separated into qualitative and quantitative sensitiveness. Under the former kind is understood the capacity of the sensitive film to be im-

* Photographische Mittheilungen.

pressed by various colours; while quantitative sensitiveness denotes the degree of impression by any particular colour. If, as is usual in practice, one has to do with many colours at one time, that salt would be considered the most sensitive which reproduces the greatest number of tints, and which is, therefore, the most qualitatively sensitive. In cases, however—as in portraiture—where shortness of exposure is the principal point to be considered, quantitative sensitiveness, even at the loss of qualitative, is preferred. For portrait photographers, therefore, a qualitative—but, above all, a quantitative—silver salt is the best; while, on the contrary, to meet photographic requirements in the reproduction of oil-paintings, where the exposure may be prolonged, a qualitative material would be the more suitable. Finally, in the copying of engravings, the qualitative sensitiveness of a salt is limited, for it is, in this case, a question merely of reproducing the direct contrast of black upon a white ground.

The qualitative sensitiveness or compass of sensitiveness possessed by the different silver salts for colours cannot be ascertained by photographing a series of tints painted upon a board, from the fact that there is no pigment in existence of a pure character, regarded from a scientific point of view. Dr. Vogel has shown that many colours which differ from each other but very slightly when seen by the naked eye, yield remarkably diverse results in photography. Some red colouring matters—as, for instance, zinnabar—contain yellow, or, like carmine, blue; and, in these cases, the photographic action would be widely different, seeing that yellow is without scarcely any action upon the sensitive film, while blue attacks it very vigorously. Pure colours may be obtained by observing a beam of white light through a glass prism. These rainbow tints—or spectrum, as it is termed—show certain lines running across the colours, which have been designated by certain letters, and mark the limits of the colours. These lines are always to be seen in a photograph of the spectrum. Red and yellow in the spectrum do not exert any photographic action; green reaches from line E to line F; blue, from F to G; violet, from G to H. Beyond H the spectrum is invisible, but, nevertheless, acts upon a sensitive photographic film.

A chloride of silver plate prepared in a fresh silver bath free from iodine yields a picture only of the invisible portion of the spectrum, and of the outside half of the violet, near line H.

An iodide of silver plate yields a picture which includes from the invisible rays to beyond G, as also the violet and a small portion of the blue.

A bromide of silver plate prepared in a fresh silver bath free from iodine (from an ordinary silver bath containing iodine there is invariably produced, even with pure bromized collodion, a bromo-iodine salt), gives a picture of the invisible part of the spectrum, from violet to blue, in the neighbourhood of F.

An iodo-bromized plate gives a picture of the spectrum reaching from the end of violet to line E, and includes, therefore, the green portion of the spectrum.

An iodo-chlorized plate also yields an image which takes in green.

The chloride of silver plate is, when viewed as a transparency, very slightly coloured, and appears of a blue tint by reflected light. Bromide of silver is of a light yellow by transmitted light, otherwise, also, of a bluish colour. Iodide of silver is of a whitish yellow; and bromo iodide of a darker yellow.

As regards qualitative sensitiveness, therefore, iodo-bromide of silver ranks first, then follows iodo-chloride of silver, pure bromide of silver, iodide of silver, and, lastly, chloride of silver. The same results are obtained if the sensitive plate is prepared from nitrate of silver collodion, and treated in an iodide, bromide, or chloride of potassium bath, and washed; the iodide of silver plate is sensitive, and precisely the same description of pictures of the

spectrum are obtained as when an excess of silver salt is present. The quantitative sensitiveness of these plates is, however, less; an iodide of silver plate prepared in this way, for instance, requires an exposure ten or twenty times as long as one produced in the ordinary manner. The so-called sensitizers are, in wet plates, without any influence; acids have no action whatever upon the qualitative sensitiveness of a plate, while, as is well known, they materially diminish quantitative sensitiveness. Dry plates possess the same qualitative sensitiveness as wet plates, but the quantitative action of the former, as we know, is somewhat less than the latter. The presence of fluorine in the silver bath is without influence upon the qualitative sensitiveness.

For the purpose of obtaining comparative results in regard to quantitative sensitiveness, the same normal collodion was treated respectively with salts of iodine, bromine, and chlorine in such a manner that the same amount of silver salt was formed upon each plate.

Chloride is less sensitive to the invisible parts of the spectrum than bromide of silver, and this, again, less sensitive than iodide of silver. Pure chloride of silver does not, therefore, find employment in the negative process.

As regards the violet portion of the spectrum, iodide of silver is much more sensitive than bromide of silver, iodo-bromide of silver being, according to the amount of bromine contained, less sensitive in this respect than pure iodide of silver.

For the blue, from line G to F, is iodo-bromide of silver, which contains at least one-fourth bromide, more sensitive than bromide of silver; the action of the blue is, however, much more feeble than that of the violet.

For green, from line F to E, iodo-bromide of silver only is impressionable; iodo-chloride of silver behaves in the same way as iodo bromide of silver, but is, as a rule, less sensitive.

The larger compass of sensitiveness of the compounds of iodide of silver with bromide and chloride of silver was already known in the days of Daguerreotype, and the pure iodide of silver employed, in the first instance, by Daguerre, was very soon abandoned for these compounds. The qualitative sensitiveness of iodo-bromide of silver in the Daguerreotype process is, as Draper's early experiments proved, exactly the same as in the wet process, and my own researches have proved the same to be the case with iodide of silver.

From the above data some very important deductions may be made of practical value. For a quick-working collodion, giving details in the shadows—or, in other words, in those parts illuminated to a greater degree with yellow light—a material treated with iodo bromide salts, and containing a larger proportion of iodide, would be preferred, which, therefore, reproduces violet much more energetically than blue or green.

When, however, it is desired to secure a picture of very harmonious character, then an excess of bromide is to be preferred; blue and green light is then reproduced in the same degree as in the previous instance, while the action of the violet is less energetic than in the previous instance.

The quantitative sensitiveness may be increased to a certain degree, by increasing the thickness of the film, either by the pressure, therefore, of more iodizing solution, or by a thicker collodion. This influence is more remarkable with a bromine salt than with an iodide.

Actinic light invariably passes through the sensitive plate, as Onumerganck was the first to show by placing behind the first plate a second one, upon which an image was obtainable. It is an absurd proceeding, therefore, to blacken the back of the plate for the purpose of making use of this light, as is recommended in dry-plate photography, for it is immaterial whether the light passing through is absorbed by this black pigment, or by the blackened wall of the dark slide. If the experiment of

Ommergauck is repeated with ordinary iodide of silver plates, in the faint image upon the second plate will be found the details of the shadows very much pronounced. This may be explained in the following manner:—If the spectrum is photographed with two plates in the way mentioned, upon the rear plate is obtained only the depiction of the green and blue, and not the violet; while, upon the front plate, the violet is by far the most apparent.

If a thin film of metallic silver is produced upon glass, and iodized in the same manner as a Daguerreotype plate, a very thin clear film of iodide of silver is obtained, of a slight yellowish tint. This film, like the sensitive collodion plate, does not allow the violet of the spectrum to pass, but permits of the green and blue rays doing so without lessening their energy. It would be possible, therefore, by producing a film of iodide of silver of this description upon one of the surfaces of the lens, to modify, or even annihilate, the action of the violet rays. This is a point deserving of elaboration and experiment, for a method of this kind would be invaluable for the reproduction of paintings.

The peculiar behaviour of the iodide of silver by this absorption of light, as also that of fused chloride and bromide of silver, and the compounds of iodide of silver, are of very great scientific interest, and have already been discussed by me in a communication to the Academy of Sciences.

As regards the invisible chemical change of silver salts by light, it may be mentioned that the action upon chloride of silver (the only salt used in practice) occurs only in the ultra-violet and invisible portion of the spectrum, as already demonstrated by Becquerel. This chemical change is, therefore, identical with the photographic sensitiveness of the chloride of silver; and it is probably the same with bromide and iodide of silver. How the action behaves quantitatively cannot be measured by chemical means. Because chloride of silver darkens the most in light, it by no means follows that it is decomposed more vigorously than the other salts; perhaps the product of decomposition is more deeply coloured than those of bromide and iodide of silver.

With collodion plates prepared in a suitable manner with other silver salts—as cyanide of silver, sulphocyanide of silver, oxalate of silver—no trace of photographic action could be observed.

The above experiments were carried out in Dr. Vogel's photographic laboratory at the Berlin Industrial College; and to Dr. Vogel, therefore, I tender my most sincere thanks for his courtesy.

PHOTOGRAPHIC RESIDUES.

A GREAT deal has been printed in the photographic journals about the saving of waste of our precious metals in the various processes of photography. Many of these are good, many are scientific and elaborate; but what the photographer wants, so far as I can see, is, how to save his waste—be it ever so small or great—in a simple manner, and convert it into cash, or new material to use again. So many methods of saving wastes have been printed, that I will not take up your valuable space on that matter, but will now begin with a practical method of reducing such as the chlorides, by salt from old nitrate of silver baths (this ought to give about 75 per cent. of silver), cuttings of silver prints, hypo fixing baths, and developing solutions. All should be saved, and the dirt residue, or settlement, dried. Now comes the practical part that all careful photographers should take note of: first, don't give your savings to any one to convert for you; the chances are, they will reduce it, and keep the remainder for their honesty. I recommend the American photographer to reduce his own wastes, as he possesses, or his neighbour does, the chief apparatus, that

is, a globe stove or furnace. In England there are none, so one must be built for the purpose.

The following method for reducing silver waste was given me by a gentleman who came to learn photography for his amusement, he having retired from a successful business in London as a gold and silver refiner. "Now," said he, "as you have so openly shown me the secrets of photography, I shall only be too pleased to show you the few secrets of our trade, so far as they concern you." Then he told me that secret—black flux—and bidding me to make what use of it I liked. As he freely gave it to me, so I freely give it to your readers.

The converting process is as follows:—Say you have one pound of silver waste; take one pound of pearlash, two pounds of common salt; mix them well together by sifting through a sieve, or otherwise; place the whole in a crucible of clay, not blacklead or plumbago. Now see to the stove. Place on the middle of the grate half a brick, or, still better, the bottom of an old crucible, bottom upward, as a table to stand your crucible on; make up a little fire round this; then put in your crucible, surrounding it with fuel; place a cover or large lump of coke on top; get your heat up, and, when all is apparently in a liquid state in the crucible, add more of the waste, if there be any, as a crucible first filled will bear to be refilled two or three times; give more time in the fire; stir it with an iron rod, or, if the fuel has dropped into the pot, dip out with an iron ladle. All the silver ought to sink to the bottom of the crucible in the shape of a button, large or small, as the case may be. Now see all safe, and go to bed, or let the whole remain till the fire is out; but if you feel as I did when I began, and want to know the result, get a pair of smith's tongs, and remove the crucible from the fire, not on to the hearth, say, but into a pail of water, and the result will be, the whole household will have a vapour bath gratis. When cold, break off the bottom from pot, and there is the precious metal in one solid button, if properly fused. The tools required are a few clay crucibles, a pair of smith's tongs, a small iron ladle one and a-half inches, with a hole in the bottom for the metal to drain through. Sometimes the crucible will break in the fire: save everything, ashes and all, and wash by shaking in a pan of water. The metal will be found at the bottom, to be remelted. As a precaution against accidents, some fire-clay, mixed with cow-dung, is made into a stiff dough, a lump put on a piece of strong paper, the filled crucible pressed into the dough, and the paper, &c., brought up round the sides to about one-third its height; this forms a second crucible on the lower part, and is a great protection to the first one. Another plan is, to place the crucible mouth downward on a moderate fire before filling. Metallic gold or silver can be melted without flux, and a plumbago pot used, which will do for many times; but with a clay crucible and flux you require a new one each time. I use ordinary gas-coke, but think anthracite coal would be just as good. In getting up your heat, cover the pot some inches deep in fuel. Don't be afraid if a little gets in, as it will swim, and can be easily taken out with the small ladle. The metal will run through the small hole in the bottom of ladle, should you skim any with the dirt.—H. D. F., in *Anthony's Bulletin*.

HOW TO ENAMEL MOUNTED PHOTOGRAPHS.

BY L. G. KLEFFEL.*

THE favour lately bestowed by the public upon pictures of this kind renders it desirable that an easy and reliable method of preparing them be in the possession of all photographers. The following plan, already practised in America, has been recommended to me by many friends, and has some pretensions to the above-mentioned qualifications:—

* *Licht*.

The plates used for the purpose must be perfectly free from scratches, and quite even; they are best of plate-glass, which must be carefully cleaned, to allow of the film of collodion readily leaving the surface. To make certain that this takes place, a solution of white wax in turpentine, equal proportions of both, is applied to the better surface of the two, the compound being afterwards removed as perfectly as possible by means of a pad of linen, which is rubbed over with considerable energy. Treatment of the plate with talc is also recommended for the same purpose.

Cartes-de-visite cannot be well enamelled singly, and, for this reason, plates measuring about 9 inches by 11 are chosen, which are large enough to take six cartes at a time. The cardboard employed, which should not be too thick, must be cut somewhat smaller than the plate.

The pictures are cut of the same size as an ordinary carte-de-visite, so that when the cardboard is finally cut up, they cover the whole card.

A long strip of linen of the same breadth as the cardboard is moistened in water, and then gently wrung; upon one end of the linen is placed a glass plate of sufficient size, and on this a piece of cardboard measuring 9 by 11 inches (upon one side of which the name of the firm may be printed), face uppermost; upon this card is laid another, face to face, and the linen then folded over, the operation being proceeded with until the cards have been all enclosed in the moistened fabric, two cards always lying between two layers of linen. Finally, another glass plate is laid on the top, and the whole pressed down by means of a ten-pound weight.

The glass plate destined for enamelling is coated with a very transparent and tough collodion film in the ordinary manner, and allowed to dry.

The mounting of the pictures must be effected with a not too thin solution of gum arabic. Before the operation, the prints should be moistened, either by being placed in a moist cloth, or exposed to the vapour of hot water.

When the pictures have been mounted upon the moist cards, the latter are again enveloped in the linen, so as not to become too dry.

The gelatine solution used for glazing is prepared in the following manner:—

White gelatine of the best quality is cut into pieces and placed in water, in the proportion of one ounce of gelatine to fifteen or twenty ounces of water; after standing for a few hours, the vessel containing the solution is placed in an outer utensil of water, and warmed until the whole of the gelatine is dissolved; then the solution is filtered through moist flannel, and maintained at a temperature of about 30° Reaumur, or 100° Fah., until required for use.

To apply the gelatine coating, the plate coated with collodion is placed upon filter-paper, collodion side uppermost, and a sheet of the moist cardboard upon which the pictures have been mounted is taken from the moistened bundle, and laid, face downwards, upon the collodion surface. A strip of thick card about three-quarters of an inch thick is then placed upon the lower edge, and fixed to the plate, together with the picture, by means of some wooden clips. When this has been effected, the upper end of the cardboard is raised and bent back with one hand, while, with the other, a quantity of the gelatine is poured across the plate, beginning at the bottom; a small roller covered with filter-paper or cloth is then passed over the cardboard, beginning at the bottom of the plate, and, in this way, the superfluous gelatine is pressed out; after this has been done, the clips are removed, and the same operation repeated from the lower end. A stout glass rod will do for pressing out the superfluous gelatine instead of a roller.

These operations finished, another glass plate is laid upon the one bearing the pictures, and heavily weighted; in this condition the prints are allowed to dry. After twenty-four hours they will be in a position to be removed from the plate, this being effected by cutting through the card to the

glass with a sharp knife, and lifting the whole from the surface.

Air-bubbles are apt to form in the gelatine before drying if the liquid material happens to be too thick or warm, or the pressure of the roller is not strong enough; after drying, bubbles will also appear if the gelatine is too thin and hot, and the pressure exerted has been too great.

If the cardboard refuses to leave the glass, the collodion was either not sufficiently tough, or the plates were not perfectly clean.

To enamel single pictures it is best to proceed in the following manner:—

The plates are first coated with normal collodion, and afterwards with gelatine solution of one in twenty strength. The pictures, in this instance, must also be cut of the same size as the cardboard upon which they are mounted. The mounted pictures are dipped into cold water; the plate prepared with collodion and gelatine is then placed in a vessel of water, and a soft brush passed over the surface to remove the air-bubbles; the picture is placed upon the plate, under water, and both are then lifted out, drained, and placed under some sheets of filter-paper and a paper-weight to dry. Another way is to dip the pictures in a gelatine solution, and then to place them in contact with the collodionized plate. Any air-bubbles are removed by subsequent rubbing down with the thumb-nail, or in any similar manner.

To produce pictures with white or black borders, a piece of sensitized and blackened paper, of the size of a carte-de-visite, is ovalled out so as to form two masks. According as a black or white margin is required, either the picture itself, or the border of the same, is covered up by one of these black masks. Thus, if the picture is required with a black border, the print is produced in the ordinary manner, and, when sufficiently deep in colour, is covered with the black oval, and exposed again to the action of the light; if a white margin is desired, the open oval mask is at once put over the negative in the printing-frame.

ON TAKING BABIES.

BY ROLAND VANWEIKE.

MR ROLAND VANWEIKE, in our Philadelphia contemporary, instructs his pupil in the best mode of dealing with babies. He says:—

“The baby is a peculiar subject, and its little individualities and freaks of temperament need to be studied and humoured as much as in older persons.

“There are some photographers who won't make pictures of babies at all; at least, I have heard of those who did not, and I know they were not successful in the business. The baby is often the key that unlocks the purse for the whole family, to the benefit of the photographer. Besides, operating with them is a good school for self-government; it gives a man an opportunity to practise keeping his temper—for, of course, no man would get into a passion with a child—and as patience is, or should be, part of a photographer's profession, nothing, perhaps, will make him exercise this virtue more than making pictures of children. I have become satisfied, however, that one of the best means to help one to understand their dispositions and work into their good graces is to have some of the little pets—I don't mean pests—of his own in his own home. But you need not be discouraged, Focus; there's time enough for you yet, and a love for children is, after all, the great thing necessary to operating with them successfully. A kind word or look impresses itself upon the tender, sensitive nature of the child, and you oftentimes gain its confidence at once.

“We may be perplexed with business, or have more serious matters occupy our minds, but when it comes to this, we must, for the time being, come down to the child; we must forget all other things, and enter, as far as possible, into sympathy with this little sprig of humanity before us.

“If you do not succeed with one trial, try again, and continue to try so long as there is any possibility of success. If the child is neither frightened, cross, nor tired, keep your temper and persevere. If you cannot get it one way, try another; your success will depend much upon your resources, as well as

your patience; and when, after failing again and again, the fifth, sixth, eighth, or dozenth trial, you succeed, you feel amply repaid for all your efforts.

Focus. "The baby is ready.

VAN WEIKE. "Very well, we will proceed. This being a little one, we will sit it in this chair. The arms prevent its falling over, and as it rests against the back, we do away with the necessity of using the head-rest. The rest, however, is almost useless with small children, as it is very difficult to get them to keep the head against it. A smaller chair than this even, might be better, as some of the subjects are so small that there seems to be more chair than child. But it won't do to be too fastidious in this respect, for whatever means we employ to catch a perfect impression of the little one with the greatest certainty will insure us the greatest success. This little fellow seems to have been somewhat out of sorts this morning, but appears to be feeling better now, and if we proceed gently with him there will be no trouble. Be very careful about making any sudden noise, or having any loud talk or calling. Let the mother stand near him, so as to be out of the picture, and he will not be so likely to be frightened. We must work lively, Focus, with these subjects; see that he rests against the chair, get your focus, adjust your plate, fix his attention with some toy that has motion without being noisy, and make your exposure.

"The next is a child just can toddle, with a doll almost as large as she is, and a poodle dog. They want the child standing, with the doll and poodle in some pretty position. The doll may do, but the poodle never, especially such an animal as that, that is never still the tenth part of a second unless asleep. The only way in cases of this kind is to say firmly and decidedly, if they want a good picture of the child the dog must be left out, unless you have nothing else to do but experiment.

"Now here are the mother, father, grandmother, and, I presume, old maiden aunt, and there's a perfect Babel; we shall be bewildered, if the child is not. The first thing to be done is to send out all but the mother, and then see what we can do.

Focus. "She's afraid of me. She seems to be afraid of everything. We can't get her standing.

VAN WEIKE. "Now this is a case that requires peculiar treatment. We must gain her confidence and get her interested. Examine and praise her hoots, the locket on her neck, the ring on her finger, her doll, its dress, feet, and everything about it, and, finally, propose to make dolly's picture. She seems suspicious no longer, but readily assents to the suggestion. Now, the matter of making her picture must not be hinted, but everything that's done is for dolly. She is perfectly willing to sit with dolly to keep her still, and even consents to having her own head against the rest, when told it is necessary to get a good picture of dolly. We will show dolly this little singing bird, and our shy little miss has a good picture without her knowledge or suspicion. It is not often necessary to resort to as much strategy as in this case, but I have found it well always to keep the child's attention as much as possible away from what you are doing; say nothing about taking its picture.

Focus. "What do you do when the child won't have its picture taken? Here's one says she won't."

VAN WEIKE. "Well, she's probably been told about it over and over; and in the meantime, perhaps, has been to the dentist, or been frightened somewhere. She seems a sweet little girl, and not much afraid. I think I can soon get acquainted with her. I take her in my arms and carry her about the room, show her the pictures and playthings, with kind words and a few kisses, and now I think we may try a sitting. No, she won't sit. No amount of coaxing or persuasion will avail. She is good enough anywhere else but near that chair. Her mother gets out of patience, and threatens to whip her. Now this will never do; and the mother must be given to understand that threats or abuse will render it impossible for us ever to get a picture of her child. I can readily understand the style of treatment that child has at home, and what is the principle of government for the household. If we allow it to be practised here, this place will have as much terror for the little one as, no doubt, many others have. Love and kindness must rule the baby here. Compulsion is entirely out of the question, for even if the child should be compelled, through fear, to sit, we can readily imagine what kind of an expression such a state of mind would produce. No; if the child will not sit willingly, we must decline any further attempts at this time. We want her to go away with pleasant recollections of this

place, and next week, if she comes again to see our birdies, and all the pretty things we have, saying nothing about the picture, I have no doubt we shall succeed without difficulty.

"The next is a wide-awake youngster that don't care for anything. Now this type is generally as difficult to manage as any we have. He can only be kept in place in the chair by holding him, and he seems ready to explode at every noise or motion you make. Now there are two ways of fixing the attention of this kind: by keeping perfectly quiet, he watches for a few seconds, apparently waiting for something to turn up, and you can catch an impression; again, you may astonish him by the most violent demonstrations, bringing out your whole collection of birds and animals, and turning clown yourself.

"There is just as much difference in babies as there is in other folks; and, finding such a variety, we will not have time to go into details with them all, but will note some of the more prominent peculiarities. Those that we have no trouble with we need not dwell upon; but it is the difficult ones, or impossibles, that I want you to practise on. Now here is the baby only four weeks old, that don't take notice of anything, and you are expected to make a brilliant, wide-awake picture of it. Another, its mother says, is afraid of strangers, and won't let you come near it. She has no faculty for arranging its position or doing anything with it, so you must catch it as you can, arms and legs flying, making a perfect caricature on your idea of grace and propriety.

"This one wants three different sizes and styles of pictures, and when it comes to the trial we can't get anything.

"The next they want taken with the great red, freckled-faced nurse, because they think it would take better that way.

"Here's one just can walk; they want it standing. It won't stand still; it won't stay a moment where you put it. They don't want it sitting; its grandmother wants it standing, and if they cannot get it that way they don't want it. They've had it taken a great many times before, and never had any trouble. The only way is to prove to them, by trying, that the thing cannot be done, and then they may have it sitting, as it has always been done before.

"A youngster in a black velvet suit, the blackest of all black things to photograph."

Focus. "Why, I always thought black took best."

VAN WEIKE. "It does in some cases, but not for a child four years old, when it is often difficult to keep it still long enough for light drapery.

"Some measures ought to be taken to educate people in this direction, so they may not presume so much, but proceed from a knowledge of the facts in the case. We should lose no opportunity to impress upon customers the fact that light drapery is always best for children.

"A group of three children, from three to seven years old. Their mother wants them all standing side by side; thinks they would take better that way; as she 'intends to send the picture to Europe, she wants it taken good.'

"Now, when people come with such notions as these, we must try and persuade them out of them.

"Three children standing in a row!

"I don't want to make any such picture, much less to have it go to Europe as a specimen of American photography. By showing the mother the absurdity of such an arrangement, she is willing to leave it entirely with us. They may be grouped around a table, two standing and one sitting, or but one standing; or they may be all sitting; let the oldest be in the middle, and the others seated lower on each side, so as to give a good form to the group. It is well to group children with books or toys, as though they were doing something. Nothing is prettier than to put them on the floor among their playthings, with as little formality or order as possible.

"Our next lesson, Focus, I think I will devote to groups."

Correspondence.

PHOTOGRAPHY AND THE INTERNATIONAL EXHIBITION.

DEAR SIR,—The complaints made in to-day's number of the PHOTOGRAPHIC NEWS, respecting the way in which it is alleged that the Committee of Selection for the Photographic Department of the approaching International Exhibition have exer-

cised their functions, are substantiated by such well-known signatures as to render them, at all events, deserving of an impartial hearing. I have formed my own ideas on the subject, but shall leave it to those who are more immediately interested to apportion the blame, should any exist, in the right quarter.

The aim of the present communication is, with your leave, to suggest what I consider to be the most desirable mode of meeting the difficulty, and, at the same time, enabling the general public, as well as the large body of photographers who will, in all probability, be present in London during the continuance of the Exhibition, to judge for themselves how far meritorious works in photography have or have not been recognised by the Committee referred to.

You, sir, will doubtless recollect that last year, under somewhat similar circumstances, a large number of artists, who believed that their productions had been unjustly excluded from the Exhibition of the Royal Academy, resorted to the plan of combining for the purpose of exhibiting them in an adjacent building which they engaged with this view. I would propose that a similar course should be adopted in the case of the rejected photographs, by making them the nucleus, as it were, of a separate photographic exhibition, to be kept open during the approaching season.

Let all photographers who have a care for the advancement of their calling give the project their support; and, bearing in mind the vast influx of visitors from all parts of the world which is likely to take place, there can hardly be a doubt that it will prove sufficiently attractive to warrant its having been carried out. Let admission be free on the presentation of the visitor's card, and let all expenses, such as the rent of suitable rooms, &c., &c., be defrayed by a small fixed subscription payable by those who favour the scheme. It would, of course, be necessary to hold a preliminary meeting, which should be duly advertised, and at which a managing committee should be nominated for the purpose of arranging details, and carrying the project into execution in the most effective manner.

I may mention that, apart from the immediate reason which has induced me to offer this suggestion to the readers of your journal, there is an additional and equally cogent one, to which I desire to draw attention. I allude to the fact that at the Exhibitions of 1851 and 1862, as well as at that in Paris in 1867, the manner in which the displayed photographs were arranged, the very secondary positions assigned to them, and the tendency of the vast collections of more striking objects by which they were environed to eclipse them, as it were, and lure people away, led to their being very frequently overlooked. In short, I could not avoid coming to the conclusion that for the proper display of such a class of objects as photographs these gigantic exhibitions are not the most appropriate arenas.

It only remains for me to add, that having some weeks ago perused a letter in one of the photographic journals hinting at the possibility of certain complications arising in connection with the Committee of Selection already alluded to, I at once determined to forego my intention of sending any of my own photographs to the Exhibition. The present letters from your correspondents satisfy me that my decision was a judicious one, inasmuch as I have been spared the disappointment so naturally felt by them. I may, perhaps, on this account, be the more readily permitted to submit the above proposals for the consideration of photographers generally.—I remain, your most obedient servant,
G. C. WALLICH.

Kensington, March 31st, 1871.

PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

Str.—The usual crop of complaints in reference to the arrangements of an exhibition may naturally be expected in reference to that which will open in South Kensington next month; but, from the letters which appeared in your last, the crop appears likely to be an early one. In this instance, I must confess, however, as an interested observer, the ground of complaint seems to be a somewhat odd one: it is, in effect, a confession, as well as a complaint. In the first instance, your correspondents grumble that the Committee of Selection have not formed the same estimate of the respective merits of their contributions which they have themselves formed. This was, possibly, a very heinous crime, but it is a very common one. The opinions of artists in regard to their own works often differs from those of persons sitting in judgment upon

them. But, setting this aside, does it not seem, as the artists themselves think that some of their pictures were better than others, that some must have been worse than others? And was it fair to send to an exhibition any but their best?

But the truth appears to be that an unfair motive appears to be suggested; in short, the insinuation which one gathers is, that some members of the Committee excluded pictures which might possibly compete dangerously with their own works. I may be wrong, but I fancy that this idea is plainly suggested. Now, a moment's reflection would show that no such motive could possibly operate. All members of juries are, by the understood rule or etiquette of the situation, well known to be *hors concours*, out of the competition, and as the admission of pictures to this exhibition is, by the published regulations, equivalent to a certificate of merit, it follows that the Committee, being practically in the position of jurors, could not award themselves such certificates of merit, and could not, therefore, exhibit. This being so, it is somewhat hard to undertake a thankless duty which involves self-denial, and meet with abuse as the reward.—Yours,
JUSTITIA.

[We have every reason to believe that none of the Committee intend to exhibit.—Ed.]

MY DEAR SIR,—As I see "Nemo" has made known, in the last issue of the PHOTOGRAPHIC NEWS, that my "Stolen Moments" has been rejected by the Committee, it leaves me only to say it is quite true; at the same time I am very pleased to see that Messrs. Robinson and Cherrill have invited photographers to make known what has been rejected, so that all may be better able to judge whether there has not been a secret motive for the turning out of so many good pictures. I should not have been surprised at having one, or even two, rejected, if they had been the worst of the four I sent, knowing they were limited for space; but to have the best returned, made me think, at first, it was a little spite against me; but as I now perceive it is not me alone, but a general thing, it clearly shows that some other reason existed.—Yours most truly,
1, Oxford Street, W., April 4th, 1871. J. HUBBARD.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The usual monthly meeting of this Association was held on the evening of Tuesday, the 28th instant, at the Free Public Library and Museum, William Brown Street. In the absence of the President and Vice-Presidents, the Rev. T. B. BANNER was elected to the chair. The minutes of the previous meeting were taken as read, owing to the absence of the Secretary through illness.

Mr. J. A. FORREST exhibited several silver prints with a highly glazed embossed surface, and explained the method of working, which consisted of soaking the print in gelatine, and, while this was in a state of warm solution, pressing the print by means of a "squeegee" into close contact with a sheet of plate glass covered with plain collodion. He stated it was desirable that the collodion should contain rather an excess of pyroxyline.

Mr. TYERMAN asked whether any steps had been taken towards photographing the objects in the Museum, as lately suggested by the Museum Committee.

In the discussion which ensued it was elicited that some of the difficulties in the way were capable of being removed, in which case it was thought that, before long, something might be done.

Mr. EDWIN FLUKES, of Bath, who had kindly promised a lantern exhibition, was delayed on the road; but, upon his arrival, the members were gratified with a succession of architectural views of Wells. They were reduced from the 12 by 10 size at which they were taken for the Science and Art Department of South Kensington, and a considerable number of them consisted of the figures which adorn the west front of the cathedral, the scaffolding now erected for the restoration of which afforded the standpoint whence they were taken. The graceful disposition of the drapery and the elegant early English foliage showed to great advantage, and, at the close of the exhibition,

The Rev. T. B. BANNER proposed, and Mr. HENDERSON seconded, a vote of thanks, which was unanimously awarded, to Mr. Flukes, for his kindness.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF LONDON.—We regret to announce that, owing to the serious illness of Mr. Hughes, his paper on the Carbon Process will not be read on Tuesday evening next. We believe that a paper by Mr. Dunmore, on Large Photographs, will be read.

VICTORIA CARDS.—In the *Photographic Bulletin*, Messrs. Anthony, of New York, having reproduced a recent article from our pages commending the new size of cards to English photographers, takes the writer of the article seriously to task for having stated that the suggestion for a new size first appeared in the September number of the *Philadelphia Photographer*. The offence was a grave one, and we hasten, on behalf of the contributor of the article in question, to correct it. The first published reference to such a size—unless we except Mr. Notman's cards of similar size proposed four years ago—appeared in the *Bulletin* two months earlier than the letter in the *Photographer*. Messrs. Anthony say:—"We desire to correct an inaccuracy in the above article from the PHOTOGRAPHIC NEWS. The first suggestion for the new size of card was not made in the *Philadelphia Photographer*, but was first made, and the name Victoria suggested, in our pages, at the instance of one of our patrons. We desire to say, also, that the first cards of the form ordered or made were made to our order, for us, and were not due to the enterprise of any other person. Further, it may be as well to have it understood that, upon the introduction of the new size, we immediately commenced the manufacture of albums for them." We regret to state that as yet the origin of the new size has not acquired the interest which attaches to the birth of any accomplished fact, and hence our contributor's pardonable error. English photographers are slow to undertake novelties, and we believe that no one has as yet produced Victoria cards. We hope eventually, however, to be able to congratulate Messrs. Anthony on the success of their bantling in this country.

TESTING SILVER SOLUTIONS.—Mr. Napoleon Syrus, writing to confirm the statements of a correspondent in our last as to the great value of Mr. Hart's Volumetric Apparatus, says it has saved him from much trouble and many failures, too often "improperly attributed to the albuminized paper, which is returned, and oft-times another maker tried, and the first entirely discarded, when the real fault lies with the strength of the silver; most of the mealiness, glazed appearance, flatness, &c., resulting from the weak state of the silver, but which, accurately defined, can immediately be rectified."

To Correspondents.

ADVICE TO CORRESPONDENTS.—We are at all times glad to advise our readers on any subject connected with the art upon which information can be given in this column; but to enable us to do so with efficiency, and without unnecessary waste of time and space, it is desirable that a few conditions should be observed by correspondents. All questions should be stated clearly, and written legibly on sheets of note paper, small scraps of paper and sheets of foolscap being equally unsuitable and inconvenient. Where several questions are asked, they should be kept distinct and numbered. Where processes and formulæ have been stated in our pages, it is better for correspondents to refer thereto than to request us to do so, as we cannot, with fairness, occupy space by repeating formulæ which have once appeared, merely to save a little trouble to individuals. Correspondents should use distinctive names or initials: such signatures as "A Subscriber," "An Amateur," and others of a general character being often adopted by a few correspondents in the same week leads to confusion.

A. G.—The lenses of the manufacturer you name have not usually any other marks than those you mention. The firm will, however, verify it for you, we have no doubt, if you make application.

NORTH LIGHT.—The proportions you propose will answer well. We should try blinds, but the alcove background would also be useful. 2. When pyrogallic acid becomes brown from contact with the atmosphere, its developing value is injured; but trial will best determine to what extent. The only remedy is to preserve it carefully from the atmosphere.

F. D.—We used an ebonite bath for some years without perceiving any injurious action on the nitrate of silver solution, and we have not met with or heard of any case in which deterioration of the bath resulted from the use of ebonite. Sulphur is used in the manufacture of ebonite, which is, indeed, a form of vulcanized india-rubber; but we remember when, some years ago, this material was first proposed for use in the manufacture of photographic vessels, we called the attention of the manufacturers to the possible injurious action of sulphur, they assured us that the sulphur was eliminated in the final processes, a mere trace only remaining in any case; and that the surface of the finished vessels was so protected that no possible action could occur. The india-rubber water-tight top must be of pure india-rubber; if vulcanized india-rubber be used, it will act injuriously on the bath.

ANXIOUS.—Almost all the instructions for transferring collodion films which we have given from time to time refer to transfer of the wet film immediately after the production of the picture. For the purpose you require, it is only necessary, after the washing of the picture, to place the plate in a bath of citric acid solution, or water acidified with sulphuric acid, which will cause the film to become loose from the glass; next lay a piece of thin paper, previously dipped in water, upon it, and turn over the edge of the film upon the paper, and then lift the whole away from the glass, and place it upon another glass, which should have previously been treated with dilute albumen or gelatine, and dried. This will effect the end you desire. You will find various articles in our last two volumes, giving detailed instructions, and also in the last two or three YEAR-BOOKS.

R. MORTON DAY.—Such a drying-box as you desire will need to be devised for the purpose, as we are not aware of one already in use. We should have a funnel running through the box, underneath which the gas might be placed, and its heat secured without the fumes entering the box. The drying-box used by Mr. Burgess in the Ebarneum process, described in our volume for 1868, might possibly answer. 2. So far as we can ascertain, there is nothing more efficient for burning-in enamels than a small coke furnace with muffle. Gas can be used, as in Griffin's gas-furnace, but its use is much more costly than coke. 3. The crapy tendency of the india-rubber film may be due to some imperfection in the solution, or to using it too thick. We have used it as you describe without any difficulty, but we used a more dilute solution than that employed in the carbon transfer. It is not a safe basis, however, for transferred negatives, as the india-rubber will eventually perish.

W. P.—The experience you state is a curious one; we have not before met with such a case. It would seem that excess of nitric acid was the cause of the trouble. 2. The lens you mention may be used for groups; but it is not so rapid as a good single lens, which we should recommend for the purpose, if you cannot get the better one to which you refer.

D. W.—We have had no personal experience in the matter. Read the article by M. de Constant in our last YEAR-BOOK, and repeat his experiments, and then determine as to the substitution of pink paper for the blue. 2. Unless the tremor produced by the passing trains is very serious, it probably will not injuriously affect the steadiness of the sitters or plates. We have sat in studios in which we have noticed a perceptible tremor from street traffic, which had no injurious effect on portraits. Have any of our readers experience as to the extent of vibration and its effect produced by an adjacent railway?

ADAM DISTON.—In the absence of any communication from the authorities of the International Exhibition, you may fairly presume that your pictures are accepted. We believe that communication was only made in reference to rejected pictures. 2. The "Smithy" is very good. We shall have something more to say about it. From how many negatives is it produced, where combined, and by what method?

J. S.—The "double salt of iron and ammonia" is commonly known as "ammonia-sulphate of iron," and is sold by all dealers in photographic chemicals, or may be made by combining in their equivalent proportions proto-sulphate of iron and sulphate of ammonia.

JAMES BROWN.—Thanks. In our next.

M. DESUZE.—We have not the address of the gentleman in question. As the PHOTOGRAPHIC NEWS is published a day earlier than usual this week, the office being closed on Good Friday, answers to many Correspondents who would otherwise have received answers this week are necessarily delayed.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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A SIMPLE METHOD OF INTENSIFYING.—THE ACTION OF LIGHT ON UNFIXED NEGATIVES.

A FEW years ago, Mons. Blanquart-Evrard published an interesting little pamphlet on the intervention of art in photography, one of the chief aims of which was to indicate a method of strengthening a negative in some parts only. The plan indicated consisted in submitting a developed, but unfixed negative, to the action of light, masked in the parts intended to remain unchanged, and exposed in such parts as required additional intensity. The action of light on the negative in this stage was to continue reduction, and increase intensity.

The fact that light continued reduction of silver in an unfixed negative was not unfamiliar to experienced photographers; but the idea of utilizing this fact appeared to have occurred first to M. Blanquart-Evrard. Oddly enough, after the fact was pointed out, it does not seem to have attracted much attention, nor to have been made available in general practice. We gave details of the process as described by the eminent Frenchman at the time, and verified the method he suggested of utilizing the idea in the local intensification of negatives, but we do not remember to have seen this mode of intensifying used on a single occasion until a few days ago.

During a recent visit to the studio of Mr. Blanchard, whose portraiture, as many of our readers know, approximates more closely to the work of Mous. Adam-Salomon, the prince of portraitists, than that of any other photographer, we enquired details of some of the formulæ and modes of working in use at the moment in producing some very large portraits of rare excellence. Mr. Blanchard has so fully described in our pages and at meetings the processes and formulæ he employs, that we anticipated the reply to the effect that everything was old and well-known, "except," said Mr. Blanchard, "perhaps, the mode of intensifying I am just about to adopt, which is probably less familiar than it ought to be."

The plan in question simply consisted in placing the negative, after development with iron and washing, but before fixing, in direct sunlight for a few minutes, during which time a very definite but delicate change took place. As Mr. Blanchard explained, he very rarely required to intensify his negatives at all, simple development with iron being sufficient; but if any tendency to flatness were noticed in a negative after development, or any want of brilliant points of high light, a few minutes of sunlight afforded the simplest and surest mode of securing the end in question. The process evidently consisted in a further reduction of such traces of free nitrate of silver as remained in the film, that reduction being only effected where the free

silver was already in contact with a reduced portion forming a part of the image, and not at all on the deep shadows where no reduction had already taken place; and further, the reduction was most rapid and complete in the highest lights or densest parts of the negative. Mr. Blanchard added, that where considerable intensification was necessary, few methods of securing it were more satisfactory, simple, and certain than allowing the unfixed negative to remain some time in the sunlight, drying there, and being fixed subsequently.

The question not unfrequently arises in relation to field manipulations, "Is it safe to examine the unfixed negative by open daylight?" We have generally recommended caution in doing this, chiefly because, in the usual scarcity of water, and consequent partial washing, the abundant presence of free nitrate on the plate might cause a risk of general reduction and fog. The experience to which we have just been referring suggests that, after a moderate washing, or after treatment with golden syrup solution, the unfixed negative will not suffer risk when exposed to daylight, as the reducing action of light is induced chiefly in those parts where reduction has already taken place, and that an increase of intensity, greatest in the highest lights, is the result to be anticipated.

SPLITTING OF FILMS.—A NEW CAUSE.

IN the contribution of an "Old Photographer" on another page, a pertinent question is asked in relation to the splitting of films. He suggests that whilst all the varied suggestions as to the quality of the collodion, the kind of varnish, the conditions of keeping, may possibly have some definite relation to the cracking of films, it is quite certain that there is something beyond which remains to be discovered; otherwise, how is it, he asks, that in a batch of negatives taken with the same collodion, varnished with the same varnish, and kept under the same conditions, some will crack, and others remain perfect? That this is often the case photographers know, and, being so, it seems difficult to affirm that the collodion, or the varnish, or the keeping conditions, which prove good in many cases, should be the cause of splitting in other cases. It is clear that some other cause—or, at least, some other predisposing conditions—must come into operation in one case which are absent in the other. Collodion, varnish, and mode of keeping may each tend to produce the fault just when they concur with some other accidental cause, but may be perfectly trustworthy under other conditions.

A letter from a correspondent on another page suggests the possible action of acetic ether formed in an old iron developing solution. But acetic ether, although a solvent of pyroxyline, scarcely, we think, exercises much action on

the film when diluted to an enormous extent by the iron solution; and although some injury might arise, its presence would scarcely account for the irregular occurrence of cracks to which we have just referred, as it is presumable that the same developer would be used with all the negatives of one batch.

But there is another cause in possible operation which may, we think, account for the irregular occurrence of the cracks, and their appearance in one or two negatives of a batch, whilst all the rest enjoy perfect immunity.

When negatives are much forced in development and intensifying, nitric acid is liberated in the precise ratio in which the free nitrate of silver on the film is decomposed, and this might produce a distinct change in the character of the pyroxyline. We have noticed, in samples of collodio-chloride of silver made from collodion in which nitrate of silver had been dissolved and kept some months before the chloride was added, that the film was rotten and contractile, readily splitting up when the plate, coated with the preparation, was placed in the sun to print. Many photographers are familiar with the fact that negatives which have been slightly under-exposed, and have required much forcing in development or intensification, very readily split at times, even in the process of drying. It is not impossible, then, that the one or more negatives of a batch which split, when all the rest of the same batch remain perfectly good, may have been forced in development, and split from two causes: partly because the pyroxyline is acted upon during development by the liberated acid, and partly because, in the process of forcing, the lights are more distinctly piled up than usual, causing an inequality of thickness of film, which must decidedly favour the tendency to splitting.

PROPORTION OF CHLORIDES IN COLLODIO-CHLORIDE OF SILVER.

It has not unfrequently happened that when difficulties and failures in the preparation of collodio-chloride of silver have occurred, we have found, on enquiry, that the cause was a very simple one. The experimentalist has adopted and carefully followed a formula in all points but one; he has made use of some other soluble chloride than that indicated in the formula, substituting chloride of calcium for chloride of strontium, or chloride of magnesium for chloride of lithium, or *vice versa*, without modifying the proportions; and as each of these salts contains a different proportion of chlorine, the element by aid of which chloride of silver is formed, it follows that if the nitrate of silver added to the collodion remain the same, whilst a chloride containing more or less chlorine than is required to combine with it is added, failure, in greater or less degree, must be the result. We have occasionally pointed this out in answer to the enquiries of experimentalists in difficulties. In the *Philadelphia Photographer* we find a compendious and valuable article on the subject, by Mr. Edward Boettcher, the following extracts from which will be found valuable for reference by all working the collodio-chloride process. He says:—

“The great object in making porcelain collodion that will work well is to change all the chlorine from the chlorides of strontium, calcium, or lithium, into chloride of silver by the well-known chemical process of double decomposition. But as the chemical equivalents of the three named metals are widely different, it follows that each requires a different quantity of nitrate of silver to exchange all their chlorine for the nitric acid of the silver. Taking 10 grains of chloride of any of the above metals as a standard quantity, it follows that the lighter the chemical equivalent of the metal, the more chlorine it will contain in proportion to the others; the heavier, the less. From that it follows, that the lighter metals require the most nitrate of silver, the heavier the least.

A calculation from their respective chemical equivalents gives the following result:—

		Nitrate of silver.
10 grains chloride of lithium	requires	67.45 grains
” ” ” ”	magnesium	” 51.16 ”
” ” ” ”	calcium	” 43.05 ”
” ” ” ”	strontium	” 26.63 ”

I would not advise, however, to take just 10 grains of all the chlorides, because with the first two the collodion would print too heavy, with the other two too thin. Taking 6 grains of the chloride of lithium, 8 grains of the magnesium, 10 grains of the calcium, 15 grains of the strontium, and the nitrate of silver in proportion to the above figures, it would give the following receipts for a quantity of 8 grains of collodion:—

		Nitrate of silver.
6 grains chloride of lithium	requires	40.47 grains
8 ” ” ” ”	magnesium	” 43.33 ”
10 ” ” ” ”	calcium	” 43.05 ”
15 ” ” ” ”	strontium	” 39.94 ”

Citric acid the same quantity as the chlorides. No fuming required.

“I, for my part, prefer the magnesium. Collodion made with it after the above formula gives very vigorous clear prints and beautiful tones.”

On one point we do not agree with the writer, as we prefer the presence of a little free nitrate of silver. Whilst commending his hints on the combining value of the chlorides to our readers, we should recommend, as an important element of vigour, the presence of a little excess of nitrate of silver beyond that necessary to combine with the chlorine present.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

CAMEO-VIGNETTES—VICTORIA CARD ALBUMS—EDWARDS'S NEW MANIPULATING CAMERA—PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION—MR. ENGLAND'S OPERATIONS AT ALBERT HALL—TEXTURE OF NEGATIVES AND BROMIDES—FILM SPLITTING—MR. HUGHES AND CARBON PRINTING.

AMONGST the novelties which have been brought under the attention of portraitists from time to time, I think none has been more simple and effective than the cameo medallion or vignette. Its production is easy and cheap, whilst its effect of superiority will readily command advanced prices from the public. In all the recent examples which I have seen as produced in this country, however, there is something missed of the excellence which distinguished the first examples I saw from Milan; the dark border was much deeper than those I have seen issued by English firms. In the Italian prints this border had evidently been printed to a bronze, and in the finished print it was a very deep warm black. Its effect on the half-tones, and the flesh tints especially, was most valuable, giving to a deeply printed face a feeling of great delicacy and tenderness, combined with perfect modelling. Notwithstanding that the style had been noticed in the *News* as a favourite on the Continent twelve months ago, no attempt was made to introduce it into this country until Messrs. Marion, who deserve well of photographers for the enterprise, gave it an impetus by providing apparatus, &c.

Speaking of the impetus which can be given to any novelty by the enterprise of a good house reminds me of the small attention which has been given to the Victoria card, and the want of an album as one of the elements of its success. Will Messrs. Marion and Co. give the new size a lift by providing albums for it?

From what I learn of Mr. B. J. Edwards's new field manipulating camera, it appears likely to supersede everything of the kind which has been attempted before. It seems to afford facilities for working the wet process without either tent or dark room, and without the chance of contact between the silver solution and the developer,

which has been one of the dangerous possibilities of all former contrivances for this kind of work. If the new apparatus effect all it seems to promise, and does not get out of order by constant use, it must prove a great boon to all out-door workers, and will also permit photography to become a drawing room amusement for amateurs.

Notwithstanding the apparently unpromising circumstances, I believe that the forthcoming International Exhibition is likely to prove a good one. The space allotted to photography is small, and is in an undesirably lofty position; but, on the whole, the display will, I believe, be a good one. Some sinister rumours as to the pictures rejected by the Committee of Selection consisting of the best sent in, especially where they were likely to clash in competition with those of one of the gentlemen of the Committee, have been circulating. I am happy to believe that there is no ground whatever for this rumour. The duties of a jury are always thankless, and always offend some one. Those who fortunately win the approbation of the jury are not grateful, as they attribute the decision to their own abounding merit; those who fail to win approbation generally attribute such failure to spite, incapacity, or other sinister motive in the jury. The fact that none of the jury intend to exhibit, whilst it will be a loss to the Exhibition, will worthily tend to silence envious tongues.

Speaking of the Exhibition reminds me that Mr. England has undertaken the production of photographs of the Exhibition in the Albert Hall. Oddly enough, the original concession for photography in connection with the Exhibition was obtained by Messrs. Johnson, of Castle Street, Holborn, whose name is well known in connection with the catalogues of former exhibitions. They made arrangements with Mr. Nottage, of the Stereoscopic Company, and he with Mr. England, so that it eventually reaches the hands most capable and experienced in such work. At the opening of the Albert Hall, his arrangements had been made for securing a group including her Majesty and other distinguished persons whilst engaged in the opening; but, at the last moment, some officious official of South Kensington, in temporary power, refused to permit the camera to occupy the necessary cognate of vantage, and nothing was obtained.

In some interesting remarks which recently appeared in your pages on the colour and texture of negatives, Mr. Lea has some comments on the printing qualities of creamy negatives. He mentions the well-known fact that creamy negatives yield rich, silky, velvety-looking prints. He remarks that such negatives are generally free from granular deposit, and that the use of a large proportion of bromides in the collodion is, amongst other things, an important cause of coarseness and granular crystalline deposit in the negative. Of course Mr. Lea has, under some circumstances, found—or believed that he had reason to conclude—that this was the case. But I cannot but believe that, as a general fact, the notion is erroneous. That a creamy negative gives good, rich prints almost every photographer well knows; and that such negatives are free from granulation and coarseness of texture, being more actinically opaque than visually opaque, may be easily determined by examination. But I do not think that the presence or absence of bromides in the collodion has much to do with the creaminess or granularity. With the same collodion it is not difficult to produce creaminess or granularity at will. Indeed, in the course of experiment, I have done so; and I have experimented with almost every proportion of bromide without producing granularity by its excess. The primary condition of producing a creamy negative, other things being equal, is full exposure. The primary cause of greyiness, granularity, and poverty in a negative is under-exposure. With a bath in good order, moderately new, neutral, or nearly so; a good collodion, with plenty of bromide; a bright light, full exposure, and nearly freshly mixed iron developer, a negative with the creamy quality and fine bloom which generally indicate perfection in the gradation and good printing cha-

racter, may always be obtained. With an old bath, containing much acid—or, worse, acetic ether—a collodion with little or much bromide, or none, short exposure, and old iron developer, a grey, thin, hard, patchy, granular negative, worthless for printing purposes, may, with equal certainty, be secured. The use of old discoloured collodion, the ether in which has become ozonized, is a cause of grey, granular negatives. The use of a weak old developer, acting slowly, and rendering much forcing necessary to bring out detail, is a sure source of granularity in the negative; and the grey, granular negative, as Mr. Lea observes, is very deceiving to the eye. It often seems to possess good gradation and sufficient intensity, but prints wretchedly.

The film-splitting difficulty has been again discussed, but not, I fear, settled. Many of the causes have doubtless been indicated, but one puzzling circumstance remains: how is it that, in a batch of negatives taken the same time, with the same collodion and chemicals, varnished with the same varnish, and kept in the same conditions, that one or more films will split, whilst all the rest remain perfect? This little fact—and most photographers are familiar with it as a fact—seems to upset all theories as to the cause of splitting being found in the quality of the collodion, the quality of the varnish, or the conditions of keeping. I commend the consideration of this fact to those who are engaged in investigating this important subject.

The absence, at the next meeting of the Photographic Society, of Mr. Hughes's paper describing his experiences in carbon printing, will cause much disappointment; and the regret will not be lessened when it is known that the serious illness of Mr. Hughes, confining him to his bed, is the cause. I learn that he is happily improving, and that the paper is only delayed, not lost. I have seen some of the carbon prints he has been producing, which could not be distinguished from silver prints on albumenized paper in texture and colour, even by experts. As this is the point of excellence to which photographers desire to attain, this will doubtless satisfy them. Meanwhile, the more cultivated in art matters ask, Is an albumenized print the highest standard of monochrome in colour and texture? Luckily, as such questions will arise, carbon printing can meet any exigency of this kind which taste may demand.

THE PURPOSE AND LIMITS OF RETOUCHING.

BY W. HARTMANN.*

WHILST striving to improve the purely technical operations of the camera, the desire arose among photographers to know more of the art of retouching, and thus, by means of the pencil and brush, to impart to the photograph those minor beauties which the painter—without, perhaps, being cognizant of the act—adds to his production, according to his skill and good taste. How far it is possible for the photographer to act as painter, and to improve his work by additions or modifications; how far he dare embellish his portrait without interfering with its semblance to the original; and how far, in fact, the limits of retouching may be carried, will form the subject of this communication. The ideal of beauty flutters before all of us, and an experienced eye is necessary to separate what is material and what is of no consequence in a portrait, and to distinguish between effects of an effective and injurious character. The perfection of the technical part of the work, and the limit or extent of the retouching, must depend upon the capacity of the artist.

In regarding any human face, it is at once apparent that the prominences formed by the facial bones which stand out so clearly are the least susceptible of modification. The surface of the forehead, the nose, jaws, eye-prominences, always bear some proportion to one another. It is these parts, together with the position of the eyes and mouth,

* *Photographische Mittheilungen.*

and shape of the nose, which constitute the striking characteristics or likeness of the portrait. More or less contraction of the muscles, especially of those at the corners of the mouth and eyes, and those of the cheeks and cheekbones, give the expression to the countenance. These features must, therefore, be handled by the retoucher with the greatest care. The skin, on the other hand, as likewise the hair, dimples, or relaxed and loose surfaces, may be treated with more freedom. At the same time, it must not be forgotten that the skin, owing to its tint and blemishes, is often more strikingly reproduced than slight dimples, which are rendered only by very light shadows. To render the face more plastic by remedying these defects is the principal aim and principal difficulty in the art of retouching. We will now consider these main points separately, and study the different features, their change in age, their difference in the sexes, and their value as regards expression and likeness.

The forehead, in children very round and soft, becomes exceedingly marked in the man, and separated into several flat surfaces, being one of the principal characteristics of his face. The upper part of the forehead is that portion of the human head which shows most plainly the form of the skull, and only the lower part is covered with the wrinkles which lie just above the eyes. When lighted up, the surfaces of the forehead are very distinctly marked, and here the skill of the retoucher is necessary to sober down the boundary lines so that the forehead may appear as much as possible like one surface. A too much rounded forehead—which is, with women, passable—renders a man weak and unhandsome, and, for this reason, a flat surface should be secured. The skin-folds in the forehead are disposed upon the lower portion according to the tightness of the skin, and run parallel with the prominences above the eyes. As they are often seen in middle age, and follow quietly the shape of the forehead, they may generally be allowed to remain in a softened form. The perpendicular creases or wrinkles which occur in later life, and which run across the former and interfere much with the beauty of the forehead, may be touched out altogether. At the most, it is well to allow the two principal of these wrinkles, which come from the root of the nose, and, to some extent, annul the horizontal lines, to remain upon the portrait.

The patches of hair on the temples, so soft and delicate, are always turned to good account by painters. The eyebrows, while differing much in density, form, and colour, are always of æsthetic value, from the fact that they follow the arch of the eye-hollows, and form the boundaries of these. For this reason it is well to soften down any hairs that may be growing out of place, and to define clearly the arches of the brows. A meeting of the eyebrows over the nose is considered a defect; it lends to the face a gloomy expression, more especially as a shadow is already cast upon this portion of the countenance.

The sum of a retoucher's labours are, therefore, confined briefly to rendering prominent the plane surfaces, the considerate treatment of hard and soft hair-patches, the toning down or removal of upright and unimportant creases in the skin, the softening of the large cross-wrinkles, and rendering the arched eyebrows more clearly defined. To what degree these operations may be pushed must, of course, be regulated by the age and sex of the sitter.

The head seen in profile often appears not to project far enough back. Smallness of the head in the presence of a large face imparts the characteristics of an animal. A little may, therefore, be added by retouching; at any rate, the head will then appear more important. In the same way any unsymmetrical arrangement of the coiffeur may be remedied by judicious additions or removals. Blonde hair which prints too deeply may be bettered by employing a body colour, and half-shadows in black hair which have been somewhat under-exposed may be harmoniously put in by means of a lead pencil. The same also holds good with whiskers and beards.

In the treatment of the nose the same holds good that was remarked of the forehead, for a muscle extends from down the length of this feature, rendering its upper surface more or less flat. The whole length, therefore, should be rendered clear, and, if necessary, a high light introduced to make the feature stand out in relief. The shadows at the side of the nose must be covered, and may be lessened should the feature appear too broad. Crooked noses may often be remedied. The shadows of the nostrils should not remain perfectly black. Attention should be paid to the fact that the shadow upon the lower part of the face be not of the same depth as that cast by the nose. The lighting up of the point of the nose is then more marked, and the effect more plastic. As regards the profile view of the nose, the outline of the same given by the bridge, generally so characteristic, must never be altered; at the same time, the fleshy portions, which, in old age, often increases to a marked degree, may be somewhat lessened without injuring the likeness.

The mouth, from its facile motion, by the lowering or elevating of its corners, and by its greater or less breadth, is the best criterion of the sitter's disposition at the time being; in many cases—as in the instance of children's portraits, where a happy expression has not been secured—much may be done subsequently by a clever retoucher to remedy the defect. In the first place, the lips should be separated from the line of their meeting, as also the corners of the mouth. The lips should, moreover, be cleared from any ugly creases or fissures in the skin. The form of the mouth may easily be improved by rendering its limits more prominent, and its shape more uniform. When, as sometimes occurs in old age, the angles of the mouth droop, and are continued by wrinkles in the same direction, care must be taken to soften these markings down, and to prevent them from appearing like a continuation of the mouth. Above the mouth are also seen in elderly persons very marked depressions and wrinkles, which appear often like an unshaven beard; these may be removed. Attention must, moreover, be paid to the various high lights between the nose and the mouth, and especially to that one stretching from the division of the nostrils to the prominence in the middle of the upper lip. The sharpness of the outlines of the lips is very changeable. Soft and prominent lips are more lighted up than those of a rounder nature, and, in the former case, their limits should not be rendered too prominent. The corners or angles of the mouth may be softened down, and in elderly persons reduced, but must never be wholly removed; and this modification may be carried to a greater extent below than above, as the sinking of the lines of the mouth is a sign of depression or sadness. In most instances the teeth come out very dark; the filling up of the intervals so as to fuse them into the lips is to be recommended when an open mouth is undesirable, and when the opening is not so large as to add materially to the thickness of the lips.

The eye is one of the most important parts of the face, and for this reason it is important for the photographer during the exposure to look well to its expression and direction. Nevertheless, there is generally much that may be done by the retoucher in improving the feature, and some instances in which the brush may be used with advantage may be here mentioned. The clear and bright expression at the commencement of the exposure oftentimes becomes dull, the eye-lids and pupils sinking almost imperceptibly, and the high lights either becoming blurred or obscured by the lashes. In this case the best remedy is to define sharply the outline of the iris, and to cover the high lights. It also frequently happens that the high lights are brighter in the eye that is in the shadow than in that upon which the light falls, and, in this instance, it is, of course, necessary that both points of illumination should be equalised. In the same manner the lower lids are often rendered unsharp by continual winking. At their edge is generally seen a sharply defined and very bright light, which is almost

always of a brighter tone than the whites of the eyes, and this may easily be improved upon the negative. In the white of the eye, especially in aged sitters, are to be remarked very prominent little veins, which impart an unpleasant spotty appearance to this feature in the photograph. These may be removed altogether by the retoucher, only care must be taken that the white is not too bright.

As regards the neighbourhood of the eye, the fleshy portion situated directly over it strikes one generally as being disagreeably dark. This, as also the form of the eyebrows and the folds of the upper eyelid, may be touched and lightened, so as to assimilate more to the original. The so-called lacrymal bags below the eyes are also portions of the face which are reproduced of too dark a colour. The folds or wrinkles in the last-named which are generally to be seen may be allowed to remain, although any cross wrinkles should be removed, so that the folds may be cleared and run parallel to the outlines of the eyes to meet at the angles thereof. Immediately next the lowest fold under the eye comes the cheek, of firm fleshy consistence, which it should be sought to reproduce in a rounded form by a gathering up of the lights. A shadow running down between the cheek-bone and the inside corner of the eye is either due to the colour of the cheeks, or to a thinness of the face, and this lends to the countenance a saddened, care-worn expression. When but slight evidence of it is apparent, it may be altogether removed, and in any case it must be softened down. As regards the wrinkles at the outer corners of the eyes, or so-called crow's-feet, these are much too characteristic to be removed altogether.

The outline and surfaces of the cheeks are determined by the position and degree of prominence of the cheek-bones. From some points of view the latter are sometimes reproduced too distinctly, and when this is the case some improvement may be effected by subduing the same. In reference to the surface of the cheeks, care should be exercised that the front and sides thereof are divided by distinct yet softened lines, so that the shadows created by sunkenness of the cheeks may be toned down as much as possible. A dark tint arising from the bronzing of the cheeks, as in the case of military men, farmers, and those much exposed to the action of the sun, may generally be reduced by covering upon the back of the negative.

The chin possesses generally a fat dimple, especially with elderly people and good livers, and this, stretching below, covers up a large portion of the neck in an unbecoming manner, and, imparting a broad effect to the lower half of the face, interferes with the proportionate beauty of the head. As already remarked, fleshy parts of this nature belong to those portions of the face which allow of retouching to the greatest degree. In cases of profile, considerable pruning may be effected, and in a front view, by removing the lower folds of skin, a portion of the double chin may be added to the neck. Careful manipulation is, however, necessary in correcting the outline and the more prominent part of the chin; the little hollow in the middle of the chin must be subdued, as it often appears as a crevice or darkened cavity.

The neck may be treated in the same way as the chin. When the neck is thin it is well to soften down the veins, sinews, and the like, as also the shadows caused by the same, and by suitable additions or removals to render it of normal dimensions. The same may be said of the shoulders, the bosom, the arms, waist, and hands. In these matters one can, of course, go to work in a much more confident manner, seeing that individual resemblance is by no means so important as the facial features. Angular and thin shoulders, spare arms, indifferently hustled, and all matters which interfere with the beauty of women, the painter avoids under all circumstances; and the photographer should proceed in the same manner as soon as his technical knowledge, skill, and taste, allow him to do so. Improvements are very necessary indeed in correcting the outline of the hair, and the folds of drapery in ill-fitting costumes.

By means of the retouching brush it is possible to add very much to the value of negatives, and especially to those in which a large number of defects may be removed, for it is not always possible, even at the cost of considerable trouble, to obtain a perfect portrait at the time of sitting.

The above are the main principles upon which the art of retouching, when not carried out superficially, is based. I am convinced that any artist employing these rules in a conscientious and careful manner, whilst working at the difficult task of retouching, will be successful in producing fleshy and life-like pictures; whilst an indifficient covering up and equalising of all shadows produces that description of plaster-like bloated portraits which is quite opposed to any anatomical modulation, and to the ruddy appearance of the human skin in health. By sketching from nature, and assiduously studying the character of good portraits, of new as well also as old masters, and by making collections of worthy copies, much improvement will be experienced, both in taste and judgment, and I can be scarcely wrong in pointing out this way as one certain to lead to the desired goal.

THE AUTOTYPE PROCESS.

BY TOM TAYLOR.*

THE reproduction by photography of the colouring of nature was once called a *desideratum*. It may now, with more propriety, probably, be called a dream. The nearest approach, judging by our present lights, that we are likely to make to this result is that obtained by the Autotype process, to which I propose to devote the present article.

It gives us, at least, monochromatic colour, enables us to reproduce a facsimile in colour—as in lines and light and shade—of any drawing in which one pigment only has been used, be it red or black chalk, sepia, indian ink, bistre, common ink—in short, any colouring matter or tint that can be incorporated with gelatine. Now though this is very far from a realization of their aim who have toiled at the imitation of natural colours by photography, it is a result of immense importance for the reproduction of drawings, in which the colour is of great artistic importance, and materially influences both style and treatment. It is only when we have examined the magnificent series of such facsimiles, including all that is most precious in the priceless public collections of drawings at Florence, Venice, Milan, Vienna, Bale, and Paris, reproduced by the indefatigable enterprise of Adolphe Braun at Dornach, that we can appreciate the vast importance of the Autotype process to the future of fine art education, and the honours it has already bestowed on lovers of such art in a branch of it hitherto practically out of the reach of all but millionnaires.

This is but one field of the Autotype. It has open to it another as wide, and not less fruitful, in the reproduction of drawings of the time, pictures, rare engravings, and prints from ordinary negatives.

Besides its power of reproducing monochromatic colour, the Autotype process has another immense advantage over ordinary photographic processes. As far as we can form a judgment, its productions are, humanly speaking, as permanent as the pigments employed in them; and many of those most used in drawing—as lamp-black, red or black chalk, and indian ink—are among the most permanent known to art. There is no reason, according to the most competent chemical judgments, to think Autotypes more perishable than engravings. The printer's ink determines, in fact, the life of both.

Having set forth the two great distinctive features of the Autotype, let us here say so much of the process as is necessary to understand how these long-sought advantages of colour—monochromatic, at least—and durability have been obtained. We have not room here to review the many gradual steps by which, like almost all inventions, this at-

* *The Portfolio*.

tained its present position. They are carefully detailed in the Manual published by the Autotype Company.

The basis of the process is the action of light on bichromate of potash in contact with organic matter. Coat a paper with a mixture of this bichromate and gelatine; expose it to the light, under a photographic negative, in a common photographic printing-frame. Where the light reaches the coated paper freely—*i.e.*, in the high lights of the negative, which are the extreme darks of the picture to be printed—the bichromatized gelatine becomes insoluble. Where the light is entirely shut out from the coated paper—*i.e.*, in the deepest darks of the negative, which are the brightest lights of the picture to be printed—the bichromatized gelatine remains perfectly soluble, and may be entirely washed away. In the half-tones—to be reversed, be it remembered, for negative and picture, by reading half light in negative for half dark in picture, and *vice versa*—insolubility is attained, or solubility preserved, in proportion to the degree in which light is shut out from or let in to the coating of bichromatized gelatine.

Now mix a pigment with your gelatine, and your lights, darks, and half-tones, are at once translated into gradations of that pigment, be it red or black chalk, sepia, indian ink, common ink, bistre, or what you will.

The practical difficulty in this process was to preserve the half-tones of the printed picture till they could be fixed on some durable support. They were floated away in the washing process necessary to get rid of the soluble parts of the print—its lights. It was Mr. Joseph Swan, an inventive chemist of Newcastle-upon-Tyne, who so far overcame this difficulty as to make the process commercially workable; but it was rendered practically and generally available by the patents of Mr. J. R. Johnson, the Chemical Director of the Autotype Company. Mr. Johnson has devised a new and highly improved pigment paper; has discovered that when an Autotype print is impressed on this paper it may be attached to a permanent backing, or support, without any cement. If this backing (a plate of zinc, glass, porcelain, &c.) be coated with a fatty substance (infusible at the temperature of the water used for washing away the soluble coating, but fusible at a somewhat higher point), the picture film may be readily detached from the backing. All that is necessary is, that it should be mounted on properly prepared paper by any of the many colloids* that may be used for the purpose.

The Autotype process of printing, preparing, and mounting an impression, though it take some time to describe, is, in practice, both easy and simple. The best way to understand it is to go to 36, Rathbone Place, on a Friday, on which day, Phœbus permitting, the process is shown to all comers. Here the student may follow the production of an Autotype, from the insertion of the pigment paper in the printing frame till the dry print on its enamelled paper is detached from the "permanent backing," or plate, which has given its cohesion while the soluble portions of coloured gelatine were being washed away. We have said that the process is permanent, humanly speaking. This is strictly true. In the ordinary photographs produced by aid of silver and toned by agency of gold, wash the chemicals out with what care we may, it is practically impossible to secure such a thorough purification as will ensure the print against first turning yellow and then gradually fading, under the sulphurous influences of our carbon-impregnated atmosphere. In the Autotype process, if the pigment be inert—*i.e.*, chemically harmless—the gelatine that is mixed with it may be relied on. It is not soluble gelatine, liable to change from damp, but gelatine made insoluble by its combination with an earthy basis. Dr. Markham has aptly compared the Autotypic medium of reproduction to transparent leather or vellum, known, by the illuminated manuscripts which have come down to us, to be, of all organic bodies, one of the most permanent as a basis for colours.

* Gums or glues,—means of stickiness, in fact.

When the process is complete, an Autotype print shows us nothing but the insoluble gelatine imbued with gradations of pigment, from darks through half-tones to highest lights, held together by a paper backing.

It is impossible, as far as the writer can judge, to exaggerate the perfection of the reproductions by this process of the drawings of the great old masters. It is as impossible in this paper even to indicate the specially interesting examples, among the many thousands of such reproductions brought out at very reasonable prices, from half-a-crown upwards, both abroad and at home. Suffice it to say, that there is no reason why every lover of such things should not have his portfolio of great thoughts of great masters, practically not to be distinguished from the originals. More important still, there is no reason why, instead of the rapid, smoothly-hatched French lithographs of Jullien and Co., our schools of art should not be furnished, by means of Autotypes, with selected examples of the best drawings of the greatest artists the world has yet known: such giants as Michael Angelo and Raphael, and all the great Florentines before and after the Renaissance; Titian and the Venetians; Leonardo and the Lombard masters; Dürer and Holbein; the Carracci and their Bolognese pupils; Rubens, Vandyke, and Rembrandt; to say nothing of the smaller Dutch and Flemish masters. We cannot imagine any better corrective of the faults which have been, with good reason, alleged against our present art-school system, than the study of such examples as are thus brought within the student's reach. They will teach him the meaning of real exactness and expression as distinguished from superficial smoothness, and laborious neatness of manipulation; while for the higher lesson, how life and meaning are to be conveyed, what intense and protracted pains must be used to reach the ease of perfect truth and nature, a good selection of such drawings would be simply invaluable.

We are glad to find that the Autotype Company recognise the importance of this employment of the invention. They are adopting means to cheapen the multiplication of school copies of the figure, in the shape of facsimiles of hands, feet, limbs, and torsos from the drawings of the old masters, by a patented process of mechanical printing, one of the many modifications of the method invented by Poitevin, in which a film of gelatine, photographically acted upon, is made to do duty as an engraved plate, from which impressions are taken in the printing or lithographer's press. As far as we have seen, all methods of mechanical or sun-printing have one common shortcoming—want of perfect delicacy and continuity of gradation, and a peculiar granulation, or meanness of texture, particularly in the shadows. Still, this method is well adapted for works requiring cheap and rapid multiplication, such as is needed in the case of copies for school use, to which the Autotype Company propose to apply it.

(To be continued.)

COFFEE AND OTHER DRY-PLATE PROCESSES, WITH PRACTICAL DETAILS OF A NEW DEVELOPER GIVING EASE AND CERTAINTY.

BY A. DE CONSTANT.*

§ IX.—THE FIXING OF THE IMAGE.

In the face of the many accidents which yearly happen with cyanide of potassium, it is really inexplicable why the same is still used in our studios, seeing that it is easily replaceable; and surely one is compelled to breathe quite sufficient of unhealthy fumes and vapours in photographic operations, without needlessly having recourse to a further danger. For this reason, I have determined to banish cyanide of potassium from my studio. A bath of saturated hyposulphite solution is employed instead. But I find that for dry plates it is very necessary to prolong the operation of fixing, for the negatives are very loath to part with the

* Continued from p. 162.

iodide of silver contained in the film. And often one finds, upon printing, that there still remains trace of that compound, large patches being produced, which, on exposure to the sun, become more and more intense. At the same time, when it is carefully ascertained that the iodide has been completely removed from the margin of the plate, one may rest assured that it no longer exists elsewhere, and that the image has been well fixed.

§ X.—VARNISHING AND PRINTING.

Generally speaking, dry plates soon lose their moisture; but it is, nevertheless, necessary to make sure that they are perfectly dry before applying the varnish, inasmuch as the least trace of dampness gives rise to irreparable stains and defects. It is, moreover, important to employ a varnish of good quality; for if the same softens by the action of the sun, the *cliches* are rapidly injured. Yellow shellac dissolved to saturation in good ordinary alcohol yields a varnish exceedingly impervious to the sun, for it hardens very quickly. But the film of such a varnish will not admit of retouching, and for this reason it is necessary to mix a little gum benzoin, to render it somewhat softer. Negatives varnished with this compound must, however, be allowed to remain a dozen hours before they are in a condition to be printed.

For landscape pictures retouching is not resorted to as in the case of portrait photographs, but, nevertheless, I think the process might be applied with advantage, either upon the image itself, or upon a coating of varnish placed at the back of the negative. The brilliant surface of the varnish is removed, where the retouching-brush or pencil is to be applied, by rubbing on a little pounce powder gently with the finger. Upon the matt surface thus produced it is possible to work easily, the detail of the picture being readily improved by the use of a drawing stamp covered with red chalk. In this latter case, the retouching is conducted on the same side as the image, excepting where large surfaces have to be worked upon, when it is better to operate on the back of the negative, so as not to destroy the delicate half-tints, which may not be without effect in printing. By means of an ordinary pencil one is capable of perfecting or correcting any details in the trees and foliage. All this, if done with a little skill and discretion, will improve the plate wonderfully.

I have already said, that according to the preservative employed, the *cliche* assumes a different colour when developed with pyrogallic acid. With the coffee-gum process the tint assumed is that of a brownish red, which possesses in general sufficient density to yield vigorous impressions. Brilliant *cliches*, which have a transparency so high that one may readily distinguish objects placed behind them, may be very taking at first sight, but are, nevertheless, unsuitable for printing; coffee, for instance, when used by itself, yields a film of this nature. The second development with iron solution which I propose is for the purpose of doing away with this transparency, by giving body to the image in the half-tones.

As it is impossible, however, always to obtain *cliches* of an absolutely perfect nature, it is well to know of means by which less satisfactory plates may be taken full advantage of. For this reason, I mention a few manipulations besides that of retouching, which may be useful. If the *cliche* is too hard and transparent, the defect may be remedied by placing at the bottom of the printing frame a sheet of ground glass somewhat larger than the plate, which rests upon the matt surface; or, instead of ground glass, a piece of matt transparent paper may be used. If the whole of the foreground has remained positive, the transparent paper may be cut so as to form a graduated mask, which is pasted over the most transparent part of the negative; and this paper may, moreover, be touched up by means of a stump and some red chalk. But where the *cliche* has been solarized, or is too weak altogether, it is exceedingly difficult to improve, and, indeed, the best mode of proceeding

is then to employ an energetic and highly albumenized paper in the frame, placing the same in the shade to be printed.

As a rule, when printing is conducted in the shade, the results are superior to those produced in the sun; but as, in such case, special arrangements require to be made, and more time is necessary, it is not always convenient to proceed in this manner. When, therefore, printing in the shade cannot be undertaken, it is best to cover the frames with a sheet of ground glass, the matt surface uppermost; and, indeed, this precaution is indispenable when the *cliche* has been retouched or masked, as any traces of tampering with the same are thus rendered invisible.

§ XI.—THE TONING OF PRINTS.

In treating of the operation of toning, I know very well that I transgress the limits of my subject; but, knowing the many formulæ from which the *debutant* has to choose, I cannot hold back a word of advice, and would recommend him to adopt a gold solution, which is especially suitable for amateurs, and will save much cost and trouble. For, after having experimented with upwards of fifty processes, I have at last joyfully returned to the simple and reliable toning solution suggested by that skilful chemist, M. Davanne, which is, indeed, nothing further than a neutral gold bath. The manner of compounding it is as follows:—

Water	1,000 grammes
Double chloride of gold and potassium	1 gramme
Powdered chalk	5 to 10 grammes

The mixture is prepared some eight hours before employment, and will remain good for almost any length of time if care is taken to bring it up to its original strength by the addition of more gold every time it is used.

To do this properly, one should have a bottle containing two grammes of chloride of gold and potassium dissolved in one thousand grammes of water; and of this liquid two and a-half cubic centimetres are added to the bath for every quarter sheet of albumenized paper toned. The toning solution is thus always ready for use of uniform strength, and kept neutralized by the chalk, which is allowed to remain at the bottom of the liquid, and of which a pinch is added from time to time.

M. Davanne, no doubt, has recommended the double chloride of gold and potassium from the fact that he believes the gold to be purer in this form; but I have found ordinary chloride of gold of good quality to answer the purpose satisfactorily. In any case, however, this toning solution will be found very efficient, and capable of furnishing any tone that may be desired.

Here my task terminates. I shall be happy if the dry process of which I have here given the details should meet with favour; and I trust, moreover, that the sentiments I have expressed upon the subject will not be too severely criticised, seeing that my only wish has been to render myself useful to my colleagues in communicating, in perfect frankness, such experiences as I have acquired from a long and diligent study of the subject.

CHILDREN IN THE STUDIO.

BY ISAAC WILFE.*

Or all the subjects which try the patience of a photographer—and their number is legion—there is none like children for firing the temper, and wasting the time and chemicals of the artist of the sun. I am fond of children; I may say I love them, I mean in the studio when I have no better subjects; but if I have children of large growth, I love to have the little ones at home. But as long as there are photographers and children, so long will there be subjects of the kind I am going to describe.

There is a stout lady about forty-five years of age, who

* Read before the Oldham Photographic Society.

has come along with her married daughter, about twenty-four years. This daughter has got a son about one year and six months old. This son is called Philip Henry, and, being a fine little fellow, they have brought him for me to take a portrait of him, and they tell me if I can make a good one of him they will come themselves, and have a dozen cartes-de-visite taken to send to America, and to give their friends, and I must be sure to make them good, because they have to go a long way. How would you like the baby taken?" is my enquiry. "Oh! he must stand, to be sure." "But he would be better taken on your knee," I reply. "But he is too big to sit on my knee," the mother says.

I see it is of no use trying to persuade the fond mother that her child may not be still. She tells me I have no need to fear him, that he could stand still; and how forward he is, and other good qualities, all of which, of course, I understood at once. The child is dressed in a light red or magenta-coloured frock, the eyes are blue, the hair is light, and curled on the top of his head as if they wanted to make a show of him. They have brought a small wooden horse and a whip. He is to be whipping his horse while I am taking his portrait. Of course, I tell them it is of no use attempting to photograph him whilst he is moving his hand. I prepare a plate, and put his head in the rest. I hasten to the camera to take off the cap, when, of course, he moves. It is failure No. 1.

To pacify him, he has an orange bought. He makes an incision in it. I ask them to take the orange from him, when he cries loudly. Then he must have toffy and humbugs. Meanwhile, the photographer thinks they are all three humbugs. Philip Henry being an only child, I am reminded of the Spanish proverb, which says, where there is an only child, there are three fools in one house. I am ready again with plate No. 2. They wipe away his tears. All is ready now, except his lips are a little apart. I ask him to please to close his mouth. He then opens it wide. Mother and grandmother both laugh. I then ask him to open his mouth. He now closes it.

I begin to focus again, and coax or threaten him to get him still; I tell him to look for a bird coming out of the hole, and that if it comes out he shall have it to take home. He is now quiet. I take off the cap; but this time he lifts his hand to his mouth, when lo! he has three arms. I tell the fond mother he has moved again. While I am preparing plate No. 3, they say, "You should take him now; look how still he is! Just now you should be ready, while he is still." The mother forgets he should be still when I am ready.

Losing one hour in time, and nearly all my patience, I persuade them he can be taken better on the knee. Mother says that grandmother must sit with him; I recommend the child's mother; but it is ruled otherwise. The mother is not dressed for her portrait, so grandmother takes her seat. She being an artist herself, it makes me rather jealous of her. Pardon me for calling her an artist, for she is one, nevertheless, for she is the mistress of the Red Lion Inn; and are not all the publicans painters, though it takes them twenty years, sometimes thirty years, to produce a correct likeness of one of their customers?

For a description of the old lady's figure, I refer you to a portrait she has brought with her, taken by that clever artist, Mr. Brown, of Regent Street, London, when on a visit to the Great Exhibition. The portrait is handed to me for inspection, and I find it a good one of the subject before me. The fact is, the old lady is sitting on a tall chair, and, being very stout, it would puzzle an ordinary person to tell whether she was standing or sitting. She calls Mr. Brown's attempt of her portrait a brute of a thing; she never had a good one out of all the number she had had taken; she hoped I would make a good one of her and the child.

The child is of fair complexion, light blue eyes, of a lively disposition, a frock that takes a dirty white. The old lady is very stout, of ruddy countenance—I fancy

takes tea in her rum—light blue eyes, sandy hair, her bosom nearly touching her chin, and when she breathes her bosom swells up and down like waves on the sea on a calm summer's night.

I remember, when young, a motto which says, that nothing is impossible to a willing mind. Now, I am willing to try all the powers of patience and perseverance which I possess, but I think it impossible to make grace, roundness of face, and a model of perfection out of the subjects before me.

The old lady takes her seat, and the child is placed in her lap, and just perched on the front of her knee. I want to take it as quick as possible, and put in the largest stop I use. I tell her to press the child to her bosom; to hold his head firm. I succeed, after shouting, whistling, and other noises, in getting what I consider a good result; but grandmother having a red face, and I wishing to make it clear, the child's face is one patch, which will not do at all. They tell me that they do not care about grandmother's portrait; it is Philip Henry's likeness they want. I tell them I can make a good portrait of the child, but grandmother will be a little dark. I make another attempt; and behold! it is crowned with success. The child is a model of beauty, but grandmother is dark. Both mother and daughter laud the portrait of Philip Henry, but grandmother is a little too dark. They wish me to try once more. It is no use me telling them that either one or the other will be spoiled; that it is impossible to make both alike when it takes six seconds for grandmother and only two seconds for the child. "Just try once more, Mr. Allprofit—do; and then we can choose out of the last three negatives which we shall have."

I want to get rid of such subjects, so I summon courage to try again, and manage to get one where neither is good, but both are moderate; then they give me the large order of three cartes-de-visite, which, at my price, is three shillings!

WEIGHTS AND MEASURES IN CONTINENTAL FORMULÆ.

THE French or metrical system of weights and measures is adopted almost universally in continental Europe; and, as our readers frequently meet with formulæ stated in terms of the metrical system, the following information will be often found useful:—

The unit of French liquid measures is a cubic centimetre. A cubic centimetre of water measures nearly 17 minims (16·896); it weighs 15·4 grains or 1 gramme. A cubic inch of water weighs 252·5 grains.

1	cubic centimetre	=	17 minims nearly
3½	"	=	1 drachm
23·4	"	=	1 ounce
50	"	=	1 ounce, 6 drachms, 5 minims
100	"	=	3 ounces, 4 drachms, 9 minims
1000	"	}	= 35 ounces, 1 drachm, 36 minims
or 1 litre,			
= to 61 cubic in.			

The unit of French weights is the gramme = to 15·4 grains; thus a drachm (60 grains) is nearly 4 grammes (3·83). An easy way to convert grammes into English weight is to divide the sum by 4, which gives the equivalent in drachms very nearly thus:—

Grammes.	Drachms.	Oz.	Drchm.	Grains.
100	+	4	=	25 = 3 . 1 . + 43

TABLE TO CONVERT GRAMMES INTO GRAINS.

Grammets.	Grains.	Deci-grammes.	Grains.	Centi-grammes.	Grains.	Milli-grammes.	Grains.
1	15·4346	1	1·5434	1	·1543	1	·0154

The unit of French measures of length is the millimetre.

The millimetre	measures	00.0393	inches.
The centimetre	"	00.3937	"
The decimetre	"	3.9370	"
The metre	"	39.3707	" = 3.28 feet.
One yard	=	.9136	metre.
One foot	=	30.4794	centimetres.
One inch	=	2.5399	"
One square inch	=	6.4513	square centimetres.

Correspondence.

PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

SIR,—When you have made a mistake that possibly may do injustice to others, the only honourable thing that remains for you to do is to confess the error, and, if possible, undo the mischief that may have been caused.

"From information which we have received," but which it is not necessary to give in detail here, we believe we have done wrong to the Committee of Selection of the Exhibition in our letter of the 31st ult. We now believe that our pictures were treated with great consideration, and that we shall be well and sufficiently represented by those retained for exhibition. The fact is that we felt some natural surprise that those of our pictures which had received the most attention at other exhibitions should have been rejected as unsuitable for this, and, hearing rumours of similar rejection in the case of other contributors, it appeared to us that it was matter for discussion or explanation. The explanation, with which you are personally familiar, and can at your discretion make public, has satisfied us of the purity of the motives and the care exercised by the committee in promoting the general interests of photography.

ROBINSON AND CHERRILL.

SIR,—As an old photographer, and one who has seen something of the littleness of its votaries, when professional jealousy gives the clue, may I ask the complainants in respect of the numerous charges against the Committee of Selection of the International Exhibition, in the last numbers of your Journal—

1. Whether they are quite fair in so hastily complaining of secret motives and unfair bias?

2. Why, if these were the motives, could they not wait for better proofs than mere cowardly assertion of supposed competition?

3. Does it follow that, although these rejected pictures were good, there is sufficient space for all comers, and that the Committee have, in contempt of their credit, rejected the best?

Take half-a-dozen pictures out of twelve, chosen by six different individuals: what kind of agreement would there be in the selection?

Artists are not proverbial for being good judges of their own works, and why should not photographers allow their critics to differ from them, and believe that an invidious task has been honestly fulfilled, rather than seek in their own prurient minds for an unworthy cause?

4. May I ask if one of the "rejected" pictures is not a very old stager from a door-post in a fashionable thoroughfare, and is it quite fair to send pictures already so well exhibited to the International Exhibition? If so, we may expect all the man and woman traps from all the doorsteps of the great metropolis, which—

"Evil and good, have had their tithes of talk,
And filled their signposts then, like *this one* now."

Whatever excuse the owners of the rejected photographs may have for placing their complaints, there can be none for Mr. G. C. Wallich, in writing the concluding sentence of the first paragraph, and the whole of the last paragraph, of his letter. Probably, to use his own words, "I have formed my own ideas on the subject" as to the cause of his so writing; but that he should travel out of his way to insinuate charges against the Committee of Selection, before they had even commenced the task allotted to them, is a piece of unfairness that deserves the reprobation of every right-minded man, and of "photographers generally."—I am, yours faithfully,
April 11th, 1871. TRUTH BEFORE FAVOUR.

SPLITTING FILMS.

SIR,—As the films appear to have given unusual trouble of late, judging by the correspondence on the subject, every suggestion that may render this trouble less liable to occur will, no doubt, be welcomed. It is evident the causes are various.

Some years back, when using a well-known commercial collodion, I was much annoyed by the film splitting during development, and could only get rid of the annoyance by changing the collodion for another sample by a different maker. It was evident to me the collodion was here in fault.

There is, however, another cause I have seen suggested that may be worth repeating, as it is, I think, a common one. When a developer containing acetic acid and alcohol is kept for any length of time, or in a warm room, it is very probable that a small quantity of acetic ether is formed during its gradual decomposition; and, as this is a solvent of pyroxyline, the use of such a developer would be likely to induce rottenness in the film, and so render it more liable to be influenced by outward causes; when, therefore, large quantities of developer are made, it is a good precaution not to add alcohol till it is required for use.—Yours respectfully,

AN ARTIST AND OLD PHOTOGRAPHER.

VICTORIA CARD ALBUMS.

SIR,—Your over ready and kindly attempts to benefit photographers by the suggestion of novelties calculated to revive their languishing business are, I fear, too often baffled by the apathy of those to whom we naturally look to give them the necessary start.

The Victoria Card, already becoming popular in America and on the Continent, would seem to have no chance of an existence here. I have spoken with some professional friends in London. We all agree that the size is excellent, and that if it were introduced with spirit and unanimity, it could not fail to be at once fairly successful, and ultimately an established favourite. The album is the difficulty. I cannot find that any have been brought over from the Continent. Several manufacturers to whom I have written have given me the same answer. Messrs. M—— and Co. say:—"We doubt if the Victoria will be largely in demand; if it should, we shall at once go in for them." Perhaps it is hardly fair to say that in so doing manufacturers are putting the coach before the horse, because the manufacture of a new size of album on the large scale would necessitate new machinery, &c.

Now, if ten or twelve of the leading London photographers would unite to push the Victoria vigorously, there is not the slightest doubt that the want of albums would soon cease to exist. This is, perhaps, too much to expect. Those who are inclined, say, "Provide the albums, and we will do our best to bring the pictures into favour." The manufacturers say, "Create the demand, and we will supply the albums." And so the proposal shares the fate of every project which has the misfortune to stand between two stools.

Is there no remedy? I think I can suggest one. Let twenty or five-and-twenty photographers subscribe fifteen shillings each, and let them commission Messrs. De La Rue and Co., or any other respectable firm, to make forty or fifty albums, the best they can for seven-and-sixpence each, to sell at half-a-guinea. A very neat thing might be made for that sum (taking the quantity) at a profit to the maker. The apertures might be hand cut, and bordered with a plain line in gold. As to the backs, and binding the wide margin, carte size would do very well. Each of the subscribers would have two of these, and could then go to work with a will. If gentlemen who think well of this will forward their names to you, sir, and, when the number is made up, their subscriptions also, I would willingly undertake the arrangement with the manufacturer if no one else would care to do so. As a stationer, &c., I have had some experience in such matters. Perhaps you would kindly receive and pay the money. If this should set the ball spinning at the centre, I expect before long to see it whirling at the farthest provincial circles.—I am, sir, respectfully yours,
MIDDLESEX.

VICTORIA CARD ALBUMS, ETC.

SIR,—In your last number of the News there are two things I should like to say a word or two upon.

As regards the Victoria Cards, I introduced them here (Dalston) a few weeks since, and they have taken very well so

far. The great drawback, of course, is not being able to procure albums for them. When this is remedied, I think they will be very successful.

While on the subject of albums, I will mention an idea that has occurred to me. Some of my customers and friends keep a special album for the portraits of deceased friends; would it not be worth some manufacturer's while to make an album expressly for this purpose, with a black line round the opening, and crossed corners, like the Oxford mourning note-paper?

What "D. W.'s" question is, of course, I cannot exactly say; but there is one great objection to having a studio near a railway, unless the artist decides upon not taking children, or the trains run very seldom, and he has a time-table handy, and is careful to operate between the passing trains: the chances are that just as he gets a child in a happy position—which may have taken him some time and patience—the noise of a train, or scream of a whistle, will either frighten or attract the child's attention, and spoil it all.—Enclosing a circular, I remain, in haste, yours truly,

F. A. BRIDGE.

April 12th, 1871.

PHOTO-GALVANOGRAPHY.

DEAR SIR,—My aim in the present letter is to refer to the remarks of Mr. P. Le Neve Foster. The mentioned gentleman "reiterated his conviction that no plate was ever issued by Mr. Pretsch whilst with the Photo-galvanographic Company which was untouched by skilled hand-labour; and, further, that the process was incapable of producing presentable works without retouching." The first assertion is only partly, and the second quite, untrue, which I will show by the present statement, as well as by evidence of eyesight, if the mentioned gentleman himself, or anybody else, will come to Vienna, to show them the mentioned specimens.

In the last exhibition in London—where also many specimens of Mr. Fox Talbot, the Ordnance Map Survey at Southampton, and Mr. T. W. Osborne were present—I had exposed a great number of specimens, both for surface printing as well as for copper-plate. The "Venus de Milos," and some other ones, were situated in the fourth row, near the ceiling; other ones were placed on the side corner; and some ones—especially the most uncompromising ones for surface printing—were situated at the first glance. However, Mr. Le Neve Foster was the superintendent of that department, and he would, and perhaps has done so, overlooked the exhibited specimens at his leisure. Does he not know that I had worked with Mr. Dallas only about one year, and that I had more than seven years for my own use? Does he not consider that I had exhibited, at that time, almost all the new specimens which I had furnished during my stay in London of more than seven years, the time of my presence in London being almost nine years, and, altogether, it is now fifteen years?

Returning to my object in view, I wish to say that I had furnished a great number of surface or block-printing. Now I have before my hands thirty-nine impressions from blocks. These impressions are perfectly untouched, and twenty or thirty of them could have been used with some advantage. They are all from photographs; both one of them from an engraving in the same size as the original; some of them also from engravings, but of a considerable smaller size as the original; some of them from drawings smaller as the original; and many of them are taken from nature like an ordinary photograph.

Now I cannot perceive why these have not been mentioned at all at the meeting of the Photographic Society. The surface or block printing shows an immense advantage in its application. It is done in another way than the intaglio printing process. The mentioned specimens are not chosen for this purpose; on the contrary, they are quite from ordinary photographs, and some of them in too small a size. They have been printed at Messrs. Taylor and Francis's, at Messrs. De la Rue's, and at Mr. Clay's; and, if some of them look perhaps not quite in the manner like an ordinary wood engraving, it is quite naturally, because, at first, they are not such engravings; and at second, I must confess that I were in the beginning of printing from engravings like wood blocks not experienced enough. But, nevertheless, I have shown what has been achieved in reality. There has been not done anything nicer than the "Rocks in Wales," the "Rubens," the "Amphitheatre of Pozzuoli," "Hancock's Drawing of Cattle," the "Boy of a Paysant," "Venus Callipyge," the "Cathedral of

Strasburg," "Braco of Birds," especially for surface printing (the two last mentioned from originals of the larger sized specimens for copper-plate printing).

Coming to the specimens of copper-plate printing, I pray to say, that I know positively having at least exhibited two specimens not touched at all, viz., "The Venus de Milos," in the same size as the photographed original, and the "Drawing of Cattle, by Hancock." The first-mentioned plate now is in the hands of Mr. Brooker, Margaret Street, and the last-mentioned specimen is, I think, in the hands of Dr. Diamond. I had, for the purpose of showing the truth of what I have stated, shown the untouched copper-plate of Hancock's drawing in the exhibition, together with the touched copper-plate of the two birds, just to fit the contrast of the two plates, as well as of its treatment. Of Don Quixote, photographed by Mr. Lake Price, which has been touched and issued in the "Photographic Art Treasures," I had three impressions from the plate not touched at all, which are, in fact, nicer than the touched one. One copy of them I have sent to Paris, the second is in the hands of Mr. Fox Talbot, and the third is still not in my possession, but it is in Vienna, and I think to get it back again, just for the purpose of showing it. Mr. Fox Talbot can show, if he likes, the print to anybody; and if it were only to prove the difference of my method against his own. He made no use of the plate being raised, but traversed it by etching and similar processes into a plate to print from.

But still I have some more untouched plates which have been not at all publicly exhibited. There are five different impressions of untouched plates, partly published and partly not. There are also four different impressions of a fresco from Rome, "The Muse of Music with two children." Some trials have been done with it for the purpose of showing the difference of printing. Portraits of three ladies photographed from life, one touched by a clover engraver, and the other is untouched, which certifies the superiority of it over the first one. "Venus," by Raphael, which is very nicely done, but has been almost spoiled by some touchings which have been not necessary at all. One copy of a pen-and-ink drawing, by Albrecht Durer. Three copies of the portrait of Prince Albert, photographed from life, which I had the honour of showing to himself at Windsor; but, unfortunately, he died shortly afterwards. One copy of it is nicely touched, the other copy has been touched with pencil by the prince himself, and the third one is not touched at all, and I must confess that I prefer it to all others. Two copies of a drawing by Leonardo da Vinci; one copy is dirty, but still I have no other one of it; it shows the plate how it appears without any help whatever, and the second one is from the so-called "touched plate," which has been spoiled altogether. I had shown these two impressions to the head of the printing room in the British Museum, and he approved the untouched copy, but rejected with contempt the touched one. One copy of a drawing by Mr. George Richmond, which is very nice, but I think you have seen it already at Mr. Hogarth's. The "Venus de Milos," which has been mentioned already, and a copy of a painting of St. John, by Raphael, which have been not touched at all. Prince Albert, still living, furnished two copies of drawings by Raphael; one of them was very much faded and washed out, just for the purpose of showing the difference of it with the other one, which was exceedingly nice. It was done accordingly, but it did not look well, because the original itself was touched; but the second one, a large and very splendid drawing by Raphael, was done beautiful. I have four copies of it, all of them not touched at all. The first copy is of the reversed copy, and it shows pretty well what can be done in this way; the second and the third copy are of the same plate, one copy done with black ink, and the other one of the very same plate, done with a pale ink only, by the printer, Mr. Brooker. The fourth plate did not want this; it was quite like the original, and, consequently, is perfect in its beauty, and shows the superiority of my method over any of the other methods of reproducing drawings of high artists; in fact, it proves that no other method is in existence that may and can do this. This mode of reproducing such drawings will form, by degrees, an immense value to the art, and it will certainly surpass the present mode of doing those copies by photography only. All of the mentioned specimens are not touched, excepting a few of them which I have exceptionally mentioned, just to show the difference between touched and untouched.

It was especially in the beginning of the business of the company that touching was so much applied. However, I

have also some untouched specimens of this first period, twenty-one of them, published afterwards with the help of hand labour, which has been exceedingly expensive, being a new thing, and the artists in London taking advantage of it. They are taken from photographs; some of them I do not consider at all failures, and many of them could have been published with very little help by the artist. Besides these I have seven impressions of three pictures, untouched and touched by the artist: two copies of the portrait of Mr. Fenton; two touched and one untouched of a copy of "I pays," by Rejlander; and a large landscape of Mr. Fenton, touched and untouched, just to show the difference of them. Three copies of the envelope, St. Laurent's Church, in Nuremberg, and the Queen of England on horseback, which are almost untouched, an untouched faint plate of the first-mentioned picture being added. Five specimens are here done from a transfer of the plate from stone, which are very nice, but, nevertheless, I do not consider them of any great advantage for the future.

Now, moreover, there are twenty-seven specimens of various sizes which are touched but very little, and forty-one of them which have been published, and show to some extent the handwork of the artist. This can, however, be only be applied to works taken by photography from nature, which is necessary at least to put the sky in. In works from art it is quite impossible to apply handwork.

I know and have watched the progress of carbon printing; I know the different modes of doing photographs by lithography; and M. Albert's, in Munich, mode of reproducing photographs by printing from the photographic plates themselves is very ingenious, but does only answer to an experienced and very clever printer. These three modes of reproducing photographs would have never reached any degree of importance, if the mode of doing them by copper-plate or surface printing would have been applied in England. I can do this, and I am ready to do it again at any reasonable request.

Maps of whatever description, being like the ordinary engraved ones, or only designed in a somewhat other way, or being only washed by pencil and brush, I can change in a considerable short time into a copper-plate, to print from any number of copies, being hundred thousands or more.

Expecting to see Mr. Le Neve Foster, and, perhaps, some other Englishmen in Vienna, who are also connoisseurs of old drawings and prints, I shall receive them with every courtesy, and remain, dear sir, yours very faithfully, PAUL PRETSCH.

PS—I am now living, 1, Färbergasse No. 8, Vienna, 4 Stock (fourth floor), where I will be at home twenty-four hours after receiving a written application.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

THE usual monthly meeting of this Society was held in the Architectural Gallery, Regent Street, on the evening of Tuesday, the 11th instant, Mr. J. GLAISHER, F.R.S., in the chair.

The minutes of the former meeting having been read and confirmed, and the receipt of Transactions of the Astronomical Society acknowledged,

THE CHAIRMAN announced, with regret, that, owing to the illness of Mr. Hughes, confining him to his room, his paper on Experiences with the Carbon Process, otherwise quite ready for the meeting, must be postponed.

MR. DUNMORE then read a paper on Large Photographs, advocating, as a simple means of securing them, the production of large paper negatives from small collodion negatives. He exhibited several good prints on whole sheets of paper, and the paper negatives from which they had been produced. The original negatives were half plates. The specimens shown were produced by an amateur in the country.

A MEMBER asked for details of production, as Mr. Dunmore had referred to the operation as simple and inexpensive.

MR. DUNMORE, not having produced the specimens himself, did not know details. They were produced by the solar camera. Probably, if demand arose, persons would undertake to produce large paper negatives for the profession.

MR. H. BADEN PRITCHARD thought such work was a step in the right direction. No one could doubt that the charming small photographs of men like Mr. Gordon and Mr. England would, if enlarged to three or four feet, be very beautiful.

THE CHAIRMAN said, as a small photograph often contained

beauties too minute to be appreciated, the enlargement would often be very valuable. He should have been glad if some practical details of effecting this work had been given, and hoped that, on another occasion, Mr. Dunmore would be able to show to members that the process was as easy and simple as he had suggested.

After a vote of thanks to Mr. Dunmore,

THE CHAIRMAN showed a photograph of a port-wine bottle, in which the deposit or crust had been eaten into a curious design by, it was supposed, some caterpillar. He also showed some photographs of the recent eclipse by Lord Lindsay, and requested his lordship to furnish a few particulars of their production.

LORD LINDSAY referred to a few of the difficulties he had to encounter. First, delay and attempted extortion at Cadiz. Then, after transporting his instruments and equipment over very bad roads for twenty-five miles, he reached the desired position. The bad weather which ensued prevented observations whereby the instruments might be adjusted in a satisfactory position. The day of the eclipse having arrived, and everything being arranged in the best manner available, he placed two of his assistants in the dark room, one at the finder, another to pass plates to and from the dark room, whilst he himself exposed. He exposed ten or twelve plates during totality, and got six good negatives. About ten minutes before commencement, the sun became covered with a large cloud; fortunately, a vignette-like hole or rift in this cloud occurred, which just passed over the sun during totality, permitting the eclipse to be seen through it. Of the six negatives obtained, the longest exposure was twenty-three seconds. He hoped to show the photographic apparatus attached to the telescope at the next meeting. It was arranged so that it permitted him to get as many as seventeen to twenty negatives of the sun in a minute.

After a vote of thanks to Lord Lindsay,

THE CHAIRMAN called attention to the prize photographs of the Amateur Photographic Association on the wall, and, after a vote of thanks to the Association, the proceedings terminated.

Talk in the Studio.

PHOTO-LITHOGRAPHS OF MUSIC.—We understand that at the inauguration of the Royal Albert Hall, the copies of the music used by the singers and players, instead of being written by the old mode of taking out the parts of scores, were first photographed, then laid down on stone to be lithographed. The time and labour expended in the correction of written copies are now saved. Fidelity is secured by photo-lithography, as well as promptitude. We believe that the method of Mr. Griggs was employed.

MORE PIRACY OF PHOTOGRAPHS.—On Monday Mrs. Theresa Conroy, described as a photographer, and who had been apprehended on a warrant, appeared before Sir Robert Carden to answer a charge of infringing the Act 25 and 26 Vic., cap. 68, passed for protecting copyright in works of arts. Mr. George Lewis, jun., solicitor, conducted the prosecution; Mr. Merriman, solicitor, the defence. The prosecutor was Mr. Henry William Taunt, a photographer at Oxford, and he deposed, in effect, that he had photographed both the Oxford and Cambridge crews of the present year, who had respectively sat to him for the express purpose. He produced one of each of the photographs he so took, and a copy of the certificate of registration, which he had lodged in the proper quarter on the 9th of March, with the view to secure the advantages of copyright as to the Oxford crew, one of whom was thus described in it: "Mr. Payne, with his hat off." The copyright as to the Cambridge crew was registered in like manner, and the photographs of both crews were published by him in great numbers, and sold at 1s. each. On the 31st of March he bought, first five, and afterwards six spurious copies of his photograph of the Oxford crew, for 2d. each, in a court leading out of Little Tower Street, where the defendant and her son were selling them, and where he saw about sixty more on a piece of paper, and about as many again in a case. He also bought there a copy of his photograph of the Cambridge crew. After the warrant was granted for the defendant's apprehension, he went with a police-officer to 10, Bond Court, Wallbrook, an address she had given, and saw the officer take possession of nineteen more copies of his photograph of the Oxford crew. He had never given her nor any one

else permission to copy them. He had the negative still, and it had never been out of his possession. Being cross-examined, witness said he had registered six photographs of the Oxford crew from as many negatives, and worked them all; but in only the certificate of registration of one did the remark occur, "Mr. Payue, with his hat off." He had printed from all the six, and sold about 500 copies. The first day of publication he sold fourteen dozen at 1s. each. He afterwards saw the defendant's son at Putney selling pirated copies at 3d. each. Mr. Boydell Graves, son of Mr. Henry Graves, printseller, Pall Mall, proved that a warrant was now out for the arrest of the defendant's husband, at the instance of his father, for the infringement of copyrights in celebrated engravings vested in him, the "Railway Station," by Frith, being among the number. For the defence, Mr. Merriman complained of the manner in which the case against his client had been got up, and argued that a warrant should only have been issued where there was reasonable ground for believing that a summons would not receive the attendance of the defendant, which was not so in this case. He believed the law in this instance had been administered in an illegal manner, but, if not illegal, then in a way never contemplated by the framers of the Act. Mr. Oke, the chief clerk, replied that it was a matter entirely within the discretion of the magistrate to issue a warrant or a summons with respect to such an offence as that now charged. Sir Robert Carden commented upon the serious detriment and discouragement resulting to artists from a systematic piracy of their productions, and he fined the defendant £5, as he was empowered to do, for the first copy sold, with the alternative of two months' imprisonment, and £3 each for the other ten copies, with the alternative of twenty-one days' imprisonment, which would be cumulative. The fines amounted in all to £35. Mr. Merriman intimated that he would appeal against the judgment to a superior Court.—*Times*.

To Correspondents.

TROUBLE—We fear very much that with the studio you describe you will always have trouble. It is neither built nor arranged in accordance with advice we have very repeatedly given for years past. A south-east aspect must always be more or less troublesome, as the quality and strength of light must be perpetually changing. But two thicknesses of calico used to keep out direct sunshine must inevitably deprive you of almost all the light. If you cannot have any other aspect, you must be prepared for constant care and management. Instead, however, of using two thicknesses of calico to intercept direct sunlight, use one thickness of tracing-cloth, or a thickness of tissue-paper stretched on a frame; or slightly dull the glass through which the sunlight constantly pours, by means of starch. Any of these will sufficiently break the direct rays, without stopping out much light. Your room is rather low and narrow. Green is a bad colour for the walls, and blue-and-white-striped blinds are unwise.

MELBOURNE.—Under the circumstances you describe, you appear to have a perfect right to sell the prints. The original drawing may be copyright, in which case a question might arise; but if you have had permission to sell photographs of it for years undisturbed, it seems improbable that your right can now be disputed. The portrait of a dead child is very pretty and successful indeed.

G. BARRETT.—The yellow spots are due to imperfect fixation at the points in question, probably caused by the formation of minute air-bubbles on the print whilst in the hypo bath. These bubbles prevent the perfect action of the bath at these points, and cause yellow spots of imperfect fixation, which do not show generally until after the print is washed and dried. 2. The tone is good. 3. We are unable to recommend any especial manufacturer. 4. We cannot with certainty speak of the probable success of the cameo vignettes. So far as we have opportunity of judging, they will become popular, and we think they deserve to do so. 5. The example you enclose is very good. The figure is slightly too low in the oval, however.

SEMPER VIRENS sends us the following advertisement cut from a provincial paper:—"Important Notice.—Professor Simpson, from the London Photographic Society, is erecting a first-class photographic studio in St. John Street, —, which will shortly be opened. The Professor intends to open his establishment in the London style, and at London prices, which will be announced in future advertisements. Photography in all its branches, with all the latest improvements. By strict attention the Professor hopes to gain a liberal support." Our correspondent asks, "Can this really be our respected Editor?" and wishes to know what are London prices. We need scarcely inform him that we know nothing of the matter. We hold no professorship; and there is not, and, so far as we remember, never was, a Professor Simpson connected with the Photographic Society.

A. Z.—The simple ridge-roof form of studio is best. The size depends much upon your choice or necessities. The following are good proportions:—Length, 26 feet; breadth, 12 feet; height to eaves, 8 feet; to ridge, 14 feet. The principal side-light from the north; on north side and roof all glass, except five or six feet at each end; the glass need not come within 18 inches of the ground. No glass is necessary at either end or on the south side or roof, but a small portion of glass on south roof may be at times convenient; but it should be kept covered with blinds when the sun shines.

F. S. M. (Bedfordshire).—Varnish may be filtered either through soft filtering paper or cotton-wool, taking care to put a plate of glass on the top of the funnel to prevent evaporation. We prefer, however, to let varnish stand to settle well, and then to decant off the clear portion. It is wise, also, to pour from one bottle, and pour back into another, so that the stock of varnish for immediate use may be kept clear, and free from particles flowing back from the plate. 2. The reason that you have fewer negatives break now that you are using old cleaned plates coated with albumen is doubtless due to the fact that the plates have been before tested and found flat, whilst amongst new plates some will occur which are not so. Your plan of using two glasses is useful in improving the gradation.

J. A. D.—Mr. Durand's method of preparing his sensitive paper so as to keep some time without deterioration is a trade secret, with which we are not acquainted. We have recently published the best generally known method of keeping sensitive paper.

SIXTH VOL. sends us details of an irritating kind of competition to which he and others in his neighbourhood have recently been submitted. He says:—"Knowing you to be an advocate for remunerative prices in photography, I write to state a piece of what I consider unfair practice now being adopted by a provincial firm, which may be considered legitimate by some business people, but which I consider deserves a different appellation. Some three or four years ago the said firm sent an operator here to obtain a set of view negatives, and, as soon as they were ready, they offered them to the non-photographic shopkeepers at 3s. per doz. cartes, 6s. per doz. stereos, to sell at 6d. and 1s. respectively, and which was respectively 6d. and 1s. lower than photographers had supplied them before. On calling upon my customers at that time, I was informed of the reduction, and told that if I would supply my views at the same prices I should be dealt with by them. I, with others, bowed to my fate, trusting to the merits of my productions to secure custom, a result which has followed, my wholesale business having gone on satisfactorily increasing. And, in consequence of our rivals finding their orders becoming so small, their authorised representative, on his last visit here, disgusted with the smallness of the accounts, plainly told his customers that unless they gave orders as formerly to a respectable amount, that they (the firm who sent him) would push their goods into any and everybody's hands, such as greengrocers, &c., and at such prices as would enable them to sell cartes at 2d. and stereos at 6d. each, so as to cut up the trade. I am sorry to state that some here were intimidated into giving larger orders through those means, and, consequently, we local photographers suffer accordingly. Can you advise any means by which we may prevent photography being so degraded? In some other towns I am informed their customers refusing to be intimidated, they actually carried their threat into execution, and eventually gained their ends. Now, can nothing be done to stop such proceedings, to prevent them bullying their customers into their own terms, to the detriment of local tradesmen, with threats of ruining the photographic profession in the place? We made the best of fair competition, but, when such means are resorted to, I think we are called upon to bestir ourselves. Could not the photographers in other towns the firm have "done" be induced to join hands and support each other in such a matter? Is there not sufficient *esprit de corps* amongst them to make a stand against such practices? Can you assist us in putting us in the way of communicating with each other?" The circumstances described are sufficiently mortifying, and the conduct of the firm in question, in our estimation, is as unwise and suicidal as it is injurious to others. We regret, however, that we do not see any method whereby such under-selling can be prevented. The best plan is to excel them in quality, instead of attempting to compete in price when they sink below what is fair or remunerative. The examples sent are very good.

C. G. E.—Any photographic dealer will, doubtless, supply you with crucibles; or, possibly, you may be able to procure them of a local chemist. We cannot tell you the exact prices; but they are not expensive.

R. SLINGSBY.—We coincide with your decision.

ADAM DIXON.—Thanks. In our next.

F. NEWBURY.—There is no manual on the subject of enlarging by line light. The back YEAR-BOOKS are almost all out of print. The present has been sent. Various numbers of the NEWS contain articles on enlarging by artificial light.

W. H. BADEAU.—Many thanks.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

It will gratify our readers generally to learn that, all difficulties and doubts to the contrary notwithstanding, the display of photography at the forthcoming International Exhibition promises to be fairly representative and decidedly satisfactory. During a recent visit to the Exhibition in its present embryotic and chaotic state, we were very agreeably surprised to find the completeness in every respect of the photographic department. The various portions of the Exhibition buildings are, as many readers know, scattered about the grounds of the Horticultural Gardens; photography, however, in conjunction with water-colour drawings, engravings, and other fine art products, finds a place in the handsome gallery which runs round the Albert Hall. Although the position necessarily involves the ascent of many steps, no more favourable or attractive locality could possibly have been chosen for light, space, and convenience; and no place more favourable for publicity, as the gallery in question must inevitably be visited by almost every body, not merely for the purpose of inspecting its fine art contents, but as presenting the finest view of the very noble hall, which far surpasses in grandness of proportions, symmetry, and general harmony of effect, the majority of the descriptions which we have met with.

Before referring further to the photographs, it may be well to advert to a subject the discussion of which has occupied some portion of our columns during the last few weeks, and in relation to which we are asked in the present number for specific explanations with which we are familiar. The Committee appointed to make a selection of the worthiest examples of photography to fill the space available, having completed their work, at once notified photographers that they might withdraw the contributions not found worthy, or for which there was insufficient space. The inevitable disappointment followed: similar disappointment always has followed, and probably always will follow, on similar occasions. Many contributors felt disappointed that all their pictures were not retained, and others discovered that the rejected contributions were the very pictures which themselves and their friends had most highly admired. The care and capacity, or the motives, of the Committee in such cases are at once suspected: their judgment is at fault, or some sinister motive is at work. This kind of dissatisfaction is probably very natural, it is certainly very common. We know something personally of the thankless character of juridical labours in exhibitions of this kind: hard and anxious labours are rewarded at times by hard and virulent abuse, generally by distrust, and rarely or ever by gratitude. In this case, however, the rumours of dissatisfaction assumed a more specific form, and it was distinctly suggested that one of the Committee

who had attained a very high position in the most artistic branch of photography had suppressed the works most likely to compete with his own productions. All these rumours prove, on a little examination, to be utterly groundless. The letter of Mr. Peter Le Neve Foster in our present issue satisfactorily explains and justifies the general position of the Committee; but we may add a few further comments, the result of personal investigation and enquiry, in order to show that the principles which directed the selections of the Committee most conduce to the interests of photography and photographers, that their work is thoroughly well done, and that rumours of personal motives are altogether without foundation.

To dispose of the latter point first, it is simply necessary to state that the Committee do not exhibit at all. That the interest of the Exhibition would have been greatly enhanced by the display of some of Dr. Diamond's photographs, unsurpassed in their special branches, and by some of Col. Stuart Wortley's grand sea and cloud pictures and large portrait studies, there cannot be a doubt; but there cannot be less doubt that, in refraining from exhibiting, these gentlemen take the highest and most unchallengeable position, and become, like Cæsar's wife, not only pure, but beyond suspicion.

In doing justice to photography and photographers, the Committee had three considerations in view: they had to secure excellence, novelty, and a fair distribution of space; and their general aim would not have been secured by the sacrifice of any one of these considerations. We believe that, as a rule, little difficulty was experienced in relation to the first. Photographers generally sent their best work, and much good work was contributed. Too often, however, the element of novelty seemed to have been altogether disregarded. In many cases the pictures sent in had been displayed at every exhibition held for a year or two past; many had been published, advertised, and sold largely; some had been in show-cases, or used as advertisements. The justification offered by the contributors of such pictures we know will be, that novelty was not made a condition of acceptance, and that if it had been, the long unfavourable season would have rendered novelty absolutely unattainable. It should be remembered, however, that whilst the absolute novelty which will be demanded in the subsequent annual exhibitions of this kind was not made an imperative condition here, yet novelty is at all exhibitions a desirable, if not an inexorable condition, and that of two pictures equally excellent, that which was new, or, if not new, that which had been least frequently exhibited, would be selected. That the importance of sending new pictures has not been appreciated by many photographers is tolerably certain; but after a very little reflection it will be clearly seen that the exhibition of old and familiar pictures must completely defeat the end of the contributors themselves. Visitors to

the photographic department seeing a number of pictures with which they were familiar would quickly lose interest in the display. The press critics generally, from whom, at an exhibition of this kind, exhibitors hope for notice, seeing pictures which they had noticed at other exhibitions, would pass the matter by as stale, and, therefore, without interest. For these, and a variety of other tolerably self-evident reasons, some degree of novelty becomes a condition of vital importance to photographers themselves, without stipulations from the authorities. Absolute novelty was probably impossible this year, and it was not made a condition, as in future years it will be; but wherever it could be found combined with sufficient excellence, it was a recommendation which secured the selection of the Committee. We may add another hint to photographers: novelty and excellence in some cases fail to secure pictures a position if these qualities are spoiled by the introduction of the trade element. We understand that some of the rejections were due to the fact that the contributions were clearly trade advertisements, and nothing more.

The best justification of the Committee will be found in the accomplished fact. Within a fortnight the display will be open to the public, and we shall not anticipate by entering into details now. We may remark, however, that we feel sure that those gentlemen who have been induced, by adverse rumour, to express doubts, will be perfectly satisfied with the result as it stands. We repeat, that the collection of photographs is a very fine one indeed, well selected, and admirably hung. There are five bays or panels devoted to photographs, each about twenty feet wide by sixteen or eighteen feet high, and in each of these are hung, in very effective order, from sixty to seventy pictures, all more or less excellent, some very fine indeed, and many of the best quite new. We miss the works of some we should have liked to see present; but, on the whole, the selection is admirably representative, as well as of great excellence, and the general arrangement leaves nothing to be desired.

THE WET PROCESS WITHOUT DARK ROOM OR TENT.

It can scarcely be doubted for a moment that if the wet process could be worked in the field as easily as dry plates, and involved as little trouble in packing and carriage of appliances, dry-plate photography might, except for very special purposes, soon be numbered amongst the extinct arts. Repeated attempts have been made to render the wet process possible without a tent, and many ingenious contrivances have been devised to permit the preparation of a plate, and its transport through its various phases until it emerged as a negative, under perfect shelter from light; and some of these have had so much promise that we have been surprised that they have been received with so little attention or favour by the photographic public. Tents, manipulating boxes, and manipulating cameras, all possess the cardinal objection of involving troublesome package, bulk, and weight, and, worse than these, of involving much discomfort in manipulating. With the head enveloped in a hood, as in Archer's camera, the arms both engaged inside a box, and held there with sleeves, or the whole figure inside a small tent, there are many discomforts and inconveniences besides the risk of being attacked by the bull, which was once supposed to be the landscape photographer's *batte noir*. But in spite of these things, the seductive faculty of the wet process, the charm of knowing the quality of the negative just exposed, the opportunity of trying again when any form of defect is noted in the negative; these, and many other advantages, induce many photographers to bear the fardels of the wet process, and groan and sweat under the weary load of impedimenta it involves.

The very ingenious combination of camera, baths, and protecting plate carrier, described some years ago in our pages by Mr. Barrett; the photo-camera-hutch, a some-

what similar arrangement, described more recently by Mr. W. Whiting; the miniature apparatus of Dubroni; and some similar contrivances for working wet plates in daylight without a tent, have failed to impress photographers with their practicability; from what cause we cannot precisely say; but, so far as we can judge from expressed objections, chiefly on the ground of the possible contact between the silver bath and the developer, being conveyed by the portions of the apparatus holding the plate. That such a danger was by no means a necessity we are satisfied, if ordinary care were used in the operations, the experiences of Mr. Barrett, a trustworthy amateur, and that of Mr. Whiting, both bearing full testimony to this fact. But fear of this, fear of the trouble of the operations, or of the apparent complications of the apparatus, or of other undefined troubles, have served to prevent the contrivances coming into use.

Mr. Edwards proposes to effect the desirable end in question by simpler contrivances than those hitherto proposed, and by means of apparatus sufficiently efficient to silence all objections, and captivate the most indifferent or unbelieving. There appears to be neither difficulty nor risk of any kind in the system of working he proposes. The new appliances consist of a silver bath and a developing bath. These, and a new camera back, are all the new apparatus required. The silver bath consists of a flat bath of well-seasoned wood, lined with a neutral water-tight material, having at one end a well containing the nitrate of silver solution. A plate having been coated and placed in the flat bath, is protected from the light by the new camera back, which slides into a groove so as to cover the flat bath. The solution from the well is suffered to flow over the plate, and remain a sufficient time to excite the film properly. The bath being then placed in a vertical position, the solution flows back into the well, and the plate is left a few seconds to drain. A very clever contrivance in connection with the apparatus next comes into play: the bottom of the flat bath consists of a sheet of pure india-rubber, which, being elastic, permits the plate to be pushed forward into the camera back, the slide of which has been withdrawn to permit the plate to be passed into it. The slide is again closed, and the camera back containing the excited plate withdrawn, which, having been exposed, is ready for transfer to another flat bath for development. This, also, consists of well-seasoned mahogany, rendered neutral and water-tight. Its bottom consists of non-actinic glass, and it has a sliding cover of non-actinic glass. The camera back having been placed in a groove over the dish or bath, the yellow glass top is withdrawn, and the slide of the camera back being also withdrawn, the plate drops flat into the bath. The yellow glass cover is now again closed, and the camera back removed. At the side of the flat wooden bath is a cell, into which a developer is poured. This cell is ingeniously arranged with an aperture formed of a double elbow or zig-zag, which a fluid can readily flow over, but which is an effectual protection from light. The developer is thus easily made to flow over the plate, and, as top and bottom of the bath consist of yellow glass, there is no difficulty in watching the process of development.

The developer used by Mr. Edwards is that he recently described in our pages, consisting of a few drops of a concentrated solution of sulphates of iron and copper, added to a solution of acetic acid, alcohol, and water, the two being mixed when required. The peculiar characteristic of this developer consists in its deliberate action permitting time for watching the precise result required. When the negative is seen to be sufficiently developed, the iron solution is poured off, and a little of the acetic acid and water applied, which at once effectually arrests development. The plate can then be removed from the bath in daylight without risk of injury, and can be placed in the box without washing, to be dealt with at home at leisure.

The simplicity, compactness, and efficiency of the apparatus, and of the operations, appear in all respects to leave nothing to desire. Mr. Edwards has produced a negative in the dining-room of our residence with perfect ease and perfect success, as he also produced one before the South London Society by the aid of the magnesium light. With ordinary care there appears to be neither risk of stain nor failure, all the operations being as easily and safely practicable in a sitting-room as in the open field. There is no risk of injury to or contact between the solutions, and everything appears under control as perfect as that obtained in working in a dark-room, so that amateurs at home, as well as in the field, will find the new apparatus a very valuable accession to the operating facilities.

OBITUARY.—T. R. WILLIAMS.

With very deep regret we have to announce the death of one of the oldest and ablest amongst the veterans of photography, our task being rendered more painful and difficult by the fact that in doing so we have to speak of the loss of a very highly esteemed personal friend. On Wednesday week, in the forty-seventh year of his age, Thomas Richard Williams, of Regent Street, died at his residence, Sellers Hall, Finchley. Just two years ago Mr. Williams, who had been for some time in imperfect health, was stricken down by serious illness, which rendered his immediate and complete retirement from business imperative, his disease being pronounced incurable, and even temporary prolongation of life depended upon perfect rest and constant care. These conditions being at once secured, partial restoration followed, the two years which have elapsed since having been marked by interchange of hope and fear, recovery and relapse, general weakness increasing until the end came.

Mr. Williams was one of the earliest photographic portraitists, his connection with the art commencing immediately after his birth, upwards of thirty years ago. In the year 1840 M. Claudet commenced professional portraiture by the Daguerreotype process in London, and shortly after he commenced, Mr. Williams, then a youth in his seventeenth year, entered his establishment, the especial duties for which he was intended being those of book-keeper and assistant in the reception room. Very soon, however, his skill and taste led him to take part in the operative and artistic departments of the establishment, and he developed a rare talent for tinting Daguerreotypes with the powder colours then just introduced. After spending a few years in M. Claudet's establishment, and acquiring high skill in different branches, he left, and was for a time successfully engaged in the studios of Beard and Henneman. It was in West Square, Lambeth, where, in a modest way, Mr. Williams had commenced business on his own account, that he first obtained the attention of the art world as a photographer of very unusually fine taste and skill, Sir Charles Eastlake, then president of the Royal Academy, being one of his earliest patrons. From this time his career began to be one of rapid and complete success; the unpretending little Lambeth Square being not unfrequently blocked with a dozen carriages awaiting the visitors at Mr. Williams' studio. About seventeen or eighteen years ago Mr. Williams removed to Regent Street, where he built a studio, the excellence of his results and the success attendant thereon having in no wise declined. Two years ago, when his health failed, he was joined in partnership by Mr. W. Mayland, of Cambridge, a gentleman whose delicacy of taste and especial skill accorded in a singular degree with the qualities which had attained for Mr. Williams such a high position in the ranks of photographic portraitists. The Regent Street establishment was thus enabled to maintain, without diminution or change, its prestige in the special branches of portraiture in which Mr. Williams had for years stood *facile princeps*.

The chief influence exercised by Mr. Williams on photography consisted, not in making discoveries or initiating novelties, not in communications to societies or articles in journals, but in the force of a great example. His produc-

tions were always something to work up to, and for many years seemed to present to the majority of portraitists a pinnacle of excellence altogether unattainable, dependent upon occult causes, the arcana of which were impenetrable. Mr. Williams was, however, an originator. To him, if we are not mistaken, photographers are indebted for the simple suggestion of iodizing the nitrate bath, instead of spoiling the first few plates immersed into the uniodized solution. He was the first also to produce the charming subject stereo slides which had at one time such a rage. Groups and rustic scenes, often combined of properties arranged in his studio, yet managed with such consummate skill and feeling for nature that, even with the searching scrutiny of the stereoscope, no discrepancy or lack of truth and keeping was perceptible to the closest observers of nature. First in Daguerreotype, and afterwards on paper, these charming studies had for a time a high popularity, and it was only when the same class of work became vulgarized by imitation, and scarcely remunerative from competition, that it was abandoned by Mr. Williams, in order to devote himself more completely to his especial forte, portraiture, in which he attained a higher and more remunerative success than probably any of his contemporaries. The Daguerreotypes of Mr. Williams were distinguished by the combination, in their highest possible forms, of brilliancy and delicacy; and precisely the same qualities distinguished his paper pictures. The especial class of portraits which have been associated with his name for years is the whole-plate vignette, generally consisting of head and bust only. These were always remarkable for the singular roundness and perfection of the modelling, the solidity united to exquisite delicacy, and the perfection of the vignetting. As a rule, his work possessed, in virtue of excellent lighting and skilful photographic management, the rich delicate modelling with which photographers are now familiar as the result of retouching the negative. A fine perception in selecting always the most beautiful aspect of a head, and an instinctive knowledge of the treatment and arrangement which would render it at once the most picturesque and characteristic, were also amongst the essential elements of his success and reputation.

Great excellence and complete success in any art generally depend upon a combination of qualities; but, probably, to no one quality did Mr. Williams owe so much of his success as his exquisite delicacy of taste, his fastidious demand for faultlessness within the range of his perception. No result was good enough which was not the best attainable. In a business returning five or six thousands of pounds per annum, rarely a picture was permitted to be sent out which had not passed under his eye. We have seen him throw aside ten out of a dozen whole-plate vignettes sent in by the printer, in which scarcely any fault was perceptible; but the shape, gradation, or the extent to the eighth of an inch of the vignetting did not come up to his standard, or the precise depth or tint might be improved; and if improvement were possible, the print was ruthlessly condemned. This precision and fastidiousness of taste governed the whole of his work. No anxiety to do business would induce him to try sitters in bad light, when good negatives were impossible. The issue of such a course is instructive: few portraitists have ever attained such high rates for their work, or have had such an extensive first-class connection.

To skill, precision, and taste, Mr. Williams added singularly winning and graceful personal qualities. Gentle, conciliatory, and amiable, he everywhere created a favourable impression. A keen lover of nature, of poetic temperament, and contemplative habits, his chief pleasure beside photography and art consisted in horticultural pursuits. The loss to photography and to his friends is great, and it is scarcely mitigated by the reflection that success induced—as it should not do, but too often, alas! does—too close, too anxious, and too protracted attention to duty, and too much neglect of personal comfort, rest, and restoration, and thus cut short in its prime a life that might have been long, happy, and useful.

THE "EDINBURGH REVIEW" ON
PHOTOGRAPHY.

AN interesting, but scarcely sufficiently accurate or comprehensive, article on the "Applications of Photography," appears in the number of the *Edinburgh Review* just issued. In making some extracts from the article, we shall incidentally point out some of its omissions or errors, without undertaking, however, to supply all its shortcomings. At the outset we may remark that in any sketch of the history of photo-mechanical and permanent printing processes, and of their present applications, it is singular to miss the names of Poitevin, Osborn, Swan, and others, and very odd to find omission of all allusion to the processes of Dallas, Albert, Fruwirth, and others who have been working of late years with such assiduity and success in combining the capacities of photography and the printing press. The writer commences by remarking that "any real scientific discovery, however barren in practical bearing it may appear at the moment, is certain, in the long run, to lead to many other inventions, and to set in motion other appliances, which heretofore only seemed to be awaiting the new influence. The machinery, so to speak, rests idle for the want of some cog or spring to complete its action. Among the more recent examples of a latent want, the supply of which has given a start to many a new art, and has revolutionised others, may be considered photography. The instantaneous draughtsman, ever ready, working with absolute truth both by night and day (for by the addition of highly sensitive paper the aid of the sun can now be dispensed with), catches and registers the scientific data of the astronomer, and the meteorologist, seizes the wonders, and renders patent to the eye the hidden world opened up to us by the photo-microscopist; and where there is excess of light which blinds the human eye, Sol paints himself with his own beam, with lineaments so accurate from day to day, that the scientific watcher is only now beginning to discover the changes that are taking place in the great luminary.

When Fox Talbot and Daguerre simultaneously discovered the power of the pencil of light to paint an image on a tablet as quickly as it flashes upon the retina of the eye,* great were the predictions of the part the new discovery would play in the field of science and art; but the wildest anticipations have already been surpassed in less than forty years since the original discovery, and every day is adding to the number of the wonders it is opening before us. It is our purpose, in this paper, to sketch, with a light hand, the many valuable arts and the curious appliances which this beautiful discovery has suggested to the scientific worker, the artist, and the manufacturer. So rapid are the changes, and so great, from day to day, are the improvements, that we can only treat it as a progressive art, capable of almost unlimited extension."

After commenting on the fact that the photograph in silver contains within itself the elements of its own destruction, he proceeds:—

"It may easily be conceived that Mr. Fox Talbot was fully alive to this shortcoming in his great invention, and, as long ago as 1852, was anxious to find some means by which permanence could be given to sun-pictures. In casting about to find some means by which engraved plates could be taken directly from the photographic negative, his attention was directed to a discovery made by Mr. Monge Ponton a short time before, apparently by accident, that bichromate of potash became darker in colour when exposed to the light. The photogenic quality of this salt at once struck his acute mind as the means of solving the problem. After many experiments he found that bichromatized gelatine or gum, upon exposure to

light, became insoluble in water, and that a plate could be prepared with this material, from which all those parts debarred from the light might be dissolved away. This discovery was the germ of numerous allied processes which have revolutionized the engraver's art, and which cannot fail to have a most important effect upon the illustrations of our literature, and, indeed, upon pictorial art generally, inasmuch as we need no longer depend upon line engraving, woodcutting, or lithography, nature herself reproducing her own drawings at a cost infinitely less than we have hitherto paid for inferior productions of the human hand.

"Among the numerous patents that have been taken out of late years for utilising by this means the sunbeam as an engraver, we name, as practically established, the different processes known as Autotype, Woodburytype, and Heliotype. We wish to refer to these three processes first as the only ones capable of giving, with commercial success, copies of photographs, pictures, and drawings whose delicacy of *half-tone* in a graduated tint is their chief beauty, and this cannot be produced with equal success by line engraving, lithography, or mezzotint."

The process of photo-relief printing having been described, the writer goes on:—

"Already some excellent specimens of its work have issued from the press, among which we may mention 'Viardot's Wonders of European Art,' which contain sixteen impressions by this process, with eleven woodcuts—and the contrast between the two is sufficiently striking to even the uninitiated in art. 'Crossing the Stream,' by Claude, gives the golden haze of the Italian distance with a delicacy which is perfectly unapproachable by any system of engraving, whilst the shadows possess a depth which leaves nothing to be desired. Again, the copy of Vandyck's noble portrait, in the Louvre, of Charles I., habited in Cavalier costume, is an exquisite example of its power to render the tenderest details and the most powerful shadows with wonderful effect. The ink used—or, rather, we should say, the pigment—is of a very warm, dark chocolate tint, and of a flowing character, which gives a rich glow to all the shadows, contrasting powerfully with the harsh blacks of the woodcuts in the same volume. The small expense at which these delicate copies can be made will, we fancy, give the process a great advantage in the illustration of books. The only drawback, as far as we can see, to its being applied to cheap literature, is the necessity to mount the prints upon card or other stiff paper, their borders being destroyed by the nature of the process, which, as we have before stated, spills all the superfluous ink over the margin, consequently trimming and mounting are necessary. Unless this difficulty is overcome, we fear the process will be confined to the more expensive class of works. At the present moment, the size of the prints produced is limited by the size of the hydraulic press, which is comparatively small; but we understand this size is about to be increased.

"The action of light is necessary to produce the chemical effect upon the bichromatized gelatine, but efforts are being made to accomplish this by artificial means. The company working this process have been employing a powerful electric apparatus, worked by a gas engine, which gives a speed of 400 revolutions a minute to a revolving armature, which rotates inside a number of permanent magnets, and yields a light of great intensity. It is far, however, from being a substitute for the solar ray, inasmuch as, whilst a good impression from an ordinary negative is produced by the former in ten minutes, the electric light requires three hours to yield the same result. But this is an advance upon the lime-light, which necessitated an exposure of even double this time. In the dark winter weather, when the sun is sometimes hidden for weeks, there can be no doubt the electric light will find constant employment. In night-work, again, it will be ready, thus affording employment upon works which otherwise would be delayed for want

* It is, perhaps, somewhat hypercritical to point out errors of exaggeration, but it is not a fact that this rapidity was so discovered. The Daguerreotype, as discovered by M. Daguerre, required an exposure of some minutes; and the simultaneous discovery of Mr. Talbot was not more rapid. The discovery of the instantaneous possibilities of photography was due to subsequent labours.—ED. PHOTO NEWS.

of daylight. Already several works have been illustrated by the Woodburytype process, and are familiar in our drawing-rooms; the pictures are easily mistaken for photographs, and are far more delicate and effective than the best steel engravings, at a cost almost nominal; a good-sized picture being reproduced at less than a fathoming a copy. After a long struggle with many difficulties, this method of reproducing the most delicate drawings, photographs, &c., may be considered a commercial success, and we cannot doubt that it will have a material effect upon the engraver's art, which, with some limitations to be mentioned hereafter, it must in course of time greatly supersede.
(To be continued.)

A FEW HINTS WORTH KNOWING.

BY W. T. BOVEY.

AN interesting leader, treating on the intensification of negatives, which appeared in the NEWS of last week, reminds me that I have hitherto omitted publishing particulars of a method of strengthening fixed negatives, which for several years I have practised with unvarying success. The process in its general details is by no means novel; there is, however, a notable point of divergence from the original, which will, probably, be regarded as worthy of attention, and to which, in due course, I purpose directing attention.

Occasionally I receive from customers parcels of negatives in an unvarnished state, accompanied with a request that, if requisite, they might be further intensified. But, in addition to a lack of the proper strength, I perceive in some of the negatives sent me, that deficiency of detail which is common to all under-exposed plates; and to remedy the defects as far as after-treatment is capable of effecting, I proceed as follows:—

First. With a small brush I lay on a rim of varnish around the four edges of the plate, to guard against the possibility of film slipping during subsequent operations. I then proceed to loosen the pores of the collodion surface by flooding it with water. Draining the water off, I replace it with a two-grain solution of iodide of potassium, and allow this to remain on the plate about one minute. This last operation I execute in the dark chamber. I then expose the plate to daylight for two or three seconds, and wash the iodide solution thoroughly off. A pyro solution composed of—

Pyro ...	...	...	...	...	2 grains
Citric acid ...	...	...	...	...	3 "
Water ...	...	...	...	...	3 ounces

is then poured on and off the plate, when a drop or two of a 20-grain silver solution is added to the redeveloper, and the intensification is proceeded with in the brightest light available short of direct sunshine.

The results are often surprising: details before invisible come strongly out, and the negative gains in printing strength very rapidly. In some instances it is advisable to go through the whole of the operations as I have described them a second time, but recourse to this available contingency is not often needed. For instantaneous photography this mode of strengthening negatives would prove of considerable value. I scarce need add the caution that the negative must be fixed prior to its being subjected to the treatment.

A word respecting the novel point to which I have before alluded. I convert the surface silver into an iodide in the dark room; the usual custom observed is to perform this operation in open daylight. By the adoption of the last described course the iodide of silver loses those magnetic properties by which reduction of the silver salt is so materially aided. The force of this remark will be best understood by a thought being directed to the result which follows a prolonged exposure in a very intense light. Beyond a certain point of exposure iodide of silver must certainly retrograde in its powers of magnetic attraction. By applying the pyro and silver to the plate in solar light

we secure actinic aid to effect reduction on the weaker parts of the negative. A negative must be very weak indeed which remains uninfluenced by the treatment I have described.

Apropos of weak negatives, a method of producing comparatively vigorous prints from such will doubtless prove of interest to those who require such information. Medium Rive's, coated with a fresh and full-bodied albumen, is preferable. Float the paper not less than seven or eight minutes. Print in very diffused light. If the negative is one of extreme weakness, print through a sheet of white—or, what is better, a sheet of lemon colour—paper. This should be fastened on the outside of the frame, and at some distance from the negative. The picture should be printed deeper than would be required with a stronger negative. Tone the prints in a weak gold bath, and, whilst toning, keep the picture side uppermost. This remark includes a hint worth noting, as a brilliant print and tone can often be secured in the way advised, when nasty flatness would result from toning the printed surface downward. It is worthy of remark that prints tone much more rapidly face down than when the picture side is kept upwards. Those who are in the habit of toning in batches with strong gold baths would do well to observe this hint, and tone the earlier lots of prints face uppermost, a precaution which would ensure a greater uniformity in the colour of the prints they produce.

Writing of prints reminds me of a singular bit of experience recently related to me by a very intelligent photographer, Mr. Middlerness, of Kelso. For a considerable length of time he had been troubled with, and had suffered much pecuniary loss from, metallic spotting of his prints. He consulted his photographic friends, and faithfully tested each remedy they prescribed, but success lay far beyond. At length, in forlorn hope, he changed his toning dish. *Eureka!* the plague ceased from that moment. On reflection, he remembered that the offending dish had been frequently used in the operating department, and doubtless the crack-like, unglazed portions of the porcelain had imbibed the reducing agents, which subsequently attacked and spoiled the prints. Without doubt Mr. Middlerness has provided us with an additional illustrative argument to prove that on little points, for weal or woe, important results very often hang.

The season advances apace when amateurs, with tent and satchel-camera, will be roaming amid the picturesque of hill and dale in quest of those little "rustic bits" which every admirer of rural nature loves so fondly. Let me advise those ardent hunters to add to their takings a few good cloud negatives, as the process of combining natural clouds with their pictures is a more simple operation than is generally supposed. The way to do it I briefly describe.

The sky portion of the picture must, of course, remain, in the onset, white. With a clear horizon, where no buildings or trees obtrude, a card, with arched edge laid over the sky portion of the negative, will suffice; but with a well-wooded landscape, "stopping-out" must be resorted to if the sky prints through. When painting around the edges of foliage, to avoid cutting lines, so suggestive of scissors, the hand should be kept in a tutored palsied motion, which causes the brush to describe a serrated movement. So treated, the black varnish will not impair the softness of the outlines. The foreground printed satisfactorily, the print is then removed to another frame, and placed in contact with the cloud negative, and the foreground masked with cardboard, arched at its outer edge as before advised. By a judicious moving and placing of the mask as the printing proceeds, atmosphere and distance are effectively rendered. Or clouds might be produced on either side, to compose with the picture, by blocking out the unneeded portions with the mask. In such case, the white parts are tinted when the print is finally removed from the frame. Printing-in clouds is the easiest form of combination printing; by no means is it the least effective.

A NEW METHOD OF WORKING WET PLATES WITHOUT TENT OR DARK ROOM.

BY B. J. EDWARDS.*

ONE of the greatest hindrances to the practice of photography among amateurs, and to the production of out-door pictures by professional photographers, has always been the necessity for the use of a dark tent or chamber to shield the plate from daylight during the operations of sensitizing and developing.

From the earliest days of photography attempts have been made to overcome this difficulty, or invent a light and portable substitute for the dark chamber which is ordinarily used by the operator at home. Mr. Scott Archer—who was a true inventor, and to whose fertile brain we are indebted, not only for the collodion process, but for most of the apparatus and appliances necessary for its daily practice—saw the necessity of devising some means of finishing the plate, or developing the picture before removing the camera; and, to this end, designed an arrangement by which the plate was manipulated inside the camera, the body of which formed a dark box which served for this purpose. This contrivance was, however, found very inconvenient in many respects, while it necessarily added very much to the weight of the apparatus employed in the field.

Since Mr. Archer's time, an infinite variety of dark tents and manipulating boxes have been invented, some of which are ingeniously constructed to serve the required purpose; but all are open to some objections fatal to their general utility.

The portable dark chambers hitherto made for use in the field are of two classes: first, those in which the plate only is protected from the light; and secondly, the tent in which the operator himself was partially or wholly enclosed. In the first place, the hands of the operator were passed into the interior of the box, through sleeves made of some dark material, while the progress of development was examined through a small pane of yellow glass in the top of the box, the interior being lighted by a large pane of yellow glass in the front of the box.

I worked for several years with a box of this description, but always felt great inconvenience arising from the difficulty of not seeing perfectly the progress of the operations going on inside the box, and from the fact that both hands were tied, as it were, to the box, and must not be removed for fear of injury to the plate. Besides, a dark chamber of this kind could only be used for very small plates. When larger sizes of photographs were required, it became necessary to devise a different form of dark chamber, which should allow of greater freedom in manipulating the plate.

In this second form of tent the operator is partially or wholly enveloped in the tent, which is made as much as possible to resemble the dark chamber or room ordinarily used for photographic purposes. An immense variety of tents of the latter kind have been designed and brought into use for out-door photography, and at the present time almost every landscape photographer has his own pet tent, fitted up to suit his fancy or convenience.* But, notwithstanding the great ingenuity brought to bear on the subject, and the degree of success which has attended efforts to overcome the minor difficulty of detail connected with the construction of portable dark tents, there has always remained this one serious objection, viz., the extra bulk and weight which are necessarily added to the apparatus employed in out-door photography. It is, as I believe, owing solely to this "weighty" objection to the employment of a dark tent, that dry processes have received so much attention, and that such strenuous efforts have been made to discover a dry process which shall possess all the good qualities of wet collodion. Without going into the much discussed question of "wet versus dry," I think I may venture to assert that this perfect dry process has not yet been discovered.

Good negatives have been made with many of the dry processes, but I think all who have had experience in both

wet and dry will agree with me, that there are many advantages in the wet process which dry plates do not possess; not the least amongst these I may mention, rapidity of exposure, development, and far greater certainty of result, without the extra trouble and risk in preparing and keeping the plates. The strongest argument in favour of dry plates has been their great portability; but once get rid of the extra impedimenta needed for the use of wet plates in the field, the only strong point in favour of dry plates falls to the ground. In fact, the reason for their use no longer exists. If further proof of this were needed, it may be found in the fact that in portraiture, and in all the higher branches of photography, the wet process is exclusively employed.

In the apparatus which will be shown to you this evening, this question of portability has been fully considered; the bulk and weight of the whole apparatus necessary for manipulating wet plates in the field being little more than that of a couple of the ordinary double backs used for dry plates.

In order that the invention should be of perfect utility, I may state that in designing this apparatus I considered the conditions of success to be, first, extreme portability; second, convenience in working; third, perfection of result; and I think I may fairly claim that this invention fulfils each of those conditions. I have also secured the minor advantage that the hands of the operator are not stained by the chemicals.

It is not necessary to give a detailed description of the complete apparatus, or the various possible modifications of the principle on which it is constructed. Full details will be found in the specification which I have filed at the Patent Office.

It is often extremely difficult to convey in a few words a clear idea of the simplest mechanical contrivance, without explanatory drawings or illustrations; I will, therefore, merely state that the various parts of the new apparatus will be found perfectly adapted to the purpose required; thus the method employed for sensitizing the plates I have found in practice to be superior and easier to work than the ordinary method of using an upright dipping bath. There is no liability to accidents, such as breaking of the dipper, or the falling off of the plate, while much less than the usual quantity of nitrate of silver solution is sufficient to do the work with far less risk of stains.

The same remarks will apply to the plan adopted for developing the plate. I am convinced that a few trials will prove that the operations both of sensitizing and developing are performed with greater ease and certainty than they can be by the ordinary method now employed in the most commodious dark room or tent.

It has been my aim to secure the best possible means for working the wet collodion process at home or abroad, with the additional advantage of enabling the operator at will to dispense with the necessity for a dark tent or room, and work in the open daylight without risk of injury to the negatives.

Before proceeding to show you the apparatus, and the mode of working, I beg leave to call your attention to a modification I have made in the iron developer, and which will be found of great advantage both for work in the studio and the field.

I have for many years been in the habit of using a saturated solution of iron for making the developer, but as it is well known that a solution of the ordinary proto-sulphate of iron rapidly becomes discoloured and unfit for use, I have made a compound solution, which, I find, will keep perfectly for an indefinite period. The formula for this compound solution has been recently published in the photographic papers, but as some present may not have noticed it, and as I consider it to be of great importance, I will repeat the formula, which is as follows:—

Common sulphate of iron ...	1 pound
Ammonia sulphate of iron ...	1 "
Sulphate of copper... ..	1 ounce
Water to make a saturated solution.	

* Read before the South London Photographic Society, April 13.

This solution will keep for any length of time, and with it a great variety of iron developers of any strength may be made at a moment's notice. To use it for out-door work, proceed as follows:—To one pint of water add one ounce of glacial acetic acid, and one ounce of alcohol; this I will call solution No. 1. In another bottle may be carried one or two ounces of the compound iron solution, called solution No. 2. When required to develop a plate, add a few drops of solution No. 2 to one ounce of No. 1 solution; about thirty drops of the former will make a capital developer for ordinary work (there is, however, great latitude in this respect). A developer suitable for a distant well-lighted view would be utterly useless for rendering the detail of a mass of dark foliage. Very much depends upon using a developer suitable to the subject.

After the details are well out (and I may here add that there is no fear of fogging the plate), pour away the developer, and rinse the plate with a small quantity, about one ounce of No. 1 solution, without the iron; this will effectually stop the development of the picture, which may then be exposed to sunlight without injury. No water is required for washing. The negative may be placed in a metal or varnished wood plate-box to be fixed and intensified at home at leisure.

The above method will be found very convenient when working wet plates in places where water is scarce, and will prove especially useful with the apparatus I am now about to show you.

The only chemicals it will be necessary to take into the field will be a bottle of each of the above solutions, and a bottle of collodion.

I will now proceed to take a negative with the graphogenic apparatus. I have used this name as a distinctive title, and one which is sufficiently descriptive to serve the purpose. I have reason to hope that this little contrivance will prove a boon to professional photographers, and be the means of awakening renewed interest among amateurs, many of whom, owing to the necessity of using a dark room or tent, have given up the practice of our fascinating art science.

ON THE PRODUCTION OF SMALL PORTRAIT NEGATIVES SUITABLE FOR ENLARGING.

BY EDWARD W. FOXLEE.*

DURING the last few years much has been written on the production of enlargements from small negatives; and the recent introduction of curved and concave plates for the purpose of taking the negatives upon has induced me to offer a few remarks upon the subject.

If we examine a life-size enlargement from a small negative, we are struck with its coarse and unpleasant appearance. In the case of a gentleman, the beard, instead of being the same thickness as in life, is generally represented as twice or cord, and what is so easily noticeable in the beard applies more or less to all parts of the picture. Why is this? The answer, I think, is—firstly, that part of it is caused by the astigmatism unavoidably introduced in flattening the field of the lens with which the negative is taken; secondly, by a slight movement of the sitter during exposure; and, thirdly, by the coarse deposit forming the image. We will now consider the remedies I propose for these defects.

First: the astigmatism. If we consent to use concave plates for our negatives we at once get rid of that, as the optician can give us a lens almost entirely free from it, and giving the most perfect definition possible to obtain, and, at the same time, of much shorter focus. It is well known that the great difficulty in constructing a lens to work rapidly on a flat plate has been the large amount of astigmatism present to secure flatness of field so as to render the lens useless, certainly for enlargements. I am now speaking of lenses of shorter focus than those generally termed carte-de-

visite. I think it is quite possible for the optician to give us a lens that will work in one-fourth the time now required for our ordinary rapid carte lens; and, if the same lens be used for enlarging, any little distortion in the original negative will be corrected by the enlargement. Of course, theoretically, this will only apply where the enlargement is life size, but I think it will, also, practically, to all sizes.

This is a question for the optician, which I do not profess to be. If, however, I am right in my surmise, this will help us over our first, and partly over our second, difficulty, by shortening the time of sitting.

Now for the third: the coarseness of the deposit. The negatives generally recommended for enlargement are those termed "over-exposed positives," developed with iron or bromo-iodized collodion. This, I think, is a mistake; for if we put such a negative under the microscope, we find the image formed of particles of silver far too large to represent the hair and fine details in their proper proportion in a picture (say) of three quarter inch face. It is quite possible to produce a negative suited to our purpose—without prolonging the exposure—in which the image consists practically of a stain instead of a deposit, if we go back to the old pyro development on simply iodized, not bromo-iodized, collodion, which for the best results I certainly recommend; but it must be used under its most favourable conditions.

I will now describe, for the benefit of those who may not be familiar with it, that now almost obsolete process. The collodion must, of course, be quite structureless. I know of no better formula than that given by Mr. Hardwich in the sixth edition of his "Photographic Chemistry." For the pyroxyline—

Sulphuric acid, s.g. 1.845 ..	9 fluid ounces
Nitric acid, s.g. 1.457 ...	3 "
Water	2 $\frac{3}{4}$ "
Cotton	150 grains

Immerse for ten minutes, at a temperature of 150°. I have always found I have got on better by using two drachms less water than that recommended by him.

For the collodion—

Pure sulphuric ether (hot methylated), s.g.	
.725	4 ozs.
Alcohol	s.g. .805 2 "
Pyroxyline	45 grs.

For the iodizer—

Alcohol, s.g. .825	2 ounces
Iodide of potassium	26 grains

Two drachms to be added to each six drachms of plain collodion. The collodion and iodizer—and these should be prepared and allowed to settle, and iodized only a few hours before use, as its sensitiveness, unlike the bromo-iodized, becomes rapidly less. The ether used should be tested for acidity, as that is fatal to its keeping properties and sensitiveness. If the methylated ether be substituted for the pure, it should be that known as "washed and re-drawn," in which case I recommend the iodide of ammonium instead of the potassium salt for the iodizer.

The bath should consist of thirty grains of nitrate of silver to the ounce, and be saturated with iodide. The way I always prepared mine was to dissolve twenty drachms fused nitrate of silver in four ounces of distilled water; then add about eight grains of iodide of potassium dissolved in one ounce of water, stirring until dissolved; and then test with litmus paper for acid; but this will rarely be found if the fused nitrate be used. But if the crystallized be used, it should be the pure re-crystallized, which may be slightly acid, in which case neutralize with moist oxide of silver. Add thirty-five ounces water, and filter. The bath must be kept quite neutral if the highest amount of sensitiveness be required. If, on trying a plate, it should slightly fog, one drop of glacial acetic acid to the pint will correct it, supposing it to have been made of pure materials.

* Read at a meeting of the South London Photographic Society, April 13.

Nitric acid should on no account be added, as it tends to give a crystalline image, and destroys the extreme sensitiveness.

The exposure in the camera should be the same, or rather less, than for an ordinary negative with iron developer.

The developer I use contains two grains of pyrogallic acid and fifteen minims of glacial acetic acid to the ounce of water, with sufficient alcohol to make it flow easily. It should be used new, as when old it is not so energetic, and has a tendency to bronze the shadows. With this developer the image will appear rather rapidly, of a pink colour; and care must be taken not to over-develop the picture, as the colour obstructs more light than it appears to do at first sight.

It should be fixed with a very weak solution of cyanide of potassium, which will not remove the iodide of silver in less than from forty-five seconds to a minute, or it may injure some of the delicate half tones.

I had intended to have shown some examples of the fineness of the deposit produced by different developers and iodizers, but press of other matters has prevented me doing this. I have, however, brought down a few old negatives taken some years back by the means I have described, and you will see the image is composed of a pale elaret-colour stain. They are, of course, much too intense for enlarging, but of the character I advise for the purpose.

THE AUTOTYPE PROCESS.

BY TOM TAYLOR.*

But the Autotype proper has been more nobly employed on examples which eminently deserve the title of "school copies," too, though fitted for higher schools and older scholars. We refer to the complete reproduction, by the indefatigable A. Braun, of the mighty frescoes of Michael Angelo in the Sistine Chapel, and those of Raphael and his scholars in the *Stanze* and *Loggie* of the Vatican. Two articles in the *Portfolio*† have already been devoted to these two noble series, but we cannot forbear from going back to them here, in order to insist on the essential superiority of these autotypes to all that engraving has done, or can do, in bringing home to the mind the beauty of Raphael and the majesty of Michael Angelo. Of such work, for example, as the "Disputa del Sacramento," or the Prophets and Sibyls of the Sistine ceiling, and still more, perhaps, the naked youths who support the roundels above them, these autotypes give us an altogether new impression. In the range of Prophets and Apostles who flank the Divine Son and his Virgin Mother in the "Disputa," as in the Angels who float around the Father, these autotypes reveal to us heights and depths of grandeur and dignity, of grace and loveliness, of sublime and pathetic expression, of which the best engravings of the subject convey but a faint and feeble suggestion. This holds true also of the School of Athens, the *Incendio del Borgo* and the *Miracle of Bolsena*. They also enable us to appreciate, as engraving never did, the enormous distance that separates the work of the master from that of his pupils, whether in compositions or single allegorical figures. Only in a few of the latter, from the hand of Giulio Romano (as emphatically in the Justice of the latter), we see an occasional approximation in this one scholar to the height of the teacher. They show, moreover, only too honestly, the ravages of time and damp, completed by the worst ravage of restoration. These together have robbed the Bible pictures of the *Loggie*, in particular, of all traces of the master's hand, except as regards the composition and general character of the groups. It must be owned that the Autotype is as pitiless in its discovery of retouching

and restoration, as it is potent in bringing out the essential beauties of great originals.

But intensely interesting for their manifestation of new power, expression, and grace, as are the autotypes of the *Stanze* frescoes, it is for their revelation of the unequalled grandeur of the genius of Michael Angelo, as embodied in the Sistine frescoes, that all lovers of the noblest art should be most grateful to the autotype process. Now, for the first time, those who have never been at Rome can understand the supremacy in art awarded to Michael Angelo by the concurrent judgment of the severest and most skilled critics. Those who have already, in the Sistine itself, learnt to bow down before the majesty of that mind as displayed in its master-work, will here find an opportunity of studying those colossal conceptions, figure by figure, group by group, with a patience and minuteness impossible in the chapel itself, from the conditions under which the originals must be viewed there. How these extraordinary reproductions were taken, by what wonderful contrivances of scaffolding, what happy accidents of light, what patience, what dexterity of manipulation, we cannot imagine. Suffice it to say, that the achievement has been consummated with a success nothing short of triumphant. A framed autotype of the whole ceiling is now brought within reach of even modest purses, though the complete series of the Sistine, embracing not only all the details of Michael Angelo's work on a large scale, but all the works of the older painters which he allowed to remain—Perugino, Sandro Botticelli, Luca Signorelli, and Cosimo Rosselli—as we learn from Mr. Scott's article, is necessarily costly. The "Last Judgment" all but defies autotypic reproduction. But the other designs on walls and roof—above all, the nude figures of youths, which merely fill up the space over the Prophets and Sibyls, and claim no specific names or characters of their own—come out with a strange and surpassing power, such as belongs to no other painted work in the world.* One can understand, after seeing these, how it was that Reynolds, himself a true man of genius, however different his time and path in art from those of the great Florentine, should have desired, in the evening of his laborious life, and in the memorable close of his concluding discourse, that the last words which he should pronounce in the Academy, and from his Presidential place, should be the name of Michael Angelo. Not less worthy of note, and more intelligible than ever after looking at these autotypes, is the passage which immediately precedes that harmonious close:—

"If the high esteem and veneration in which Michael Angelo has been held by all nations and in all ages should be put to the account of prejudice, it must still be granted that those prejudices could not have been entertained without a cause. The ground of our prejudice, then, becomes the source of our admiration. But, from whatever it proceeds, or whatever it is called, it will not, I hope, be thought presumptuous in me to appear in the train, I cannot say of his imitators, but of his admirers. I have taken another course—one more suited to my abilities, and to the taste of the times in which I live. Yet, however unequal I feel myself to that attempt, were I now to begin the world again I would tread in the steps of that great master; to kiss the hem of his garment, to catch the slightest of his perfections, would be glory and distinction enough for an ambitious man."

Students cannot better prepare themselves for reading what Sir Joshua has written of Michael Angelo than by studying these autotypes. Of course, they will soon be found in the library of every leading art-school.

(To be continued.)

* These autotypes are the more valuable because the ceiling, extensively cracked in 1797 by an explosion of gunpowder in the Castle of St. Angelo, is yearly becoming more liable to disintegration. The decay, which has already erased some of the figures, will no doubt gradually spread; so that the whole ceiling must in time become little better than a grand wreck. How precious will then be such a record of its glories as these autotypes will have preserved.

* Continued from p. 174.

† By Mr. W. B. Scott, Nos. 13 and 14.

GERMAN CORRESPONDENCE.

PECULIARITIES OF LOESCHER AND PETSCH'S STEREOES—A NEW WAY OF MAKING STEREOES WITH A SINGLE OBJECTIVE—ON THE TIME OF FLOATING POSITIVE PAPER—THE VICTORIA CARD—A DEVELOPER WITHOUT ACETIC ACID—MEDALLION

In the "Sphynx" of the January number of your Journal, some one asks the question how it happens that in the stereos by Loescher and Petsch, "Gems of German Life," the figures on the two halves of the picture are not of equal size, and how it is possible that, nevertheless, the stereoscopic effect is so splendid. I answer the first question by stating that Loescher and Petsch employ lenses of *unequal focal lengths*. The focus of the one objective is a little longer than that of the other. The second question is explained by the faculty of the eye to accommodate itself to circumstances, for it has the power to combine in the stereoscope not only pictures of unequal size, but also those which are generally different, provided this difference is not too excessive. I have two pictures of the same person, which were taken one after the other; the position is not exactly alike, and still they readily combine in the stereoscope.

Another original question which, however, was not proposed in your "Sphynx," but in the German Photographic Society in New York, is as follows:—How is it possible to make a stereoscopic picture with a single objective and without moving the camera? The gentleman who put the question gave the answer also. He said we take a seven or eight-inch objective, and use a stop with two openings instead of one. The possibility was doubted generally, still it is possible, although not in the manner described above. I will try to explain.

In the April number of last year, on page 131, I wrote to you "On the Effect of Large Apertures," and remarked that in a lens of 2½-inches diameter, the diametrically opposite points are already as far removed from one another as the eyes in our head, and as our right eye sees a little more of the right side and our left eye more of the left side of a sitter, so also does the right and left side of a lens take in more on either side, and hence produces an almost stereoscopic picture on the ground glass.

This really stereoscopic effect which is produced on the ground glass when working with large lenses, must certainly have been noticed by nearly all the practical photographers. How a stereoscopic picture can be made with a single objective, and without moving the instrument, explains itself very easily. We take a four-inch lens of as short a focus as possible, and cover, with a piece of pasteboard, all but one inch of the left side of the objective; we now take a picture; we next cover, all but one inch of the right side of the lens, and again take a picture. Such pictures, together, will give a stereoscopic effect, which will be more perfect in proportion as the distance between the object and the lens is shortened.

With a three-inch lens which I covered all but half an inch, I have succeeded in making beautiful stereos of small models of machinery; but a diaphragm with two openings will not answer, as the pictures on the ground glass will cover each other.

In our Society for the Promotion of Photography, Mr. Prüm gave lately some interesting facts of the influence which long-continued "floating" exercises on the positive paper.

A manufacturer sent him a quire of arrowroot paper with the direction to float it on the silver bath for three minutes. The results were very indifferent: the pictures looked gray and weak, and appeared to be more inside the paper than on its surface. Mr. Prüm tried next what effect it would have if the time of "floating" was shortened. A piece of paper was placed on the bath for only about half a minute, and the result was really surprising: the pictures left nothing to be desired—were vigorous and full of beauty. Their beauty was still heightened when they, immediately

after sensitizing, were dried with blotting-paper. He obtained pictures the strength of which was equal to albumen prints.

The above goes to show that it is not always well to follow the directions of the manufacturers. We in Europe generally float too long. I was surprised to learn from Mr. Moore, in Philadelphia, that he floats the Dresden albumen paper for only three-quarters of a minute, while we are in the habit of floating it for three minutes. I myself afterwards tried short floating, and found the pictures much more brilliant than before.

The Victoria card gets more and more popular. Grasshoff pushes this new size very much. He has adopted a very simple manner of gaining customers for it: when a person orders a dozen cartes-de-visite, he prints also, from the same negative, two or three Victorias, and shows them to the party. Generally the Victorias are taken, and, in most cases, the preference is given to them over the cards.

The proprietor of a large establishment in which "reproductions" are principally made, complained to me recently that he had to spend such large amounts of money for glacial acetic acid for the developer. I advised him to discard the acetic acid, and this works really very well. The expensive glacial acetic acid can be left out of the developer entirely, and the pictures have even greater intensity. It is only necessary that some alcohol should be present in the developer in order to make it flow more readily; common alcohol, containing fusil oil, will answer for this purpose. When the developer is to be kept for some time, it is advisable to add a small quantity of another acid; for instance, the cheap sulphuric acid. Such a developer is made as follows:—

Sulphate of iron ...	...	...	60 parts
Sulphuric acid ...	...	...	3 "
Water ...	...	...	1200 "
Common alcohol ...	...	...	36 "

Yours very truly,
DR. H. VOGEL, in the *Philadelphia Photographer*.

Correspondence.

CHILDREN IN THE STUDIO.

SIR,—So long as photographers content to lower themselves to the ideas of their customers, instead of raising themselves and their customers to definite artistic principles, so long, I suppose, will such difficulties be possible as those described in a paper you published last week on "Children in the Studio."

It seems rather hard, and possibly unjust, to toil a man who has apparently spent about a couple of hours in unavailing attempts to photograph a troublesome child, that he might have avoided much of the trouble, and most likely have accomplished all he desired in a brief quarter of an hour, if he had used a little more tact and *savoir faire*; and yet, on a careful perusal of the paper alluded to, there is, to me, somewhat of a temptation to come to this conclusion. Ho will, perhaps, pardon a few suggestions.

His very first act was, it seems to me, a mistake. He begins by asking the old lady who has come along with her married daughter, "How would you like the baby taken?" Now, fancy Millais or Grant sitting down to his easel, and enquiring of his sitter, with an uncertain air, "Pray what sort of a portrait would you like?" Is it not as much as to say, "I really don't know what I am going to do; what would you do under the circumstances?" We can all of us see the absurdity of such an idea at once. It ought to be just as absurd in a photographer. Given a certain kind of picture—carte, cabinet, Victoria, or whatever it may be—this is your customer's affair; the rest is yours; and no man in a studio is equal to his position who cannot, with ready firmness, combined with insinuating suavity, insist upon having his own way when he knows he is right. This is the more necessary with children, because the conditions ensuring successful portraiture are narrowed to a very limited range. For instance, in the case before us, Philip Henry is to be photographed standing when he can't

stand, and flogging a horse into the bargain. What is to be done? I should very quietly say, as I have had to say to such ignorant people hundreds of times, "I have no objection to take your interesting little child in a position which I believe to be impossible, when I have first taken a portrait of him in a position which I know to be possible." There is no occasion to say this offensively. Be conciliatory, be courteous; but when you see an impossibility or an absurdity ahead (and you ought to be able to see one at once), be resolute in avoiding it.

Another mistake is, the presence of the mother and daughter in the scene at all. I never allow it; or, at any rate, if the child is afraid of strangers, and requires the parental presence as a sympathetic link, I never allow them to interpose with the picture. Let the parents amuse the child as much as they like before and after the exposure, but let the amusement of the interval of exposure be from your own resources alone.

Another delusion consists in the too prevalent idea that the portraits of children must be instantaneous: just a hasty snatch at the cap, a wild unearthly yell (to attract attention), and then the dark room and a half-exposed picture. As a proof of the fallacy of this notion, I send you herewith a few cartes of children, not one of which was exposed less than five seconds, and many of them seven or eight; and yet I think you will agree with me that in none of them is there any perceptible motion, nor anything unfavourable in the expression.

The great secret of success in children's portraits is not instantaneous exposure, but in the concentrated attention of the child on *yourself* as you coax its picture through the lens on to the plate.

And now I can give your contributor an idea. Philip Henry had to be taken on his grandmother's knee after all. *Query*—How to get rid of grandmother? In one or two of the cartes sent you will see how this very desirable consummation is effected: simply by throwing a black lace shawl over her. In the resulting picture the child is apparently leaning against a sofa or arm-chair, or in front of an ordinary background. Nobody would dream that grandmother was the better.

It might, perhaps, be objected, that the kind of treatment I uphold of customers in the studio, and especially of mothers with their children, might tend to drive them away altogether. I can only say, so far as I am concerned, it has never been so. People will respect you when they find you respect yourself. Indeed, the best commentary on the opposite course is found in the text of the paper I have been criticising, where, after endless bother and vexation, the photographer was rewarded with the munificent sum of *three shillings!*—I remain, yours very truly,
LUX ET PRÆTEREA NIHIL.

PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.

SIR,—Permit me to say a few explanatory words on this subject, for it appears to me, from the correspondence which has lately taken place in your journal, that great misconception exists as to the nature of the Exhibition. In the first place, the Exhibition is of "selected objects" in all the classes, and differs, therefore, essentially from all other exhibitions that have hitherto taken place. Secondly, no medals or prizes of any kind are awarded; the admission to the Exhibition becomes the equivalent of a medal. The objects sent in are examined by a committee of selection, and those only retained for exhibition which are deemed worthy of a place. It is, in fact, applying to the Exhibition of Art and Manufactures the principles of the Royal Academy as regards the pictures annually sent for hanging. Excellence, novelty of production, and space necessarily rule the selection. How far the committee of selection are competent for the work, of course disappointed exhibitors must be at liberty to hold their own opinions; but the public will have an opportunity of forming theirs. Hanging committees always have been, and, I suppose, to the end of time, must expect to be, a target for abuse of all kinds. Ignorance, incapacity, and interested motives of the lowest kind are freely attributed to them by the vulgar, who seem to think that gentlemen who undertake gratuitously a laborious and thankless office at once lay aside every attribute which entitles them to hold their position in society as men of honour and justice.

I am glad to see that Messrs. Robinson and Cherrill gracefully admit their error on becoming acquainted with the true state of the case as regard their pictures. I felt sure, as soon as I read their letter of complaint, that the committee of selection

had most properly rejected the pictures named by them in their letter, simply on the ground of want of novelty, even if space had not inexorably forbidden their display. Their merits few would venture to dispute. Again, when my excellent friend, Mr. Hubbard, told us that his exquisite little gem "Stolen Moments," or "Pensive Thoughts,"—I forget which—had been rejected, I saw at once it had been rightly so treated. It was not new; it had been seen and admired in public exhibitions previously. I regret that it cannot appear side by side with the foreigner, to show what an Englishman can produce. I hope that Mr. Hubbard has sent some new work of that class, for there is no one so capable as he of maintaining the position of England in that special walk of the art. Space and novelty, too, must be borne in mind by my friend Mr. Blanchard, when he complains of the rejection of some of his pictures. Those named in his letter have all been exhibited before. Their rejection is no slur on his merits. They are too well known to admit of doubt. In his own special walk, Mr. Blanchard stands in the highest rank, and I doubt not that what the committee of selection have retained will fully sustain his reputation. It is a well-known fact that artists rarely, if ever, are the best judges of which are their most meritorious works. I have specially used the term "friend" to both Mr. Hubbard and Mr. Blanchard, first, because I am proud to be able to do so, and next to show that, however much friendship might incline me to show favour, my verdict on the present occasion is against them on their own showing.

I fear, from reading the various letters which have appeared, and from information the legendary "little bird" has brought me, that photographers have, in many instances, thought more of quantity than quality, and have endeavoured to utilize the Exhibition as an advertising medium rather than as a display of fine art, forgetful that they are artists, and not advertising traders in quack medicines. Photography takes its place in this Exhibition among the fine arts. Let us try and deserve the title.

In making the foregoing remarks, I beg leave to say that I am in no way connected with the management of the Exhibition.—I am, &c.,
P. LE NEVE FOSTER.

PS.—I think it would be well if, at the Society's exhibition, some restriction could be adopted to stop this growing evil; say by limiting the number of pictures any exhibitor may send, and sternly rejecting advertising show-boards.

SIR,—We must all feel glad that Mr. H. P. Robinson has written the letter he has in the last NEWS. The original attack made upon the Committee appeared very unfair, and it is gratifying now to see it was made under false ideas.

Your correspondent, "Truth before Favour," asks about an "Old Stager." It is rumoured, and his letter bears it out, that one portraitist sent in the picture that always stands at the door of his rooms in Piccadilly, which was very properly rejected, as the element of novelty should surely have some consideration in selecting for an exhibition.

Your correspondent is also right in his remarks as to Dr. G. C. Wallich, who, if imputation of motives were permissible, possibly might be supposed to remember a communication in the *Athenæum*, by one of the gentlemen of the Photographic Committee, pointing out the scientific errors or folly of one of his proposals. Hence, possibly, his going out of his way to attack the Committee, he having, however, not sent anything in, and having, therefore, no *locus standi*.—Yours truly,
London, April 17th.
M. R.

SIR,—In the letter of Messrs. Robinson and Cherrill, in which they, in what seems to be a spirit of fair play, withdraw any suggested imputations on the Photographic Committee at the International Exhibition, they refer to information they have received, and to explanations with which you are personally familiar, as satisfying them that the Committee in question was actuated only by a regard for the interests of the art in making their selections and rejections. Whilst it does not seem at all difficult to believe, on general grounds, that this should be so, as specific explanations are referred to as existing, is it not due to photographers generally that you, in your discretion, should make known to them details which may probably interest and satisfy them as much as it has done Messrs. Robinson and Cherrill?—Yours,
W. E.

KEEPING QUALITIES OF DRY PLATES.

DEAR SIR,—Having seen many queries as to the keeping properties of various dry plates, I venture to give you my experience in the matter.

I have found coffee plates keep well and tolerably sensitive. For instance, on the 31st March I exposed a plate which I prepared in May last year, thirty seconds, with a pair of Dallmeyer's rapid landscape lenses, second size, rotating stop, in sunlight, and obtained a fair negative. I developed as follows:—First, a wash of plain solution of carbonate of ammonia; then plain pyro and ammonia, till all details were well out; and intensified with ordinary citro silver and pyro.

A tea-plate prepared in October last was exposed the same day, and for the same time, with the same development, and also gave a good negative.

I have tried coffee and gum, and like the plates much. I find them quite as sensitive as the ordinary collodio-bromide plates. They are a little more trouble to prepare, as are all plates where the silver bath is used; but one is not tied down to a certain kind of pyroxyline or collodion and bath, which is an advantage to amateurs who, like myself, live in a place where the necessary materials for the collodio-bromide processes are not readily procured.

The keeping qualities of the coffee and gum plates I have not, of course, yet tried; but I see no reason why they should not keep their sensitiveness quite as well for long periods as plain coffee.—I am, sir, yours faithfully, JOHN B. C. FOX.

Lutterworth, April 18th.

ALBUMS FOR NEW STYLES.

SIR,—In last week's PHOTOGRAPHIC NEWS we notice two letters respecting albums for the Victoria cards. The writer who signs himself "Middlesex" seems to imagine that they are not obtainable. We here beg to assure him that we shall be able to supply them to him, or to any others, and at the reasonable price of 7s. each. We must, however, at the present, ask a little indulgence as to time for the execution of an order. Mr. F. A. Bridges, in his letter, suggested a special album for the portraits of deceased friends. We have pleasure in informing him such an album has been made by us six months ago, and is now kept regularly in stock.

We wish to make a little observation for the benefit of those gentlemen who declaim against the want of energy on the part of dealers and manufacturers, in introducing and making articles suitable for novelties. The fact is, it is so much the interest of the dealer to introduce novelties, that if he were not checked by the evil consequences of failure, a loss to himself and to his customers, we should see novelties out every week, and pushed by the various houses of business, till photographers would be sick at the sight of anything new.

With regard to the Victoria card, in our opinion, it is a size that approaches too close both to the cabinet and carte-do-visite; consequently there will be, in reality, no extra business from it; any orders received will be so much from the carte or cabinet; we, therefore, determined to hold back and wait. By this we mean, we would wait for the demand, and not seek to create it. We shall, of course, be most happy to execute any orders we may be favoured with, both for the Victoria cards or albums.

The cameo-vignette portraits will show that we are quite ready to introduce and make known a novelty. This style, according to our judgment, will prove a great success, and, consequently, give a large increase of business to photographers, as well as to the man of business.—Yours truly,

Soho Square, London, April 19th. MARION AND CO.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE ordinary monthly meeting was held at the Memorial Hall, on Thursday evening, the 13th inst., Mr. NOTON, V.P., in the chair.

After the routine business had concluded,

Mr. WARBURTON exhibited a pair of Mr. Edwards's combination printing-frames, which attracted much attention.

A long talk followed on albumen, and the various modes of its employment in photographic practice. Nothing new was elicited.

The subject of summer out-door meetings came up for con-

sideration, and met with a very discouraging reception. It was ultimately decided to leave members to arrange photographic trips among themselves.

THE CHAIRMAN made some remarks on the albumen process on glass, commending it for the beauty of the results obtained by it, and promised to read a paper on the subject at the next monthly meeting.

THE meeting, which was only moderately attended, was then adjourned.

C. ADIN, Hon. Secretary.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held in the City of London College on the evening of Thursday, the 13th inst., Mr. SEBASTIAN DAVIS in the chair.

THE minutes of a previous meeting having been read and confirmed,

MR. B. J. EDWARDS read a paper on working the wet collodion process without a dark room or tent (see p. 186). After reading the paper, Mr. Edwards exhibited his new "Graphogenic" apparatus for working wet plates in daylight; and, in the course of the evening, showed its working by producing a negative with the aid of the magnesium light, Mr. Solomon's lamp, under the charge of Mr. Walter Paul, being employed.

After some conversation,

MR. FOXLEE asked Mr. Edwards what part was played by the sulphate of copper in the developing solution he used.

MR. EDWARDS found it checked the tendency to ready oxidation of the iron solution, and was, therefore, of great value in a concentrated solution to be kept ready for use.

MR. HENDERSON had found that camphor had a similar action.

MR. EDWARDS said that as camphor was very sparingly soluble in water, it would scarcely be available in the stock concentrated solution. He found the plan of using a concentrated solution, diluting it as required, very valuable. Sometimes he used the solution with scarcely any dilution, and had, in such cases, obtained a negative of a baby with half a second's exposure.

MR. FOXLEE had found that a silver solution kept in a bath lined with pure india-rubber was spoiled in a few weeks.

MR. EDWARDS said the solution need never be kept in his bath more than a few hours; and, owing to the small quantity necessary for covering the plate, fresh solution was constantly required. He had known pure india-rubber become much contaminated with sulphur by lying in contact with vulcanized india-rubber in a warehouse.

MR. WHARTON SIMPSON had used an india-rubber lined bath for some years for landscape work without inconvenience, but the solution was always removed from the bath at the end of the day's work.

MR. HOWARD had used india-rubber constantly for the watertight top of his bath without injury.

After some further conversation on the facility for watching development through the two non-actinic glasses, on the shellac varnish for lining the silver bath, and a vote of thanks proposed in some eulogistic remarks from the Chairman, the subject dropped.

MR. FOXLEE then read a paper on small negatives for enlargements (see p. 187), and exhibited some negatives.

After some conversation on the superiority of pyrogallic acid for giving negatives in which the texture is amorphous, and free from texture, deriving its non-actinic character from its colour rather than thickness of deposit, and a vote of thanks, the subject dropped.

THE CHAIRMAN reminded the meeting that the May meeting would be devoted to the exhibition of photographs, which members were invited to contribute, and to conversation thereon.

The proceedings then terminated.

Talk in the Studio.

ART PHOTOGRAPHS FROM COMBINED NEGATIVES.—We have recently been favoured by Mr. Adam Diston, of Leven, Fifeshire, with some further examples of *genre* photography printed from combined negatives, the plan of combining the negatives being that of Mr. Johnstone, of Wick. One is entitled, "The Smithy," and is an admirable rendering of the familiar interior of village smithy, with its forge, anvil, and medley collection of all kinds of implements and fragments of implements in irons, tongs, chains, horse shoes, and similar matters. The

smith himself, an elderly man in spectacles, has just lifted a piece of incandescent iron from the fire, and placed it on the anvil, the whole arrangement being singularly true to nature, and the composition fine as a work of art. "An Old Book Stall" is not less excellent. The open front of an old book shop is represented, with all kinds of odd volumes piled on the shelves in front. The proprietor, a venerable old man, with white beard, a perfect type of an old book-worm himself, is arranging some of the books, whilst in the dim interior an old woman is seen attending to some domestic duty. All is well composed, and in satisfactory relation: the white posting bills and prints which are hung about are carefully subdued in tone, so everything is duly subordinated to the fine head of the old man. Both pictures are well composed, quiet, and harmonious, and each is a capital rendering of a good thought.

GUM-GALLIC PLATES.—Mr. W. Brooks has handed us a print from a recently exposed gum-gallic plate, for the purpose of illustrating that reflection from the back of the glass, at times called "blurring," is not a necessary characteristic of these plates. The plate in question had no backing of any kind. The subject is a most trying one; the sun is nearly directly in front of the lens, a dark mass of ever-green foliage cuts against the sky, and right in front of the foliage is a delicate white marble cross. All the veins of the marble, and its polished texture and black lettering, are perfectly rendered, other portions being satisfactorily made out, and no trace of "blurring" manifest. The delicacy and softness of the picture are fully equal to the qualities of a wet plate negative. In a note on the subject, Mr. Brooks remarks:—"I find by my note-book that the photograph of the little marble tomb that I gave you last Thursday evening was taken with a Dallmeyer's No. 1 triplet, $\frac{1}{2}$ inch stop, and $1\frac{1}{2}$ minutes exposure, with the sun, as you will observe, in front of the camera. The cross is of polished marble. It was taken on a gum gallic plate, and I think you will agree with me, that if taken with a wet plate, the marble could not have been more delicately rendered. It was developed with iron, containing a small quantity of gelatine, about half a grain to the ounce. I hope by the end of the season to be able to give you a little information respecting dry plate work. In my hands my efforts have, I may say, nearly always been successful, and I think most failures occur from defective manipulation. With the morphia process, I, the year before last, prepared twelve plates very carefully, and had twelve good negatives equal to wet plates. I think you could not have a better specimen than the card as regards contrast without "blurring," which sometimes makes its appearance in dry plates."

THE SOLAR CAMERA.—Mr. D. A. Woodward has obtained, in the United States, an extension of his solar camera patent for seven years. In this country it was suffered to lapse some years ago.

SCROLL PORTRAITS.—Mr. A. Reeves sends us another of his scroll portraits, in which the shading of the partially rolled up scroll is produced by the action of light, without touching with the pencil, and is very effective.

WHERE TO GO WITH THE CAMERA.—Mr. E. Ward favours our readers with a hint as to where to go with the camera:—"Last September I took my first photographic trip. I went from London to Rugby, Leamington, Warwick, Stratford-on-Avon, Kenilworth, Leicester; these places all lie together, and scarcely a more interesting route could be found within easy distance. I had a fortnight out, and had I been very industrious, could have spent nearly all the time photographing. I took with me a portable camera, for $7\frac{1}{2}$ by 5 plates, a folding stand, and an ordinary plate box with Liverpool plates, all of which packed in a portmanteau with the rest of my luggage. The Liverpool plates were all that I could wish, they were not developed until I returned. I gave two minutes to each view, with a small stop, without having a failure. They are certainly a great boon to travellers who like to have some little token of their past journeyings, and who have not time to prepare their own plates. I think there need be no anxiety as to results if they only be kept from light, and the directions for developing followed." Our old correspondent, "A Practical Man," also proposes making some suggestions to tourists.

EDWARDS v. STUART WORTLEY.—This case, in which the plaintiff complains of infringement of patent in combination printing frames, is to come before Vice-Chancellor Malins. It has appeared on the cause list several times, but the hearing has been postponed. It will probably be heard at about the end of this week.

To Correspondents.

- DIE.**—The use of the word convex is an error; it should be concave. The die is concave, and the cushion or counter-die convex. 2. The proportions of the oval is somewhat a matter of taste; we described the size of those before us, which were effective and satisfactory. 3. The cards should be sufficiently stout to permit the convexity to be retained after the card has passed through the press; but cards of good ordinary quality and thickness will serve. 4. Albums for cameo cards should have recessed mounts to protect the convexity. 5. We do not know of any firm but Marion and Co. who have undertaken to supply the requisites for producing this class of work. 6. In the Victoria cards we have seen both busts and three-quarter length figures. The exact proportion is a matter of taste.
- J. T. (Fife).**—If you send a couple of shillings to our Publishers, we have no doubt that they will select you a specimen; or, probably, any London dealer will do the same. Portraitists rarely sell specimens except of published portraits, and many portraitists do not publish. No. 4 of the cards you send is best; the others lack modelling somewhat. From what you state of the image appearing slowly after long exposure, we should judge that you have either insufficient light, or that your chemicals are not in good order. Collodion and bath being in good condition, exposure sufficiently long, and the developer newly mixed, the image ought to appear quickly. The minute air-bubbles are doubtless the chief cause of small yellow spots.
- INGENIO.**—Much depends on the fineness of the day and the amount of light admitted into the building in which the public meeting is held. Under favourable circumstances as to light, a quick portrait lens, and chemicals in good condition, will doubtless enable you to secure a negative of a public meeting.
- T. S. (Guernsey).**—We do not know the address of the gentleman in question. Possibly the firm you mention can tell you.
- A. D. O.**—It is difficult, without further details, to say what is your cause of failure. It may be that your collodion is old and insensitive; it may be that the silver bath is out of order; it may be that you do not give sufficient exposure; it may be that your developing solution is old and oxidized. Any of these causes would give you the thin, poor image of which you complain. Sunning or boiling down is a good plan to rectify the negative bath. The dark colour of your printing bath may be removed by kaolin, or by adding a few drops of a strong solution of common salt, shaking in the bottle, and then filtering. Should you require to ask further advice, enclose some examples of your failures, from which we can judge better often than from description merely.
- D. D. (Belgian Subscriber).**—The removal of nitrate of ammonia from a silver bath without reducing the silver is a troublesome process. The simplest method is to precipitate the silver as a carbonate by means of carbonate of soda; wash well the precipitate, to get rid of nitrate of ammonia and nitrate of soda; then redissolve by means of nitric acid.
- KELSO.**—We have met with cases in which the rents appeared, at first sight, to belong to the collodion film, only the varnish appearing unimpaired; but, on a more careful examination, the rents were found to exist both in varnish and collodion. Are you sure this is not the case in your negatives? Have you tried the application of powdered charcoal—directed? This is a test as well as a remedy.
- J. W. L. K.**—Paper is the cheapest material upon which you can take locket pictures. Possibly it might be cheaper still to take collodion positives on mica or enamelled paper.
- F. B. M.**—You will find an article on the subject in another page. We are uncertain of the exact price. You will find details in an advertisement.
- D. L.**—The grey tone and lack of vigour in your transferred print are partly due to the condition of the chemicals, and partly to the use of an iron developer. A pyro developer will give you more vigour, and a warmer colour. A comparatively new and neutral nitrate bath, full exposure, and good light are necessary conditions of success.
- J. HUBBARD,** referring to his letter on the photographs at the International Exhibition, observes that he wrote because photographers had been invited to make known what pictures had been rejected, and he, whilst wishing to express no ill feeling, has no apology or retraction to offer. His "Stolen Moments" was generally admitted to be his best picture, and was rejected, and hence he had ground, he thinks, for surprise and disappointment. It must not be forgotten, however, that the fact that "Stolen Moments" had been much exhibited, and much noticed, deprived it essentially of novelty, and as the Committee were desirous of securing as much freshness of effect as possible, and as the excellence of "Stolen Moments" had made it more familiar to the public during the last year and a-half than the other, even older, pictures, they were retained, and it was rejected. Mr. Hubbard is admirably hung, and presents a respectable figure at the Exhibition.
- J. H. WOOLLEY.**—Thanks; in our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 660.—April 28, 1871.

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PHOTOGRAPHY AND TAXATION.

THE recent budget, with its objectionable proposal to impose a tax upon matches, has revived the suggestion, hitherto generally made in jest, to add to the revenue by means of a tax upon photographic portraits. On the occasion when the Chancellor of the Exchequer laid his proposals before the House, Mr. Crawford observed that as the right hon. gentleman had crossed the Atlantic to find a tax on matches, he should have borrowed another American notion and imposed a tax upon photographs, which would have proved a source of considerable revenue. In letters to the daily press, and in general conversation in political circles, the proposition has been repeated. One sapient gentleman, writing to a daily contemporary, says: "Why did not Mr. Lowe put a tax upon photographs? The Americans have done so for some years. Photographs yield a very large profit—the cost being something like 1s. 9d. per dozen, printing, &c.; the cost for chemicals for taking each negative little or nothing. This tax would not interfere in any way with the poor, and would not press heavily upon the public, if at all."

Photographers, doubtless, would be glad to learn from this astute political economist how to produce their negatives at a cost of "little or nothing." But, apart from such nonsense, although no definite project is before the public, it is just as well that photographers should be prepared to rebut the fallacious arguments and groundless assertions upon which the mere suggestion is based. The allusions to an American precedent for a photographic tax are most unfortunate, since the impost on photographs, originally applied when the country was suffering under the heavy expenses of a protracted war, was avowedly of a temporary character, and has since been removed. Further, the majority of the arguments which have been applied with justice and force against the proposed tax on matches, would tell with equal force in relation to a tax on photographs. The statement of the correspondent whose letter we have quoted, to the effect that the tax would not press heavily upon the public, if at all, is probably true; but on all true principles of political economy such a statement is fatal to the proposition. A tax to be just should press equally upon the public, and not upon a class. In this case the tax would be chiefly derived, there can be little doubt, from the pockets of photographers. The amount suggested for such a tax has generally been one penny upon each portrait, a sum it would be almost impossible to collect from the public. The average price of card portraits at the present time is at the rate of one shilling each, and at that price it is probable that photographers would be compelled to sell their productions still, as even if the attempt were made to charge the tax upon the public, the effect of competition would, doubtless, in a short time

compel the resumption of the normal price consisting of an even sum of money. The amount to which the photographer would be thus taxed would be, in many instances, most disastrous. The portraitist producing a thousand card portraits in a week would thus be taxed to an amount exceeding two hundred pounds a year. In smaller establishments, although the amount would, of course, be proportionately less, the effect of any additional taxation would be still more disastrously felt. At present there is, as we have said, happily no definite proposition for such an iniquitous tax; but as it is discussed, photographers should be prepared with good reasons against the imposition of a burden so unfair in itself, and so partial in its operation.

THE PHOTOGRAPHIC SOCIETY OF SCOTLAND.

ON another page we publish the proceedings of a meeting of this Society, which few of our readers can read without regret. It is a record of the closing acts of an old and once valuable society. Established early in the year 1856, and for a long time active and highly prosperous, the Society has now for some years been practically moribund, and it would probably have been some time since decently interred but for an unfortunate circumstance. The misfortune is not a common one: the Society is in possession of funds of which it knows not how to dispose. An accumulation of about five hundred pounds remains to be devoted to some suitable purpose before the Society can properly cease to exist. At the meeting in question, a proposition was brought before the members by the council, which, no one will learn with surprise, excited the murmurs of many present. It was practically a profound self-stultification, a confession that the whole purpose of the Society was a failure. The Society was established for the advancement of photography; its sole aim was to support and propagate the new art; and having done this for many years, it proposes now practically to say, "The advancement of photography is an end unworthy of the funds which have been subscribed by our members for that purpose; we will, therefore, hand over these funds for the purposes of another art, the devotees of which have often flouted photography, and denied its art claims, and we will remember photography no more." The council proposes first to have a portrait of Mr. Fox Talbot painted, and with the residue have a picture of some kind bought or painted, and presented to the Royal Academy of Scotland. Happily, several originally subscribed, and Mr. Tunny and others made some members most earnestly protested against such a diversion of the funds of the Society from the purpose for which they were very sensible suggestions in relation to the purposes to which the funds might, with propriety, be applied. We are not about to discuss the propositions now, but we cannot

but remark, in alluding to the subject, that there are two purposes, admirably aiding in the advancement of photography, with which the Photographic Society of Scotland has been especially associated. At its first annual meeting the distribution of presentation prints was declared to be one of its aims; and, for years past, the holding of exhibitions and distributions of medals for excellence in various forms gave an especial interest to the history of the Society. The proposal to devote a sum to the organization of an excellent exhibition, to be held during the meetings of the British Association,* was a very worthy proposition; and if something unusually tempting in the form of medals were offered in conjunction with such an exhibition, we think it would not be unsafe to predict for it a degree of success and interest which would be well worthy the effort. Recalling the idea of presentation prints with which the Society began, would it not be a noble purpose to form an album of the portraits of half a dozen or dozen of the originators of our art, to be distributed amongst the members of the Society, and possibly afterwards, in the hands of a judicious publisher, made accessible to the photographers of the world? How priceless to all interested in the art would be an album with fine large uniform portraits, the best accessible, of such men as Herschel, Talbot, Niepce, Daguerre, Reade, Brewster, Archer, Diamond, Ponton, Poitevin, and possibly others! A dozen ten by eight pictures, printed in carbon, bound in an album for presentation amongst all the members enrolled in the Society during the last few years of its existence, would not absorb all the funds at its disposal. It would certainly be an equitable mode of applying such funds, would certainly be in accordance with the original purpose of the Society, and would establish, if not a monument, at least a souvenir, recalling the Society and its purposes; and would be at once graceful, grateful, and honourable to all concerned.

Foreign Miscellanea.

The Vienna Photographic Society publish the regulations under which the medals for this and next year will be awarded. Two gold medals and two of silver are to be distributed, besides two extra ones of bronze, should the Committee consider such a course desirable. The rewards are the result of the Voigtlander fund, and can only be received by members of the Vienna Society. No clause exists as to the nationality of the candidates, and it is presumed, therefore, that any foreigners may compete for the honours, supposing they, in the first instance, enrol themselves as members of the Society. The first gold medal will be given for the elaboration of the best dry plate process which combines the qualities of sensitiveness and certainty. The gold medal for 1872 will be awarded for the best investigation and report upon the character of various kinds of gelatine, albuminate, resins, and other similar substances, such as are used with chromium compounds in heliographic processes. The silver medals will be awarded for different photographic studies.

The jury nominated by the Vienna Society in connection with the London Exhibition for this year are: Ludwig Angerer, Dr. Hornig, Dr. Heid, MM. Melingo, Haack, Homolatsch, and Antioie. A very fair collection of Austrian photographs is said to have been forwarded to South Kensington, which it is anticipated will fully sustain the reputation enjoyed by Vienna artists, especially in portraiture.

M. Santucek, of Znaim, has invented a lichtdruck process which allows of the production of heliographs upon

silk. At a recent meeting of the Vienna Society, Dr. Horuig exhibited some specimens of this kind to the members.

In Paris just now photography is being put to a purpose of a very painful character. The National Guards and Communists slain in the war, many of whom are but partially clad in uniform, are frequently unrecognisable after death, from the fact that their names and previous history are totally unknown to the officers under whom they serve. In this unsatisfactory state of things, it has been decided by the authorities to photograph all unknown dead bodies, and to attach such pictures to the registry showing the place of burial.

The three members of the Berlin Society for the Advancement of Photography, MM. Quidde, Schwier, and Petsch, who were attached to the German army during the recent war, have returned to their homes in safety, and, at a recent meeting of the Society, gave an account of their experiences in the field.

The *Mittheilungen* mentions, as a possible substitute for glass in photography, the compound to which Sonnenschein has recently called attention; he has found that when to gelatine and tungstate of soda in solution an acid is added, a tough mass is produced, which, after being thoroughly washed, becomes almost transparent. This mass has the appearance of glass, and is tough and pliable, especially at a temperature of 99° to 100° Reaumur, when it may be formed into any desired shape. A combination of the tungstic acid with the gelatine appears to take place. It is known that tungstic acid becomes changed by light, its yellowish tint being transformed to one of a greenish hue; but it remains to be seen whether this change will exert any influence upon the compound in question.

M. Löwy, of Vienna, has been very successful in the manipulation of Monckhoven's enlarging apparatus; many details of the process are said to be still unpublished by the author. Dr. Mouckhoven is just now residing at Leghorn.

M. Albert has petitioned the Russian Government for an extension of two years of his patent rights for the practice of his Lichtdruck process. M. Jacobi, of Neuendorf, near Coblenz, is said to have elaborated a mechanical printing method producing pictures without any visible grain.

M. Burger, who has recently distinguished himself as a clever photographer in connection with the Austrian mission in the East Indies, has been decorated by the Emperor of Austria.

An interesting collection of photographs has been made by the Vienna Photographic Society, which circulates among the members and the societies of the other towns, under the name of the "Wandering Album." The album contains novelties and pictures of exceptional merit, and represents very well the present state of photography as an art and as a branch of industry. Two series have already been collected of the album, and a third is now about to be completed, consisting for the most part of combination photographs from the studio of Messrs. Robinson and Cherrill. In reference to the subject of combination printing, M. Fritz Luckhardt recently exhibited a picture to the members of the Society, consisting of an interior, in which certain objects were shown whose presence under one roof was simply an impossibility, and for this and other reasons M. Luckhardt estimated that as many as a dozen negatives had been employed in preparing the picture.

A paper describing the qualities of various kinds of copal to be found in commerce appears in *Licht*.

An action has been brought against M. Steinhanser, of Prague, for publishing a little book on mechanical printing, mention of which was made in our "Miscellanea" some time since. The book purported to describe all methods now in vogue for Lichtdruck and similar processes. Messrs. Ohm and Grossman were the plaintiffs, but were unable to substantiate their charge.

A photo-relief process by means of which pictures of any

* Since the above was in type, an idea has struck us as well worthy of consideration. Why not hand part of the fund over to the British Association to be invested, the annual interest to pay for the preparation of a complete report of the progress of the art each year, to be supplied by a competent authority appointed by the Association?—Ed.

kind may be produced in relief is the subject of an invention by M. Knirsch, of Szegedin, in Hungary.

A new gold toning salt has been prepared by M. Pietschmann, of which ten grains, we are told, suffice for the manipulation of one sheet of albumenized paper; the price for which it is sold is rather less than four shillings per ounce.

A Russian amateur photographer, Baron Michael de Motilef, has invented a transparent pellicle to which the name of "Collodion glimmer" has been given. It may be used for the transfer of negative films and such like purposes.

AMERICAN CORRESPONDENCE.

UP MOUNT WASHINGTON—NEW USE FOR PHOTOGRAPHY.

Up Mount Washington.—Five hundred miles from Philadelphia to Littleton by rail; eighteen miles from Littleton to the White Mountain House in a sleigh by moon-light; a sound sleep and a good breakfast; then seven miles floundering through the unbroken snow, partly behind two horses on an old log sled, and partly (out of mercy for the horses) on foot, with my good friend Mr. B. W. Kilburn, the indefatigable and excellent landscape photographer of Littleton, N.H., I was at the foot of Mount Washington, eager to climb its forbidding height, and to stand upon its summit.

Previous to this winter the ascent of Mount Washington during the cold season had been considered an impossibility, and I remember well, when just a year ago I visited the White Mountains, and suggested the ascent of Mount Washington, my friend Kilburn answered, "*Why, you could not live there!*" But Professor J. H. Huntington, Assistant State Geologist of New Hampshire, having "lived" during the most of last winter on the summit of Mooseilank Mount, where he made meteorological observations for the Government, thought that Mount Washington, although much higher than the other, could also be mastered, and, therefore, organized an expedition to winter there. He carried his plans out fully, and the most gratifying success has been his reward.

Mount Washington is 6,291 feet high. There are inhabited places in America at greater elevations than this, but none so exposed to the fury of the elements as it is. It is only about sixty miles from the sea, and scarcely a day passes the whole year round without *some* sort of a storm being within a mile or so of, if not on, the summit. So liable are even the summer breezes which occur there to gently lift off the shingles from the few houses on the summit, that heavy chains are thrown over the roofs, and fastened to the rocks at each side in order to prevent the perpetration of any such sort of coquetry.

Well, we arrived at the cahia of the wood-choppers at the base of the mountain just at noon. We found the six sturdy wood-choppers at dinner. They were all once subjects of Queen Victoria, five from Ireland and one from Canada, and were living there as contentedly in the midst of the forests as we do in our great cities. The "camp" was governed by "Uncle Jim," who attended to the household duties, and was called the "old woman." He cooked us a fine dinner of fat bacon, and gave us with it molasses, bread, tea, and gingerbread. His vegetables, he regretted to say, were all gone. We ate what we could, and then, strapping camera, tripod, overcoats, lunch, &c., to our shoulders, we proceeded to make the ascent. As we entered the forest, it began to snow, but I was pressed for time, and we pushed on. The ascent was steep, and the snow under-foot deep and soft, so our progress was slow. After a while we got out of the forest among the stunted pines, and there we found the snow-crust harder, and able to bear us, also making it necessary to call our Alpine-stocks into requisition. The perspiration began to start, although our clothing was opened to our shirts. At the end of an hour we came to a little signboard among the trees which informed

us that we had climbed "one mile," and that two more still harder ones were still to climb. On we went, the snow falling thicker than ever, the trees growing shorter and shorter, thus giving the increasing wind fairer play at our ears and noses. It was not excessively cold, however, so we suffered but little. At the end of two miles no more trees were seen, and where the rugged rocks were not covered with snow, we had to clamber over their frosty, slippery sides. Now the snow almost blinded us, and we could see but a few feet ahead. We kept the railway track in sight, however, else we should get lost, for all directions are alike on a mountain side. As we neared the summit, the wind became furious, and the snow and frost hung upon our whiskers in great shapes, making us regular grey-beards. We had to lock arms in order to keep our feet, and from being blown away from each other. Thus we clambered the last half mile, and at the end of two and a-half hours we were inside the depot at the summit, wherein were quartered Professor Huntington's party, on whom we had come to make an afternoon call. The gentlemen inside heard our voices, and were a little surprised at our arrival, particularly in such a storm. The velocity of the wind was measured with the anemometer soon after our arrival, and was found to be 79.6 miles per hour. A person could not stand alone against such a wind. Of course, the storm prevented our seeing anything, and we had to content ourselves inside by the stove. The wind howled, and the timbers of the building creaked fearfully, but we were assured that that was only a gentle breeze compared with what they sometimes had to bear. If you have ever been on a steamer at sea during a severe storm, and in a state-room where you could hear the grim grinding of the machinery, then you have an idea of what it was like on the summit of Mount Washington during a March gale and snow storm. I awoke often in the night, and the same fearful howling, buzzoo! buzzoo-o-o! was going on, promising to be perpetual. Not perpetual, however, for, arising early in the morning, we witnessed the grandest sun-rise that mortal man, perhaps, ever saw. Although it was clear above us, the clouds below were still busily floating around like great armies preparing to break camp, some sailing in one direction, some in another. Away off towards the sun there were some great snow clouds shifting about, as if not knowing where to turn. Suddenly their grey heads would become illuminated with the most brilliant red and golden light. The next instant they would be torn asunder like the parting of a lace curtain, and the sun would scatter his gorgeous light all over them. Some parts of the clouds would then arise, like the spray of Niagara, carrying the gorgeous colours with them; others would descend, on which we saw the most beautiful rainbows, and the sun, half risen only, would for a moment shine unobstructed. Again a thick cloud would cover the sun, and the same operation would be repeated. This was done several times at short intervals, the sun battling with the clouds for the mastery, and mowing them down as a line of musketry mows down humanity. After the struggle was over, the clouds gradually scattered and then arose again, leaving the valley below us all clear to the sea. The ocean could be seen with the naked eye, and with a telescope the ships entering Portland Harbour and the people cleaning snow from their pavements in Gotham could plainly be discerned. It was a curious feeling to see the sun shining so brightly far below us, while about us its rays had not reached. Another curious sight I must record. South of us, a half mile or more below the summit, hung a heavy bank of snow cloud. In the centre of it was a great opening, and through it we could see the bright sunlight shining on the valley below. After the sun-rise the breakfast was despatched with an excellent zest, and then I spent hours roaming about the summit, taking in the wonders around and below me. It was necessary to run in often and get warmed up, for one freezes quickly up there. The snow had nearly all blown off the mountain top, thus giving the best opportunity of seeing the beautiful fros^s

formations that attach themselves to every rock, house, telegraph pole, and so on, on the summit. One never tires examining them. They are shaped like the wings and tails of birds, and are of the purest white. They vary in size. Their extreme end points horizontally to the surface to which they are attached in the direction of the wind. They are neither snow nor ice, but masses of frost, as pure as alabaster and as beautiful as the wings of angels, for they must be like them. Over and around the summit we travelled, time and again, now opposed by the cutting wind (which had fallen to forty-four miles), then pushed forward by it, taking in what we could of the wonders about and below us. We climbed up a snow drift to the top of the Summit House, and sat astride the ridge pole, a feat not done daily. The great gulfs, long miles below us, looked to be within snow-ball distance, and hundreds of unnamed mountains slept in their white quiltings beneath. We did not go prepared for a regular photographic excursion. We carried up thirteen Liverpool dry plates, however, and exposed them all. The wind was somewhat against us, and, on development, we found it had spoiled some of our plates. We erred in exposure somewhat, too, making the exposures too short. That error, however, is one of the delectabilities of the dry method, and we expected it. Mr. Kilburn was not to be baffled by any such circumstance, though. A week after we were there together he made the ascent again, laden with a quantity of wet plates, and all necessary things to work them. At this writing, he is still there, and has been there nearly two weeks. I learn from him by telegraph that he has secured some excellent negatives and prints, from which he will send you shortly.

After a good farewell turn over the summit, and after exposing all our plates, we prepared to make the descent, for threatening clouds hovered over us, and we feared a freezing rain more than snow.

The room in which our hosts live is in one corner of the depot building, well protected, and is about eleven feet wide by twenty feet long, and eight feet high; it serves as kitchen, parlour, sleeping apartment, and observatory. Two small windows light it, and when they don't, coal oil does. Two stoves are required to heat it when it is very cold, and sometimes only one is used. My regret was that I could not stay longer.

I could tell you much more of the work of the parties there, but my space will not allow. Meteorological observations are made three times a day, and telegraphed to the Signal Service Department at Washington. By this means the approach of storms is foretold, and many lives saved from loss at sea.

We bade our friends farewell, and were soon out of their sight, descending rapidly to the "regions below." The descent was more pleasant than the ascent, for there was no storm, and we had a clear view. It was more perilous, though, and constant watching was necessary lest we fall or sink in the snow. We arrived at the base one and a-half hours after leaving the summit, took tea again with the wood-choppers, and then walked back to the White Mountain on snow shoes, accomplishing the trip in half an hour less than the horses did for us coming up. We drove at once to Littleton, and next morning at nine o'clock I was on my way to Canada. Of what I saw in Montreal, Toronto, and so on, I must tell in my next, for space will not permit.

New Use for Photography.—I must tell you, before closing, of a new and ingenious use made of photography in our own goodly city a few evenings ago. If you will recollect, at the intersection of Broad and Market Streets, there are four blocks of ground that have been occupied as public parks. Some of our "city fathers" desired to build the public buildings on this ground, and thus block up the intersection of two of our most handsome thoroughfares. This proposition excited the indignation of our citizens, and a mass meeting was called to oppose the project. The first hour at the meeting was occupied by exhibiting in

the lantern views of some of the streets in European cities, which were intended to show how our coveted space could be improved, and made an ornament to the city. Photography, as usual, triumphed, and the vote of the people was against the "city fathers."—Truly yours,
Philadelphia. EDWARD L. WILSON.

THE TEMPER OF THE OPERATOR, AND EXPRESSIONS IN PORTRAITURE.

BY ELWOOD TERRY.

I do not doubt that several papers have been written on this very interesting subject; yet if, by a few practical remarks, I can draw the attention of the operator so that he may improve the expression of the subjects that come under his control, I shall be forgiven having occupied a small portion of your valuable journal.

Everyone is ready to admit that, next to position, we look to the expression of the sitter; and it depends to a great extent on the expression as to whether the sitter will be pleased with his photograph. We all know a photograph may be admirable in position and excellently lighted, but still be disagreeable from the want of (as the public call it) a nice expression. I have met customers in a bad temper, when they have said, "I don't care for my carte, Mr. —; I think it is very bad indeed." I have then, in no very amiable manner, asked their reason for disliking the same. The answer, as a rule, is, "Well, I cannot complain of the photograph, and the position is good, but this is not my expression; you must see that for yourself, Mr. —. In fact, none of my friends like it, and I should prefer to be taken again." I found this occur so often that it became quite a loss to me. In fact, I was getting quite sick at heart about the matter until a friend came in and said, "May I give you a word of advice?" "Certainly." "Well, you are losing your customers through your bad temper." "Indeed, I was not aware I was bad-tempered." "But it is so," said he. Several of my friends have complained to me about it; at last I felt convinced it must have been so.

I found I had been so bent on getting at clear manipulation and good effects from lighting, that I had overlooked, to a certain extent, the expression and feelings of my customers, at times treating them like so many blocks of stone to be moulded after my own fashion. Invariably I managed to get good pictures and good expression when I had before me a beautiful subject, because I appeared before them using my best manner. I was pleased to gratify their slightest wish. They had but to whisper they would prefer two positions, and immediately I acquiesced, not daring to say nay, because he or she was handsome, and would make a good specimen. But woe to the person coming in that would not photograph well! My manner was altered, voice changed, and I at once acted on the defensive.

I am happy to say this is now almost done away with. I had several battles before I was at all successful. Now I strive to the utmost to photograph the plain subject the best; and I can safely say, since doing so, it has been a source of satisfaction, both pecuniary and otherwise. Therefore, I should advise operators to curb their tempers, not to be haughty with customers, treating all civilly, the rich alike with the poor; to study all sitters as they enter the studio, entering into conversation with them, causing them to feel, if possible, as though they were at home; and, whilst so doing, finding out the best position of the face. Have the plate at hand ready by the time the subject is placed in position, because, when kept waiting, a vacant expression is certain to come over the face. If delayed at the time from exposing the plate at once, before taking off the cap from the lens draw the attention of the sitter to any object there may be in the studio, asking his opinion upon it. It is very remarkable the change that is at once noticeable in the countenance. A musical album is a very

good accessory in the studio of the photographer. It gives to the person that hears it for the first time a bright, easy expression, laughing or sombre expressions being objectionable. A face in repose is the expression most to be aimed at. No time need be lost in trying to please customers. You can engage in small talk with them whilst moving the background, placing the head-rest, &c. By so endeavouring to please, the confidence of the sitter is gained, and the operator may have no anxiety as regards the result when the plate is developed.

ON LARGE PHOTOGRAPHS.

BY EDWARD DUNMORE.*

In a paper read at a recent meeting of the South London Photographic Society, attention was called to the advisability of *habitually* producing a larger class of photographs than has been hitherto the rule. Pictures the size of a full sheet of paper—say two feet long, or larger—I am inclined to think would cause photographs to be considered by the paying public not only of more real value, but a better investment for their money than the smaller productions we have hitherto been in the habit of seeing. Say what we may about the science and æsthetics of photography, the *progress* of it depends more, perhaps, than we feel inclined to allow, upon the £ s. d. considerations thereunto attached. Given the demand, the supply will not only increase in quantity, but in quality, for, I believe, in photography the motto "Qualitas, non quantitas," will not apply, but for the "non" we must substitute the "et." A surfeit of inferior work is much more readily induced now than formerly; and, with superior work, we may safely predict an increase of demand in proportion to the increase of excellence. The advantages of large photographs (now that the bugbear of non-permanence has been somewhat laid) are manifold and evident. The principal claim that can be advanced for them before all others is on the score of art-excellence, for the most beautiful effects presented by nature can never be so adequately rendered in a small picture as in a large one, however skilful the photographer may be. Perhaps few photographers have seriously thought of making large pictures of the kind and in the manner to which I allude; if they had, the supposed necessary gigantic apparatus that would be required suppressed any active endeavour to carry out these ideas, so, "like the baseless fabric of a vision," they melted into air.

If we set ourselves seriously to consider this matter, many of the difficulties will prove groundless fears; but what great success was ever achieved without some difficulty? And in this matter so much extra skill would mean so much extra pay, as well as extra praise. Thus much for the reason why we should turn our attention to large pictures.

The first important consideration is undoubtedly the cost. Can such pictures be produced with little or no extra outlay or reconstruction of apparatus now in the hands of photographers? I am inclined to think this problem can be satisfactorily answered in the affirmative; at the same time, as our requirements became manifest, so would contrivances start up to lend a helping hand. When it is found that care and skill, not money or money's worth, are the principal considerations, hundreds will "go in" for large pictures with more or less success. We have become accustomed to have our portraits enlarged with no loss of definition when the original negative was absolutely sharp. Why should not our small landscapes be served the same? There are no objections; but instead of having, as is usually the case with portraits, a positive print, we require an enlarged negative, for, in addition to the sharp correct enlargement, we must have the power of altering, modifying, and adding. That can only be practicable by contact printing; and these alterations, modifications, and additions must be made by the artist himself, who will diffuse his own individuality into the work—in fact, make the picture.

We will now consider the kind of negative most suitable. Paper negatives I am inclined to think the most practically useful. Large sheets of glass are not only expensive, but dangerously fragile; moreover, paper negatives answer every purpose, and exceedingly good definition can be obtained with them; so much so, that I question if a print from a thoroughly good one could be distinguished from one printed from a glass negative. I do not suppose paper negatives will ever supersede glass for direct field work, but, in this case, where the time of exposure and size of picture are of less manipulatory consequence, every advantage is to be gained by the use of paper. With regard to the manufacture of paper negatives, I am not sufficiently practiced to offer an opinion as to the best way of proceeding; I think this would form a very interesting subject for a paper from some practical man; for, should the ideas now enunciated be generally adopted, many would feel anxious for information on this head.

Before the preparation of the large negative, the small original will engross our careful attention. It must possess perfect sharpness, and be devoid of any granularity. Sharpness or definition cannot be obtained in the ordinary way on the usual ground-glass focussing-screen with anything like sufficient accuracy; we must substitute a semi-opaque, non-granular surface, which may be obtained in many ways. One is, by pouring suitable solutions (gutta-percha and lac in benzole, for instance) on clear flat glass, and drying; however, the more perfect this surface the better. The focussing must be done with a good magnifier—say a power that would increase the image to as large size as the intended completed proof. In fact, too great care cannot be taken to secure a perfectly defined negative.

When this part has been satisfactorily accomplished, the development of the picture next claims attention. Our ordinary iron solutions are inapplicable, producing much too coarse a deposit, although the addition of gelatine and its compounds materially improves it. A few experiments in this direction would be advisable to prove what combinations would produce the finest deposit. There is absolutely no granularity with pyrogallic development, but if the developer in common use could be modified so as to become suitable, it would be a decided advantage, for almost every photographer is accustomed to use iron for wet-plate work. A sort of rough estimate of the quality of the deposit may be formed by examination of the colour. The white-looking negatives are always much coarser than the dark ones, as the finer the deposited silver the darker the colour. In ordinary printing these slight differences are of little importance, but in this class of work no granularity is a *sine qua non*. A transparency from this negative must be obtained by contact-printing on a dry plate. I think this the best method to ensure as perfect sharpness in it as in the original. This transparency is to be used for enlargement to any required size.

Having now considered the necessary manipulations, due attention to each point being carefully accorded, the selection of the view to be enlarged must rest with the artist, and few directions can be placed on paper so as to be of any practical use; nearly all must depend on his knowledge of art practice and art feeling. He must imagine and decide, from nature spread out before him, and from the effects on the focussing-screen, how much smaller than the one, how much larger than the other, his intended work will be, so that the lights and shadows will be properly distributed, massed, and arranged, bearing in mind that however suitable such dispositions of form, light, and shade may seem for a small picture, it in nowise follows that this suitability will apply to the larger copy. Here art knowledge is indispensable, and a brilliant, well-trained imagination of the highest importance.

I will not now further trespass on your time, but submit these few remarks to your careful consideration, hoping that the walls of our next exhibition will plentifully teem with large and important artistic photographs.

* Read before the Photographic Society of London, April 11th.

I have had lent me by Mr. Bovey a few enlarged negatives, enlarged from half plates by Mr. Hopkin, of Wimborne, Dorset, which will, I think, bear out my assertions as to the necessary sharpness being obtained.

[The pictures exhibited by Mr. Dunmore were a view of Stonehenge and other landscapes, enlarged to the full extent of a whole sheet of paper. Both negatives and prints were eminently satisfactory, both on the score of sharpness and pictorial effect. The former had been rendered transparent (for greater facility in printing) by subsequent treatment with melted paraffine.]

THE AUTOTYPE PROCESS.

BY TOM TAYLOR.*

THE employment of the autotype in this country is still rudimentary in comparison with its possibilities. Nothing has as yet been done here comparable, in artistic importance and extent, to the great work of Braun at Dornach. But the work of the Autotype Company is progressing here in different directions, all for various reasons useful, interesting, and, both commercially and artistically, important.

Its durability renders the process trustworthy for reproductions of the treasures of public institutions like South Kensington and the British Museum. Some of our choicest possessions—in the way of drawings and engravings—in public galleries, museums, and private collections, are, by its help, being brought within general reach. The masterpieces of Marc Antonio, and his early Italian school of engravings, have already been reproduced in autotype, and students thus furnished with examples eminently calculated to educate the eye to appreciation of fine drawings and pure outline. Then, as examples of effect in engraving, as good in their way as Marc Antonio's are of drawing, permission has been given to reproduce by the same means some of the rarest of the engravings after Sir Joshua in the British Museum.† So the fine collection of Albert Durer's engravings and drawings, lately exhibited at the Burlington Fine Arts Club, is being now reproduced by this process, as is the celebrated Salamanca collection of prints after *Nielli*, more than fifty of which are unique and undescribed. Another valuable reproduction is that of Turner's *Liber Studiorum*, which has been eagerly bought up. In like manner has been published a reproduction of one of Hogarth's series—"The Idle and Industrious Apprentice"—from a fine example in the Museum. In this way not only may art rarities like these be made accessible to the general public, but all risk may be averted of the utter annihilation of unique works so long as autotypic facsimiles can be preserved. Some may think this dissemination of rare things a doubtful advantage, contending that their rarity is what gives them their especial charm as well as value; that "being wanted they will be more wondered at;" and that you cannot popularise such gems without, in some degree, vulgarising them. But I think it will be generally admitted that one of the objects of education now-a-days should be to open as many minds as possible to the refining influences of art; and that whatever enables us to bring fine examples of drawing and engraving within the reach of the million is a powerful instrument for this purpose.

Again, it seems to me evident that, even in defiance of difficulties of colour, reproduction of pictures by photographic means, supposing durability secured, has immense advantages over translation by engraving; at least, I have never compared photographs of pictures or frescoes with even the finest engravings without feeling that the former conveyed to me a new sense of the power, significance, and beauty of the original work. In Paris—always quickest to avail herself of new applications and discoveries in art-industry—the use of photography, instead of engraving,

as a means of reproducing the popular pictures of the time, has become universal. So in Germany—at Munich, Dusseldorf, and, above all, at Berlin—an enormous demand for such photographs of pictures has grown up. There is no reason why this should not be extended to England; why the best pictures of the year should not be autotyped, and spread broadcast over the kingdom and its dependencies, and even abroad, where now, save Wilkie and Landseer, even the names of English artists are unknown beyond the narrowest circle of *art experts*. How successfully the autotype can replace the engraving may be seen from the autotype reproductions already published of pictures by T. Faed, Lucy, Cave Thomas, Erskine Nicol, and others. The autotypes of Mr. Macnee's full-length portrait of Lord Bellhaven, and Mr. James Sant's of Mr. Capel, seem to me quite as good as even the best mezzotints; though this is a bold thing to say with S. Cousins still in the field, and with the recollection fresh in me of Barlow's admirable plates after J. Phillips' portrait of A. Egg, and Millais' of J. Fowler, the most effective portrait-engravings, if I may speak my own opinion, of our time. Again, as illustrations of the power of autotype in rendering very different classes of pictures, take the reproductions of Mr. Marcus Stone's picture of the "Princess Elizabeth at Mass," and Mr. Beavis's "Militia Train, in the Time of the Civil War, conveying stores to Elizabeth Castle, Jersey," and Mr. Wheelwright's "Her Majesty's Buckhounds," all to be seen at Rathbone Place.

In France it is a common practice for painters to make a monochrome drawing of their pictures for the photographer. To secure a correct effect and balance of colour, under certain conditions this may be necessary. But it is wonderful to see with what success—thanks to extreme care, good light, and perfection of lenses, and all other appliances—the autotype process has been applied to reproduction from the picture directly. The autotype after Mr. Marcus Stone's picture above noticed, from a drawing in monochrome, seems to me inferior in sharpness and rendering of the original to the autotypes after Beavis and Wheelwright, which are from the pictures themselves, and there seems to be no limitation in the size of the work producible by this method. It is especially for the reproduction of drawings and sketches that the autotype ought to be as available to artists of the time as in the case of masters passed away. The perfect facsimile of a sketch of a beautiful child's head by Sant, to be seen in the gallery at Rathbone Place, shows what may be done in this way. How much better to be able to distribute among friends a facsimile of a fine chalk drawing by Richmond, or Watts, or Sandys, than a photograph with all the sitter's natural imperfections sharply set down, perhaps exaggerated, and without the genius of the painter to elevate homeliness into interest! In this way we might disseminate fine art with our friendly souvenirs.

The field of book-illustration, too, is a wide one, which the Autotype Company is already working on a considerable scale, and which promises to grow into great commercial importance. Under the supervision of Mr. Fleming (the Company's Factory Director) the uncertainty and inequality of impressions are being gradually got rid of in practice. The illustrations in this number are produced by the autotype process.

Operators trained to the ordinary photographic processes, naturally wedded to their old methods, even where they are not commercially interested in resisting the introduction of new ones, used to complain that autotypic prints were inferior in sharpness of definition and brilliancy of effect to those taken by the various less durable methods in common use. But I am not at all sure that, if the complaint were just, it would hit a defect; for to artistic eyes, as distinguished from photographic, one of the great faults of most photographic work is excess of sharpness and definition. Hence, artists almost invariably prefer work like that of Mrs. Cameron, in which sharp focussing is intentionally avoided, to the clear-cut "brilliant" work of the enthusiastic photographer proper, who looks on a blurred or cloudy effect as a

* Continued from p. 188.

† This series, however, was executed under such unfavourable conditions as to light, that it gives a very inadequate impression of the capacity of autotypic reproduction.

failure and an offence. All such questions, however, are now set at rest by recent improvements, resulting in glazed autotypic prints of landscape and architecture, that seem to me even to surpass in brilliancy, depth of colour, and delicacy of gradation, the finest silver prints I have seen. For my own part, I greatly dislike these glazed surfaces, which seem so dear to professional photographers; and I cannot but regret that the Autotype Company should have found it necessary to show their power of excelling the latter even in their most inartistic points of practice. Even were the autotype less able than it is to hold its own against the usual processes, it has the immense advantage of admitting all varieties of monochromatic colour, with a durability equal to that of the pigments it employs, among which it has a large choice of permanent colouring matters.

Containing these advantages, it seems to me that the future of the Autotype process, both commercially and artistically, should be one of assured success and world-wide usefulness.

THE COFFEE GUM DRY PROCESS.

THAT the coffee-gum dry process of M. Constant Delessert is a sound and practical method there can be no doubt whatever in the minds of those at all conversant with the manipulation of dry plates; and to those who have no such experience, the simple affirmation of such a careful investigator and accomplished photographer as M. de Constant is sufficient to inspire perfect confidence. Every stage of the method and every manipulation has evidently been critically studied by the author, and we may well rely, therefore, upon the recommendations and instructions which have been written down for our use.

Although we have not yet had opportunity of essaying the method put before us, our experience of the gum-gallic and coffee processes, of which the Constant method may be said to be a combination, are such as to make us hope for very uniform and perfect results. M. de Constant tells us that out of one hundred plates exposed by him last summer not one single negative had to be rejected on account of imperfect preparation or defective sensitiveness, and only three or four of the pictures taken were of so mediocre a quality as to necessitate their being put on one side. When we remember the excellent landscape work of M. de Constant, his charming little views of lake and mountain scenery, printed for the most part upon rough-faced paper, and reminding one forcibly of the sketches of Gordon and England, the evidence thus offered is by no means unimportant. His essays and results with coffee alone, which for a considerable period has been M. de Constant's favourite method, practised in its primitive form as first suggested by Colonel Baratti, were such as to leave little to be desired, and his pictures with the coffee-gum process are even superior to these.

M. de Constant does well in not passing over lightly the difficulties attendant on a dry-plate process. He frankly admits there is much to be done in the preparation of the plates, in washing and drying them, and that proper care and attention are necessary to their successful production. But then, he argues, by their use, in most instances, much time and trouble are saved, which more than compensates for the solicitude lavished on them in the first instance. He dwells at some length upon the difficulties encountered by the wet collodion operator in the field, on the many inconveniences to which he is put, and the makeshifts to which he must have recourse in the coating, sensitizing, and development of his plates, while the photographer furnished with dry plates, instead of finding his tour disagreeable and wearisome toil, regards it simply in the light of a promenade. It is only upon the point of certainty of result that any argument is admissible, and here M. Constant says that the process is at once so simple and reliable, that as such confidence may be placed upon it as upon the wet collodion method itself. This must, however, neces-

sarily be always one weak point—the only one possibly—with dry processes, which it is impossible wholly to remove, and all that can be done is to reduce the chance of failure to a minimum, a circumstance already seemingly accomplished, if we call to mind M. Constant's results.

Two hours are given as the period necessary for the preparation of a dozen plates. We can easily believe, with the author, that this time is not thrown away, and is again saved in the further manipulation of the plates; but inasmuch as the prepared films are said to be endowed with excellent keeping qualities, it is open to question whether the time and labour could not be saved to the operator altogether. The preparation of dry plates always involves some skill and experience, even if the operator has always the requisite time necessary to the manipulation at his disposal, and for this reason we cannot help thinking that it would be a great boon if such requisites could be procured commercially. No difficulty seems to have been experienced by the Liverpool Dry Plate Company to supply a serviceable product of this kind, and it would be well if photographers could have some choice in the purchase of dry plates. Of course, in very many cases operators prefer to prepare their own working materials, but in other instances the arrangements and requirements to be attended to at the outset are such as to frighten the more timid away from the matter altogether.

Although M. Constant states that the coffee-gum plates may be preserved for two or three months, he recommends their development soon after exposure—say within the next four and twenty hours. So early an attention we should have thought scarcely necessary, seeing that both with plates prepared with coffee and with gum a few days' interval between exposure and development is of little importance. Indeed, coffee plates we have kept for three or four weeks after exposure before development, and the negatives thus obtained have possessed all their original detail, exhibiting, at the most, a slight tendency to assume a positive appearance. In our experience, if dry plates have been fully exposed—and it is always a safe plan rather to exaggerate than shorten the pose—the lapse of a day or two afterwards does not influence the character of the image in any apparent degree. We quite agree with M. Constant that harmony and delicacy are unobtainable with short exposures, and that length of pose is often an advantage with a dry-plate process rather than a defect.

Before concluding our few remarks, we must not forget to compliment M. de Constant upon the completeness of his investigations. When we remember that he has been a constant dry-plate worker for several years, and has patiently experimented with almost every method of this nature that has of late been made public, we know we may fully rely upon his experiences, more especially as his previous teachings which have been published have always been characterized by much ability and honesty of purpose.

PRACTICAL EXPERIMENTS WITH COLLODION.

COMMUNICATIONS FROM THE PHOTOGRAPHIC STUDIO OF THE ROYAL INDUSTRIAL COLLEGE AT BERLIN.

No. 1.—TO WHAT EXTENT SHOULD COLLODION BE IODIZED?

BY DR. H. VOGEL.*

It is a known fact that when too strongly iodized, collodion produces a film of iodide of silver which adheres but imperfectly to a glass surface; and is, moreover, prone to become covered with thick yellow streaks. In order to discover the degree to which the iodizing of a collodion can be carried, I prepared a normal collodion of the following proportions:—

Pyroxylin	...	...	...	...	3 parts
Ether	...	...	...	...	75 "
Alcohol	...	...	...	...	125 "

* Photographisches Mittheilungen.

Of this collodion I took six samples, and added iodizing salts in the following proportions:—

No. 1.	2 grammes Cd I.;	1 gramme Na I.;	1 gramme N H ₄ Br.	to 320 grammes collodion.
No. 2.	The same iodizing salts	to 240 grammes collodion.		
No. 3.	"	"	200	"
No. 4.	"	"	180	"
No. 5.	"	"	160	"
No. 6.	"	"	140	"

No. 6 collodion yielded plates having yellow striped markings, and dried very slowly after being poured upon the glass; No. 5 gave also similar markings, but of a less pronounced character, and dried more slowly than No. 4. This latter sample worked clearly, as likewise did Nos. 3, 2, and 1.

In the strongly iodized plates the pictures came out much more rapidly on development than with those containing a less quantity of sensitizing salts. The developed images were, in the cases of Nos. 5 and 6, very much harder than in No. 4. Between examples 3 and 4 there was no appreciable difference; but, on an average, No. 3 yielded the best results. The weakly iodized collodion—samples 1 and 2—yielded, in like manner, clean plates scarcely inferior in sensitiveness to No. 3. By decreasing the amount of sensitizing salts to a still further extent, the plates exhibited a tendency to become fogged, and then became insensitive.

According to these results, therefore, a collodion of the nature under trial should contain not more than 2.22 per cent. of the above iodizing salt as a maximum proportion; when containing between 1½ and 2 per cent. of the salts very good results are obtainable. Of course, with a collodion differently constituted, and with more difficultly soluble iodizing salts, the proportions would differ materially.

II.—ON THE SENSITIVENESS OF IODIDE AND BROMIDE OF SILVER.

About six years ago I instituted a series of experiments upon the action of bromine in collodion, and proved, by the aid of a white bust surrounded by black drapery, that pure iodized collodion was the more sensitive to the brighter portions of the object, while bromo-iodized collodion rendered the darker parts of the model the more perfectly. From this I concluded that iodide of silver was the more sensitive for bright rays, and bromo-iodide of silver for the darker or more subdued rays. For this reason it is that a mixed collodion invariably works softer than the pure iodized material. In the recent publication of Dr. Schultz-Sellack, a communication of much scientific and practical value, the writer endeavours to trace back these differences in the behaviour of iodized and bromo-iodized collodions to their respective sensitiveness to the various colours. Iodide of silver is only sensitive to the blue and indigo colours, while iodo-bromide of silver is impressionable by blue, green, and the tints even beyond these in the spectrum. Now it so happens that the darker portions of our models—or, in other words, the shadows—are lighted up from the reddish green reflected light emanating from the walls of the studio, while the high lights are illuminated by the direct violet rays and brighter light of the sky, and hence the extensive action of the bromo-iodide of silver in reproducing the shadows. Such an explanation is worthy of attention, but, at the same time, it hardly answers under every circumstance.

Relying upon the fact that iodide of silver alone yields a very hard picture, several of my pupils have employed the same in the reproduction of engravings, where a hard negative is especially desirable. Curiously enough, it was found that iodide of silver employed with a lens that had been stopped down considerably yielded a much thinner picture than bromo-iodide of silver, and for this reason, therefore, the former salt was inapplicable to the purpose in question. In this case, therefore, it is evident that while the intensity of the light is lessened by the use of a small

diaphragm, no modification of the colours takes place. The slight sensitiveness of pure iodized collodion for weaker light rays receives hereby greater confirmation.

To prove this more definitely, I obtained a Busch stereoscopic camera, and placed the same in front of a Woodbury-type print of a bluish-black colour, focussing the same sharply, and stopping one of the lenses down with the smallest diaphragm, while the other remained with full aperture. The light intensity of these two pictures upon the ground glass was, under these circumstances, of course, very different, and was, indeed, in the proportion of one to twenty-eight, calculating from the size of the two openings. A plate coated with iodized collodion, and another with bromo-iodized collodion, were then exposed, one immediately after the other, to the double image, for a period of fifteen seconds, the first collodion containing three proportions of iodine, and the second two of iodine and one of bromine.

The difference in the results was very marked. The iodized collodion yielded a very quickly developing but hard negative of the light image, and but very slight traces of the stopped down object; while the bromo-iodized collodion gave a more slowly developing and softer image of the more illuminated object, and of the darker one a more vigorous reproduction in the high lights than in the iodized collodion. The experiment was subsequently repeated several times, and with similar results. As in this instance both images of the object were of the same colour, and differed from each other only as regards brightness of illumination, the greater sensitiveness of bromo-iodide of silver for weakly illuminated objects is clearly proved. An explanation of this phenomenon is not easy.

Observations of a similar nature were made by Bunsen with chloride of nitrogen. Subdued light has at the outset no action whatever on this compound, but after exposure to light for some minutes a change takes place which, with very strong light, is brought about at once. It is just this action at the commencement which is of importance in photography, especially with short exposures, and it would appear that the action commences earlier with bromo-iodide of silver than with the iodide salt. That the present bromide of silver is more easily decomposable by light than iodide is in no way antagonistic to this circumstance. The easily decomposable bromide of silver introduced into a mixed collodion accelerates the decomposition of the iodide of silver present in the compound, and it is the latter salt which, on account of its greater capacity to blacken on development, renders this action visible.

PRINTING BY THE AID OF CARBONATE OF AMMONIA.

BY DR. VOGL.*

SOME time ago I suggested that instead of fuming with ammonia, the employment in the printing frames of carbonate of ammonia should be substituted, when but small quantities of work had to be performed. A piece of thick black cloth is placed upon the sheet of sensitive paper in the pressure-frame, and powdered carbonate of ammonia is sprinkled over it as uniformly as possible. On further experience with the use of this salt I have found that when the salt is allowed to stand in an open vessel exposed to the atmosphere for several days, its virtues disappear in part, and the prints obtained lack force and vigour. The reason of this lies in the fact that commercial carbonate of ammonia consists of two different salts, viz., monocarbonate of ammonia, and bicarbonate of ammonia. The former is readily volatile in the atmosphere, being decomposed into one equivalent of carbonic acid and one equivalent of ammonia, and the less volatile and active bicarbonate of ammonia thus only remains behind; only half of the salt is, under these circumstances, made use of, and it is obvious, there-

* Photographisches Mittheilungen.

fore, that the powdered salt must not be allowed to remain open to the atmosphere.

To institute an accurate comparison between the methods of fuming the paper and placing the powdered salt in the frames, I printed some paper treated in the two ways at one and the same time. The action appeared the same on both when the sheets had been freshly fumed, but if the latter remained a couple of hours exposed to the air before printing, they did not give such good results as were obtainable by means of the ammonia powder.

That ordinary sensitized paper, after fuming, prints more rapidly than an unfumed material is well known; but a circumstance that struck me very forcibly in this kind of work was the extraordinary brilliancy of pictures produced by means of a weak sensitizing bath. A stinking albumen-paper which, alone, yielded but flat, monotonous pictures, gave, when treated with carbonate of ammonia, the most splendid results, of surprising intensity, darker in the shadows and brighter in the high lights than prints produced with ammonia; so marked was the improvement in every way, that I can confidently recommend this mode of proceeding in all similar cases. In working with strong positive baths the difference in tone and brilliancy is not so marked.

One point in connection with ammonia printing is worthy of notice: the pictures assume a much browner tint, and take longer time to tone.

Finally, I tried the sensitized and washed paper recommended by MM. Haugk and Baden; the sheets were sensitized upon a somewhat strong bath (1 to 10), and washed in the manner described by those gentlemen. The paper printed, with the aid of carbonate of ammonia, more rapidly and brilliantly than ordinary paper sensitized on a bath of the same strength, but the prints toned somewhat more tardily.

Correspondence.

CRACKED NEGATIVE FILMS.

SIR,—Whilst the discussion is going on in your pages on the cause of vermicular cracks in the negative film, I am tempted to send you an account of my own experience of this trouble.

Some seven or eight years since, I called in at a photographer's studio; and, whilst in conversation, he drew my attention to what I considered a remarkably fine quality of colourless plate glass. This, I think I understood at the time, was of foreign manufacture. However, as he kindly offered to allow me to do so, I brought away a dozen quarter-plates, in order to try them, intending, if, as I supposed, the printing qualities of the negatives taken upon this glass were superior to those upon the usual green tinted glass, to get a larger supply. I used them up at different times along with my other plates, mostly selecting a colourless glass when I wished for a negative of more than usual value. I soon discovered that these glasses did not possess, as I had expected, any great advantage in printing qualities over the ordinary plate glass, and, consequently, I did not order any more. My plan has invariably been, to tie my negatives, after writing the date when taken upon them, in separate paper parcels, with two leaves of blotting-paper between each two negatives, to protect the films. Each of these packets would, on an average, contain four negatives or portraits, representing that day's work. The names and dates were entered in a book for easy reference. Many of these negatives, after yielding a few prints at the time, have been stored away carefully in a dry place for seven or eight years. The other day I had occasion to open one of these packets, when, to my great disappointment, I found the negative I wanted—ono taken upon the white plate glass above alluded to—completely covered with the vermicular markings. The other three negatives in the same packet, taken on green tinted glass, were as good as when first taken. I did not at this time suspect the glass, but I extended my investigation through this box, and the result was, that I found in five other packets (each of from four to six negatives), nine on colourless glass, and all similarly affected. In each packet the negatives taken on the common kind of glass, on the same day, by the

same chemicals, and, indeed, under precisely the same circumstances and conditions, were in a perfect state of preservation. I think, as regards the quality of the chemicals I was at that time using, it is only necessary to say they were from the well-known establishment of Mr. Thomas, of Pall Mall. I think, sir, you will allow that, in my case, at least, the glass on which the negatives were taken must have been a primary or secondary cause of the defect alluded to.

Now I think of it, I believe some one—probably Mr. Dallmeyer—referred in your pages a few years back to the possibility of certain kinds of glass being liable to affect the negative whilst it was "sweating."

My photographic recreations are necessarily limited, and frequently carried on at long intervals; so that I only throw my mite of experience in for what it is worth, and by way of testifying, in some slight degree, my gratitude to the NEWS for much valuable information and considerable amusement during a series of years.—I am, sir, your obedient servant,

Kilbourne, near Derby, April 18th.

J. H. WOOLLEY.

THE GRAPHOGENIC.

SIR,—How very aggravating it is, after spending much thought, time, and money (as I have) in contriving my new tent, to find my labour vain, my hope of astonishing the photographic world through your pages gone, and all owing to the fertile ingenuity of friend B. J. Edwards! If I still cast a lingering look of esteem at my poor portable bantling—there it is; roomy, running on wheels, capable of carrying camera, chemicals, grub, great-coat, and umbrella, and "up" to any sized plate—it is because I know it has still virtues which tho "Graphogenic" lacks.

1st. Shelter from wind, rain, dust, and smuts when coating the plate with collodion.

2nd. Certain advantages in manipulating, which will occur to every photographer.

3rd. Not paying 60s. and upwards—and very much upwards, too—for B. J. E.'s fancy for patenting ideas; to say nothing of the expense of annually renewing the india-rubber bath.

Even as I write, Mr. Editor, my esteem for my pot portable photographic production increases. I have a few ideas left, which I shall devote to its improvement; and, while others "Graphogenicate," I shall hold fast to that which is good, and remain, your obedient servant,

INGENIO.

ANOTHER PRESERVATIVE FOR SENSITIVE PAPER;

DEAR SIR,—I think that I can name another agent which promises to be a help in photography. It has been, I believe, made use of before, but not in the direction I am about to quote; you yourself can prove or disprove the statement I make with very little trouble. Take a piece of sensitized printing paper from the bath, well wash in some changes of water to eliminate the free nitrate, and float or immerse in a solution of Calvert's pure carbolic acid, a few drops in half pint of water, hang it up to dry, and print as usual; it will print to a good deep shade, and tone, after washing, to a good colour. As to the keeping properties I can say nothing, as I have not tested in that direction, but I think I can say that, arguing from washed paper keeping better than unwashed, it will be found to preserve the whites some time, carbolic acid, I imagine, rather improving such a quality than otherwise. I also suggest its trial with your collodio-chloride, minus free nitrate.—I am, dear sir, yours truly,

Egham, April 24th, 1871.

WM. BARTHOLOMEW.

PS.—Since sending the above, I think it better to use a stronger solution of carbolic acid than that I mentioned in my letter on Monday, for I find the vigour of the print increases in a direct ratio to the strength of the solution, and that in all probability a very weak sensitizing bath is sufficient. I hope some of your amateur readers who have time will prosecute a search with this agent, and that the effect of it on the dried collodion plate may be tested in various ways, with and without another organic substance.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF SCOTLAND.

A SPECIAL general meeting of this Society was held in the Hall of the Society of Arts, 117, George Street, Edinburgh, on Thursday, the 20th inst., to take into consideration suggestions from

the council for winding up the affairs of the society. The council recommended: 1st, that the Society be now dissolved; 2nd, that Mr. Fox Talbot be requested to sit for his portrait, to be presented by the society to the National Gallery of Scotland; 3rd, that a picture be purchased with the remainder of the funds, to be also presented to the National Gallery.

The Rev. D. T. R. DRUMMOND, vice-president, occupied the chair. The minutes of the last general meeting of the society, held in 1867, having been read and approved of, also the minutes of the last council meeting, the principal part of the business of which is contained in the above recommendations, the Chairman said he should be glad to hear any gentleman's opinions upon the recommendations which had come from the council to this meeting.

Mr. KINNEAR formally moved the adoption of the recommendations of the council, which was seconded by Mr. HARRIS.

Mr. BROWN said that he did not think he could give his adhesion altogether to the recommendations of the council. He regretted very much that he was not present at the council's meeting through unavoidable absence from town. He thought that the proposition to present the portrait of Mr. Fox Talbot to the National Gallery was a very fitting tribute to one who had conferred such great benefits upon the world by the discovery of his beautiful calotype process. By so doing he thought the society would be acting in conformity with the spirit and object for which the society was instituted. This would only absorb a small portion of the society's funds, but he was not sure of devoting the large surplus to the purchase of a picture to be presented to the National Gallery. This in no way could be construed as a legitimate mode of disposing of the funds of a society which were contributed for the furthering and promoting the advancement of the photographic art. Both the Royal Academy and the trustees of the National Gallery had ample funds at their disposal to give encouragement and to carry out the objects for which they are constituted; and he thought there would be no difficulty in finding a mode or manner of applying the funds at their disposal in a way that would more truly and faithfully carry out the object of the constitution of this society, viz., its direct application to the advancement of photography, either by annual exhibition, or by medals or money annual prizes to original discoverers. In some such way the spirit and objects of the society could be carried out; but he had very great objections to the purchase of the picture, either painted or to be painted, to be presented to the National Gallery.

Mr. ARCHISON thought that Mr. Kinnear's resolution, or rather the council's, was putting the cart before the horse; first dissolving the society, and then its scattered elements reuniting again, and disposing of its funds. He thought, in the first place, that before dissolution, we should make up our minds as to how we should dispose of the funds, as there is evidently a diversity of opinion amongst us as to their application. He might say at once that he had a decided objection to the picture-buying proposal. He thought a good deal might be said in favour of a portrait of Mr. Fox Talbot, but a still better mode of application of the funds would be the establishment of a modest bursary to some struggling student who was more directly pursuing the investigation of the chemical or optical sciences, as they may more immediately bear upon photography.

Mr. YOUNG remarked that he had very great sympathy with what had been said both by Mr. Brown and Mr. Archison. He thought it lay far out of the Photographic Society's way to squander its funds in the buying of a picture to be presented to the National Gallery. The obtaining of a portrait of Mr. Fox Talbot was a very happy recommendation, and every photographer throughout the world will hail with great pleasure the obtaining of a national memento of one who stands second to none amongst the original discoverers of our art; but he had a decided objection to either paint or brush being used in the delineation of those noble features. If a portrait is to be presented to the National Gallery, or, perhaps, more appropriately, to the National Industrial Museum, delineated by the pencil of light, which he had most marvellously used for the delineation of all that is true and beautiful in nature, he wished not only to see the portrait of Mr. Fox Talbot, but also those of Daguerro, the two Nioces, Le Groy, Archer, Reid, Ponton, and many others who were the pioneers of the art, presented to our National Gallery or Industrial Museum, but duplicates also sent to the galleries or museums of London, Dublin, and Paris; and this could be very easily

accomplished. We have got over all the difficulties in the want of permanency; we have the pure photograph permanently burnt in upon enamel tablets defying the ravages of time. Canvas and wood panels would moulder into dust, when the enamel tablets will remain as perfect as when they passed through the furnace. By applying part of our funds we would not only be securing a perpetual memorial of these men, but we would be stamping, by our appreciation, the highest development of photography; for, in his humble opinion, every kind of photograph dims before a beautiful enamel, and it would be a tribute to two men who have done more than all others in developing this most beautiful branch of our art—Lafon de Camarsac, of Paris, and Hendersou, of London. Then with regard to the residue of our funds, he would have an annual, biennial, or triennial money prize for any new discovery that may be made in any given year, which a committee might think of sufficient merit; but not a sixpence should be applied in any way but for the advancement of photography.

Mr. WALKER did not think, with Mr. Tunny, that an enamel would at all be compared to a fine large oil painting; everybody could see it, while an enamel had to be looked for. He thought that the very best application of the funds was that proposed, the painting of a portrait, and the buying of a picture.

Mr. McNAIR thought that some way of applying the funds as indicated by Mr. Tunny would be much more consonant with the spirit of the constitution of our society. He did not think the applying of our funds to the purchase of a picture at all right.

Mr. T. B. JOHNSTON said he might mention the fact that the great difficulties he had, when secretary, of getting up original papers to interest the members, convinced him that there would be no hope of getting a committee to interest themselves sufficiently to take charge of the annual awards as proposed, and he did not believe that the National Gallery would receive the enamel portraits.

Mr. TUNNY said if the funds were to be broken into fragments, he thought they could not do better than allocate £50 for the purpose of assisting to defray the expenses of a National Photographic Exhibition, to be opened during the meetings of the British Association here in August next. The Edinburgh Photographic Society, he had no doubt, would gladly take the trouble, and manage the whole business of the exhibition.

The CHAIRMAN said that if it had not been for the remarks Mr. Tunny had made, he would not have mentioned the fact that he had received a note from one of the council of the Edinburgh Society, making a similar suggestion. He thought good might come of such an exhibition.

Mr. SCOTT ELLIOT said it was Mr. Johnston's belief that the National Gallery would not receive photographic portraits; and, if they have such little appreciation of photography, why should we offer to decorate the walls with our funds? If a portrait was to be presented, he would prefer that of Mr. Scott Archer, who, he considered, had done more for photography than any other man.

After considerable and prolonged discussion, it was ultimately agreed, on the motion of Mr. Brown, "That the Society be dissolved after another general meeting had been called on the 22nd May, the funds disposed of, and all the other business of the society wound up." This was seconded by Mr. ARCHISON.

A vote of thanks to the Chairman terminated the proceedings.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The usual monthly meeting of this Association was held at the Free Library, on Tuesday, the 25th inst., the President, Mr. THOMAS HIGGIN, in the chair.

The SECRETARY read the minutes of the previous meeting, were passed.

Mr. E. ROBERTS exhibited some beautiful stereoscopic transparencies, taken by the coffee process, using some of the coffee prepared for breakfast, and put aside until the evening. The transparencies were of good colour, requiring no gold toning, and were without a spot or stain. He was not equally successful with negatives by the same process; they developed well up to a certain point, and then suddenly became covered with a muddy deposit.

The PRESIDENT suggested that for negatives a different collodion might be found more suitable.

The SECRETARY exhibited some prints mounted under thick glass, as supplied by Mr. J. A. Forrest; some cameo prints

with a glazed surface of plain collodion and gelatine; and a tissue negative for carbon or silver printing, made by taking the film from the glass after coating with India-rubber and plain collodion.

The PRESIDENT exhibited one of a series of prints which he intended taking of the fossils in the Museum; he also showed two photographs of the late eclipse taken by Mr. A. Brothers, which had been sent by Mr. Guyton for exhibition to the members. He (the President) read several extracts from the *English Mechanic*, describing the manner they were taken, &c.

Mr. R. C. Johnson then gave interesting explanations of the photographs, giving the reasons by which it was now proved that the corona belongs to the sun. A discussion followed as to the best process to be used on similar occasion, the wet collodion positive gaining the most favour.

The paper of the evening was then read by Mr. John Henderson, the subject being "Photography and the Stereoscope," which will appear in our next; after which Mr. Henderson gave some practical illustrations of the manner in which he cut his prints for mounting. He also showed several combinations of coloured glasses and papers in the stereoscope, and some stereographs in which the proper effect could only be seen by looking through the stereoscope held in a position corresponding to that of the camera when the view was taken.

After an interesting discussion, a vote of thanks was given to Mr. Henderson, and a hearty wish was expressed that he might have a pleasant trip during his visit to America, Mr. Henderson being about to spend a short time in the United States.

The meeting was shortly afterwards adjourned.

Talk in the Studio.

SOIREE AT THE ROYAL SOCIETY.—The second soiree of the season, and last one at which Sir Edward Sabine will preside, was held on Saturday last. The rooms at Burlington House were almost inconveniently filled, so numerous were the company at a later period of the evening; and the unusual interest of many of the objects exhibited caused frequent blocks in the spacious suite of apartments. Captain Monreiff's model of his barrette gun-carriage formed one of the principal centres of attraction, the ingenuity of which far exceeds, apparently, its practical value, seeing that, notwithstanding the lapse of two years since its adoption by Government, not one single example of the carriage is as yet in the service. The telegraph instruments used in the Post Office, of which there are some half dozen different kinds, formed an interesting collection; and a new description of spectroscope, consisting of but two prisms, by Mr. Browning, was also shown. An electric pyrometer, or measurer of heat, and a beautiful display of Geissler tubes by Mr. Ladd, were exhibited. Of particular interest to photographers were some of Rutherford's magnificent photographs of the moon enlarged to an immense size, and exceedingly rich in detail; a series of large pictures of Japan, measuring some twenty inches by fifteen, shown by Captain Maddison, several of which—of Nagasaki, for instance—were very fine indeed; some photographs of recent explosions by gun-cotton at Dymchurch and elsewhere, exhibited by Lieut. Abney, R.E., who showed also his new instrument for ascertaining readily any degree of elevation; photographs of military subjects by the General Photographic Establishment at Woolwich; and also some studies by Col. Stuart Wortley. Specimens of an improved lithographic (or autographic) process were shown by Mr. Maclure, the examples being all of them very fine and tasteful; and a life-sized painting of Faraday, evidently taken from some of the characteristic photographic portraits that exist of this philosopher, was also exhibited.

PRESSES FOR COME VIGNETTES.—Referring to an answer to a correspondent in our last, Mr. Solomon informs us that he also supplies the necessary appliances for producing the cameo vignettes.

AN IMPORTANT PHOTO-PRINTING PROCESS.—C. J. Carlemann, photographer, in Stockholm, Sweden, has succeeded, after many years of experimenting, in producing, by optical and chemical means, printing plates which can be printed in the printing press simultaneously with the text, and which will furnish impressions similar to the best wood-cuts. This im-

portant invention does not aim so much at the copying of engravings and letters, but its main purpose is to furnish representations from nature with all the details of light and shadow. The inventor is at present occupied in issuing a pamphlet explaining his invention, and intends to take out patents for it in England, Germany, the United States, &c.—*Licht*.

PHOTOGRAPHS OF THE DEAD.—At the Hotel de Ville (writes the Paris Correspondent of the *Telegraph*), there is an exhibition the like of which was probably never seen before. Here it is that all particulars may be obtained of those who have been killed or wounded during the different engagements. In the long corridors you meet everywhere, waudering purposelessly, with handkerchiefs to eyes, the female relatives of the fallen. But not even this sight brings home the horror of the struggle so forcibly as another that meets your eyes. There is a series of photographs—photographs of the dead whom no one has yet recognized. Side by side with these are the number of the regiment to which the dead belonged, and that of the coffin in which their remains have been enclosed.

ROYAL POLYTECHNIC INSTITUTION.—Some very fine photographic transparencies, illustrative of glacier scenery, are shown at this institution in a lecture by Mr. Pepper on "Snow, Ice, and Glaciers." They are enlarged to a magnificent size, and thrown upon the screen in the large hall, so that their full beauty and detail are at once brought out. It is, indeed, only in this way that the actual value of photographs of grand bits of mountain scenery and gigantic waterfalls can be truly appreciated, for the diminutive views we generally see fail frequently to convey to our minds the wonderful proportions of the original scene. The views serve to illustrate very clearly Mr. Pepper's interesting remarks upon the formation and movement of glaciers, and carry conviction at once to the mind of the audience. Another entertainment not to be omitted by visitors, and especially by those interested in photography, is Mr. George Grossmith, Junr.'s, amusing recital; a very instructive lesson may be taken of this gentleman on "How not to do it," in portraiture. Mr. Grossmith seizes upon half-a-dozen of the most hackneyed poses to be met with in all photographic albums, and these he depicts so cleverly and funnily, and, withal, so truthfully, that the audience are made to laugh again over their own weaknesses. Some capital songs of his own composing conclude the entertainment. Other amusements, too numerous for mention here, fill up an agreeable evening at the Polytechnic.

ANOTHER CONVICTION FOR SELLING INDECENT PHOTOGRAPHS.—Claud Boosoli, 53, was indicted at the Middlesex Sessions, April 25, for selling and uttering two low and obscene photographs. The prisoner pleaded guilty. Mr. Besley, who appeared for the prosecution, said that, in consequence of complaints made of the prisoner's dealing in grossly indecent photographs, the authorities of Scotland Yard instructed Inspector Denescoutch and Detective-Sergeant Greenham to take such steps as they might consider to be necessary for the purpose of testing the truth of the complaints which had been made. Accordingly, Sergeant Greenham went to the prisoner's house at 84, King's Road, Chelsea, and had his photographic likeness taken by the prisoner. Some conversation afterwards took place between them, and at a subsequent interview the photographs were sold at 2s. each. A warrant was issued, and on the prisoner, at the studio, and at his lodging, photographs and negatives of the same description were found. Mr. Collins, who appeared for the prisoner, urged in mitigation of punishment that the sale was made after solicitation by the officer, and at a very small price, which showed that the prisoner was not a systematic dealer. The judge said it was almost impossible to realise the demoralizing effect of such publications upon the young, and the Court, refraining from passing the full punishment the law allowed, must still inflict a severe sentence, which was, that the prisoner be imprisoned and kept to hard labour for twelve months.

MORE PIRACY.—A few days ago, at Worship Street, George W. Knight, a picture frame maker and photograph dealer, of Tabernacle Walk, Finchbury, attended in answer to a summons which charged him with having unlawfully and knowingly sold a pirated copy of a registered photograph of the Oxford crew, 1871, contrary to the 6th section of the Copyright Act. Mr. George Lewis appeared in support of the summons; the defendant was not represented. The complainant was Mr. Henry William Taunt, photographer, of the Corn Market, Oxford. He deposed that the Oxford crew sat to him for a grouping picture,

which he registered and published. He took six plates of the crew, and had not allowed either of the negatives to go out of his possession. The defendant, in answer to the charge, denied that he knew the photograph was a protected one. He said that he had purchased it in the street from a lad named Conroy, whom he called as a witness, but the lad could not say if the photograph produced was the same purchased from him. Mr. Lewis said that the defendant had previously been convicted of a similar offence, and fined £25. The full penalty for every false copy was £10. The magistrate inflicted a fine of £5, with the alternative of two months' imprisonment with hard labour. The money was paid.

SENSITIVENESS FOR LIGHT OF THE HALOID SALTS OF SILVER, AND ON THE CONNECTION EXISTING BETWEEN OPTICAL AND CHEMICAL ABSORPTION OF LIGHT.—C. Schultz-Sellack, in a paper contributed to the Berlin Chemical Society, states, as the results of his researches:—"All rays of coloured light which are optically perceptibly absorbed by the haloid salts of silver in films of some few millimetres' thickness cause a chemical decomposition. The absorption of light is in these substances always connected with chemical action. All the haloid compounds of silver are chemically affected and altered by all those rays of light which the salts absorb in perceptible quantity."

THE BROMIDE PATENT IN AMERICA.—The sometime holders of this iniquitous patent are singularly persistent. Having been more than once defeated in their efforts to get it renewed after its original term had expired, a fresh effort has recently been made to establish the impost by another application to the Senate. Fortunately for our American brethren, the application was not successful.

LORD BROUGHAM AND PHOTOGRAPHY.—In the recently published *Life of Lord Brougham* it is remarked:—"At sixteen Brougham wrote an essay on the 'Refraction of Light,' and had already hit on the 'Binomial Theorem,' made additions to the Newtonian doctrine on light and colours, and discovered *Photography*. Brougham sent a paper to be read at the Royal Society; certain parts were omitted. 'This was very unfortunate,' he says, 'because I, having observed the effect of a small hole in the window shutter of a darkened room, when a view is formed on white paper of the external objects, I had suggested that if the view is formed, not on paper, but on ivory rubbed with nitrate of silver, the picture would become permanent.'" His Lordship seems to have overlooked the fact that Wedgwood and Davy produced images by the action of light on salts of silver; but it was not until the discovery of fixing agents, many years later, that permanent pictures could be produced.

CAUTION AGAINST INSUFFICIENT WASHING OF THE NEGATIVE.—It sometimes happens that landscape negatives which are taken in very warm weather with the wet process will, on the return home, be covered with an effervescence or small star-shaped crystals. The cause is insufficient washing after development. The margin of the plate should be brushed over with some negative varnish. When this has dried, the plate is immersed for some time in an old silver bath, which will dissolve the crystals, and the clean plate is now ready for fixing. These last operations must be carried on in the dark room.—*Archiv.*

BLUE FROSTING FOR SKYLIGHTS.—As it is sometimes desirable, particularly in winter-time, to have colourless panes, in place of the blue glass of the glass-house, I use the following colouring solution for my skylight. I make a saturated solution of Glauber's salts in beer, and add Prussian blue until the desired depth of colour has been reached. This mixture is placed on the glass while warm. When cool it is crystallized. It can readily be removed with a wet sponge.—*Archiv.*

To Correspondents.

B. T.—If a toning bath of chloride of gold and acetate of soda be made of the proper strength for use, and used carefully, so as to avoid contaminating it, it may be kept in the dark a long time without deterioration or precipitation. When we used an acetate bath we kept it for many months, using it over and over, merely adding to it, as it diminished in bulk, a fresh supply of new solution of the proper strength. This plan answered perfectly.

MIDDLESEX.—You will see from a letter in our last that albums for the Victoria cards are already in existence, and that the necessity for importing them, therefore, no longer exists.

KELSO.—The damaged glass, which you describe as "mildewed," may possibly be improved by rubbing the surface with putty powder, which will polish off the injured surface. 2. Tunicare answers well so far as we have general testimony.

F. C. S.—We do not remember any special paper or article on photographing interiors with dry plates, although there are many scattered hints on photographing interiors. Unless the church interior is much lighter than churches usually are, dry plates are not often used for such a purpose, on account of the enormous exposure which would be required. If, however, you wish to use a dry process, try that with which you are most familiar, and use as large a stop as you can without sacrificing definition.

PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.—Mr. Hubbard, to thank Mr. Foster and ourselves for explaining that the Committee rejected the pictures for want of novelty, says:—"I cannot complain, nor should I on those grounds, if they had not accepted one. I did not feel disappointed at having one returned, for that I expected. It was my surprise in having the one that I placed the greatest confidence in, that if any were retained it would be that. I was sorry I had nothing new to send, but there was no chance with such a winter as we had in London. I think it would have been wiser if the Committee had made known to photographers, through the *News*, their reasons for rejection, thereby laying at rest many perplexing thoughts." Our correspondent should bear in mind that the Committee could scarcely be expected to explain that which, in their estimation, should have been self-evident—namely, the importance of novelty. It is scarcely customary, either, for a body of gentlemen performing a public duty to voluntarily place itself on its defence on indefinite charges. We sought the explanation from the Committee in the interests of photographers, and made it known as soon as possible after visiting the Exhibition.

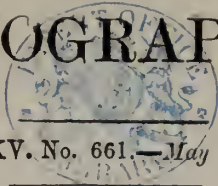
GENUS.—There are various methods of obtaining a suitable surface in the negative for retouching. More than one kind of varnish is in the market, the object of which is to give a matt surface suitable for retouching. The ordinary negative, if used somewhat dilute, and with very little heat, dries sufficiently matt to permit retouching. Some photographers apply a little cuttle fish or pumice-stone powder to such portions of the varnished negative as they wish to retouch, and, by rubbing slightly, remove the high polish. 2. It is somewhat a matter of taste with the artist as to whether lead pencil or water colour is best for the purpose. Where very little working is required on the negative, lead pencil is preferable. 3. Various water colours may be used; Payne's grey answers well. 4. We have published many articles on the subject of retouching, both in the *News* and *Year-Books*. You will find an article on the subject in the last edition of Newman's work on colouring photographs. The extracts from an American work we recently gave, constituted the whole of the instructions in the book.

TIBER.—Various fluxes are used in enamel work. Here is one: 12 parts powdered flint glass, 4 parts powdered flint, 3 parts calcined borax. Melt together in a Hessian crucible for some hours, then granulate by pouring into water, and finally reduce to a fine powder in a mortar. You can buy this more easily than you can make it. 2. Mr. Solomon will supply you. 3. We do not understand your question as to "means for taking pictures off enamels after having been burnt in." Do you mean taking copies of enamels? If so, proceed as in copying other pictures.

EXCELSIOR encloses us a copy of one of the letters which have appeared in the daily press suggesting a tax on photographs. He says:—"I enclose letter cut out of the *Standard* to-day, Tuesday 25th [the letter is one of those referred to in a leader]. It may or may not have come under your notice. What particularly attracted my attention was that portion of it relating to the cost attending the production of the negative. The idea of negatives costing 'little or nothing' for taking is so universal, that it appears to me quite time the public were more generally informed, not merely as to the expense of chemicals, but also the necessary plant required, together with the value of the operator's time. I, therefore, draw your attention to this, in the hope that either yourself, or some other more able hand than mine, may take the matter in hand. We photographers, especially in portraiture, are considered generally as mere machines, and beneath even the colourist, setting aside the artist; the former of whom is entirely dependent upon us, the latter becoming daily more dependent. There are the gentlemen photographers, accustomed to taking views on large plates, very beautiful and well chosen, as also well manipulated; but where is the skill required compared with the portrait photographer? It is time, I say, therefore, for some able hand to disabuse the public mind. I am looking forward to the results of the forthcoming Exhibition to do something, and, in conjunction with a clearer representation in the public press, and such a class of work from photographers themselves, to photography taking its proper position of an art science." The statement as to cost of photographs in the letter in question was too preposterous to need serious refutation.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

THE first of the projected succession of Annual International Exhibitions of works of industry and art was opened in state on Monday last by the Prince of Wales. The aim of the series of Exhibitions now inaugurated is to carry out the purposes in promoting art and industry, of the Royal Commission appointed to dispose of the surplus funds of the Exhibition of 1851. The report presented to His Royal Highness during the ceremony of Monday explained the intention and motives which have governed the Commission in the present project. In order to avoid the tendency to undue increase in size and extent, it was resolved to hold a series of smaller Exhibitions, and to confine the Exhibition of each year to two or three industries only, admitting, however, every year works of fine art, scientific invention, and horticulture; and to admit such objects only as might be selected as worthy of exhibition by a competent committee of selection. This committee of selection perform practically the work of a jury, and the certificate of admission will be, in effect, a certificate of merit. The decision of the Commissioners is not in favour of the system of prizes, which, it is stated, has proved a source of dissatisfaction, and, sometimes, of abuse. Practically, in fact, the jury system is declared to have failed. "The estimation of the merits of the goods of each country," it is remarked, "was often determined very much in the proportion of the number of the jurors it was allowed to name. It was impossible to find jurors with sufficient technical knowledge of all the subdivisions necessarily grouped under one heading to pronounce comprehensive and correct judgments on the comparative excellence of the objects exhibited. And amid the enormous mass of objects which such immense exhibitions brought together, many oversights occurred, which did injustice to individuals."

As the report proceeds to remark that "the admission to the Exhibition itself, in the opinion of your Commissioners, should be viewed as conferring a distinction worthy of competition," it practically re-establishes the functions of the jury, and it may be doubted whether entire exclusion, by the decision of a committee, from the opportunity of exhibiting, may not be regarded as a worse fate than exclusion from the awards of merit by a jury after exhibiting. There can be no doubt, however, that the public will be the gainers in the higher character of the contributions.

The official reports to be issued will aim at something more than a mere record of the contributions and their character. It is stated by the Commissioners that "in these reports an attempt will be made to inculcate such principles as will enable the public to arrive at a standard

of judgment, and form its own opinion upon them." The appointed reporter for photography is a gentleman thoroughly familiar with every branch of photography, and well able to form a due estimate of the subject entrusted to him, as all who know the work of Col. Stuart Wortley will readily admit.

Photographs, being in this Exhibition classed amongst fine arts, will be admitted every year; an arrangement which will permit the display of annual progress, novelty in subsequent Exhibitions being an absolute condition of admission.

We have before briefly noted the character of the display of photographs at the present Exhibition, and owing to its incompleteness in some respects—owing to the late arrival of some foreign contributions which are neither yet hung nor catalogued—we can now only give a general glance at the pictures. They are hung, as we before stated, in the lofty gallery which runs round the Royal Albert Hall, where are found—in company with water colour drawings—engravings, lithographs, and works of similar description. The ensemble of those already hung is effective and satisfactory, and the chief cause for regret, when examined in detail, is found in the fact that so many of them have been exhibited before. Another cause for regret in an International Exhibition is the fact that some important nationalities are altogether unrepresented. We find nothing from France, a circumstance easily understood. There is very little from Prussia, nothing from Italy, nothing from Canada, nothing from Australia, nothing from the United States, nothing from Russia. Of the states of Continental Europe, Hungary is best represented, some very charming photographs having been sent by Hungarian artists. Austria and Belgium are also well represented.

Amongst the novelties contributed by English photographers, perhaps one of the most striking is a subject-picture by Mr. F. C. Earl, of Worcester, who has been chiefly known hitherto by his noble landscapes. This is a combined photograph about eighteen inches by fourteen, entitled "In Memoriam," and represents the interior of a death chamber, lighted by a single lamp. In the centre is laid, placid in death, the figure of a young man; and leaning over him, on her knees, a young lady—wife, it may be, or sister—her back to the spectator, evidently bowed down by deep grief. The chiaroscuro of the picture, the realism of the lamp light, the softly spread illumination, which is thrown into a definitely pyramidal form by the shade over the lamp, and the quiet gloom and stillness, are admirably managed. The sharp, sculptural definition of the young man's features, seen in profile, and the perfect effortless repose of the eye-lids, suggest actual death; and the feeling of pain and solemnity which must ever be associated with the real, rather than the

pictured, presence of death steals over the beholder, which may suggest again the question, which has been discussed before, as to how far it may be permitted for the realism of photography to deal with certain actualities which are too intimately connected with the sacred things of human life. If the subject be legitimate for the photographer's art, it is here treated with admirable skill and taste; there is nothing gross in the realism; a perfectly reverential tone, and the purity of true art-treatment, pervade the whole. The fine lines of Longfellow which are appended to the picture are in perfect keeping with the suggestion of the composition—

There is no death! What seems so is transition.

This life of mortal breath
Is but a suburb of the life Elysian,
Whose portals we call death.

He is not dead—the child of our affection—
But gone unto the school
Where he no longer needs our poor protection;
And Christ Himself doth rule.

Also noticeable amongst the novelties are some fine portrait studies and character-pictures by the Hon. Ronald Leslie Melville. This gentleman is an amateur, with whose works, until now, we have not been familiar. They all display considerable artistic taste and feeling, and suggest something of the characteristics of the work of Mr. Rejlander and Mrs. Cameron. They have, however, qualities essentially their own, and the photographic execution is, moreover, good, and free from the slovenliness which often characterizes the lady's pictures. We shall have occasion to refer to these in detail hereafter.

Mr. Slingsby contributes some exceedingly fine large portraits of a similar size and character to those sent to the November exhibition of the Society, the subjects here being new and effective. Mr. Dismorr, of Gravesend, also sends some fine Salomonesque portraits, which have not been exhibited before. A portrait study entitled "Rosa," by Mr. F. Piercy, produced by his especial method of artistic printing, is very charming, as is also a pretty little child's head by B. Scott and Son, entitled "The Morn of Life." Mrs. Cowper, whose work we have not seen at any previous exhibition, has some exceedingly fine reproductions, printed both in silver and carbon.

Prominent amongst familiar pictures are the fine seascapes and landscapes of Messrs. Robinson and Cherrill, and the "Trysting Tree" and "Over the Sea" of the same artists; the noble portraits by Mr. Blanchard; studies by Mr. Rejlander, Mr. Hubbard, Mr. Warwick Brooke, Mr. A. Diston, and others; the charming studies of children by Mr. Faulkner and Mr. Heath; portraits by Mr. Ashdown, Mr. Briggs, Mr. Beau, Stereoscopic Company, Mrs. Cameron, Fradelle, and others; landscapes by Mr. England, Mr. Earl, Captain Lyon, Mr. Brook, Mr. Godbold, Mr. Beasley, and others.

Permanent and photo-mechanical printing processes are well but not numerously represented. The Autotype Company have a magnificent display of specimens. Mr. Woodbury has some very capital examples. Messrs. Edwards and Kidd send a good display of heliotypes. Mr. Henderson sends some fine enamels.

The foreign contributions include some very fine pictures, to which we shall refer when all are hung.

PHOTOGRAPHIC PORTRAITURE IN INDIA.

We subjoin some extracts of a letter from a portraitist in India written to a friend in this country; many of the observations will interest our readers:—

"The common plan of taking portraits out here is simply to place the sitter under cover (shelter over his head) in the open. Of course, the best time for that sort of work is about 8 a.m. It is a capital plan for children. In fact, I find it so good that I have fitted up a contrivance of the sort outside the studio, and can take babies in three

seconds with No. 2 stop with ease. At this time of the morning the light is soft, and I arrange that it should come on to the sitter as nearly as possible like in the studio: shade on one side, light on the other.

"Talking about studios, I may as well say that I got a wrinkle from the one I worked in before, which is, that I feel convinced that in building a studio have plenty of light in the side light. The one I had before was about 12 feet to the eaves, whereas mine here is not more than eight. This was false economy. What do you say; you who have built so many? If I have time, I will enclose the different elevations for you to see what it is like. As to working, I cannot complain. I give twenty seconds for a largish vignetted head (C.D.V. size), with No. 2 stop, cloudless sky; twelve to fifteen seconds standing figure.

"Now let me say a few words upon photographic subjects. First and foremost comes Robinson's luxurious and delightful process the "Syrup." What a treat it is to go into the field feeling the utmost confidence in working it! When compared with the old plan of fixing in the field, is the word "luxurious" misapplied? I constantly go out many miles, sometimes away from the studio, to take bungalows, horses, and groups on 12 by 10 plates, and *always* work the "preservative." I have no more hesitation in applying it to a plate of a large group than I have to a landscape, and *never* have I failed; not a stain is to be seen on the plate. "Golden syrup" is dear here, so I have recourse to the commonest treacle—

Treacle	...	...	...	4 ounces
Water	...	...	...	6 "
M. spirit	...	...	...	1 ounce

The same as I put in the same quantity of developer. This solution leaves nothing to be desired.

It is an invaluable process, and, knowing it to be such, I have made others acquainted with it here. What a comfort it is in the field, is it not? What a lot of negatives one can take in half the time that would be required when fixing in the field! With regard to permanganate of potash for discolouring the printing bath, I find this also another delightful process to use instead of kaolin. I have had my doubts as to whether or not the print produced from a bath so treated were equal to others, and have often condemned it, fancying it imparted a redder tone, or that the whites were affected, it is so natural to lay the blame when anything is a little wrong, to any new process one may be experimenting with. But the comfort derived from using permanganate, not to speak of the gain derived from having no necessity to filter the solution, made me go back to it again and again. After many trials, printing the same prints from paper excited in a bath discoloured with permanganate, and one with kaolin, I have come to the conclusion that there is no appreciable difference. I use a ten-grain solution, one drop of which effectually clears a bath containing about forty ounces (in bulk). I am not aware of your method of discolouring the bath, and should like to know it. I believe a ten-grain solution of salt answers the same purpose. I intend to try that. I have been practising the "mezzo-tint" dodge also, and have succeeded in producing some beautiful results. The mechanical part of the operation is easy enough. I simply get a common packing case large enough to take a printing frame or two, place it in the open, when the sun is shining, in such a manner that none of the four sides casts a shadow on the bottom, fix it in this position by a brick or piece of wood underneath, and I or the printer stands by to see that no shadow impinges on the bottom. This is easily done by tilting or lowering, &c. About noon is perhaps the best time, the sun being then more stationary. You will see two of my specimens in this style at the South Kensington Exhibition. As I said before, the mechanical part is easy enough; there is no need of black living, and all that; the difficulty lies in knowing that you have a paper that will stand sun printing, or, rather, in knowing how a paper ought to be excited for such printing. From some papers I have found

it impossible to get a good print in the sun from negatives which have given me faultless prints from other samples. The density of the negative has, perhaps, something to do with it, but I think the paper has most.

By-the-bye, what are the requisites for direct sun printing? I am sparing no pains in finding this out, for the results from this process are charming. Glass is the best medium, I believe, as thin as it can be got. I was tempted to try this process from having taken the portrait of a very pretty lady very much freckled. She remarked that all her portraits give her such hideous freckles. I replied that she should see none in the one I was about to give her, at the same time showing her the freckles strongly marked in the negative. I was relying upon touching them out with a pencil. When I came to undertake the task, I found it would be only partially successful, and so bethought me of the "medium" printing. At it I went, and was delighted to present her the next day with a beautiful picture, not a freckle on the face, and as soft and round as possible. That lady is the one represented in the portrait with her chin on her hand. You will see that her fairness has been duly preserved."

ON HÆMATOXYLIN, AND ITS USE IN THE DRY PLATE PROCESS.

BY FRITZ HAUGK.*

HÆMATOXYLIN, which receives extensive employment among dyers, is prepared from ordinary logwood. It forms little crystalline needles, ranging in colour from a straw yellow to that of a chocolate brown, which dissolve easily in boiling water, ether, and alcohol. Erdmann and Hesse found that hæmatoxylin exerted a reducing action upon silver, and for this reason Professor von Babo suggested its possible employment in photography. Acting upon this suggestion, Dr. C. Tabensky instituted certain experiments with the compound, the results of which were communicated to the *Zeitschrift für Chemie* as follows:—

"Two plates were prepared in identically the same manner, exposed to light, and then treated, the one with pyrogallic acid solution, and the other with a mixture of hæmatoxylin; in the latter case, the picture was quite as clean and distinct as when pyrogallic acid had been used."

The formula used by Dr. Tabensky in making up his developer was as follows:—

Hæmatoxylin	...	...	...	1 part
Distilled water	...	...	...	160 parts
Acetic acid (33°)	...	...	...	44 "

I have repeated the experiments of this gentleman, and am able to confirm his results, but, at the same time, I hesitate to recommend the use of hæmatoxylin for the development of wet plates. With dry plates, however, the matter is different, for in this direction the compound gives surprisingly good results; and for this reason I would recommend all photographers who occupy themselves with dry plate manipulation to institute a few experiments with a hæmatoxylin developer. My own experience leads me to value the latter much more highly than the alkaline developing solutions, which, when properly employed, possess so many valuable qualities. The formula of Dr. Tabensky I have modified for several reasons, preferring the employment of a developer of the proportions stated below:—

Distilled water	...	...	...	4 ounces
Hæmatoxylin	...	...	...	8 grains
Acetic acid	...	...	...	$\frac{1}{2}$ ounce

Sometimes, when an inferior description of acetic acid is used, a tendency to fog is apparent upon the application of the developer, and in this case a further addition of some ten or twelve drops of the acid should be made.

The silver solution I employ is made up in the proportion

* *Licht.*

of thirty parts of water to one of silver, and I intensify with pyrogallic and citric acid.

With coffee-morphia plates, I have been enabled to obtain thoroughly exposed landscape pictures in eight seconds; by using the hæmatoxylin developer, and quicker results even I have secured with some dry plates of my own, regarding which I will say a few words on a future occasion.

A NOVEL APPLICATION OF COLLODION.

At a recent meeting of the Berlin Society, some details were given of a curious quality possessed by collodion, which has been recently discovered by M. Kleffel, and which may, it is thought, possibly lead to some useful application. He has found that if a glass plate is coated with collodion in the ordinary manner, and, after the liquid has set, a printed sheet of paper is pressed upon the surface lightly with the ball of the hand, a very exact reproduction of the printed matter will be found impressed upon the collodion after the removal of the paper, the design or type remaining perfectly visible after the complete desiccation of the film.

Particularly distinct is the printed matter when the plate is held up as a transparency, or when seen by reflected light, after the surface has been breathed upon, the type or design being somewhat sunken and bright, while the remaining portion of the film appears dull and matt.

M. Kleffel is not yet prepared to offer an explanation of this singular phenomenon, but, in all probability, the greasy nature of the printer's ink prevents its being attacked by the alcohol and ether of the half-set collodion, while the remainder of the paper is completely impregnated and softened by these volatile liquids. For this reason it is that the printing has the appearance of a *has-relief*.

To obtain the result in a perfect manner, it is necessary to employ a somewhat thick, structureless collodion, and not to allow the action of setting to go too far. Moreover, a light, even pressure is requisite to yield sharp and distinct reproductions. As a ready method of copying valuable originals, it is suggested the process might be available; then the necessary manipulations require no more time than the process of copying a written document in the ordinary copying-press.

AGAIN THE QUESTION OF WHITE OR RED LIGHT IN PHOTOGRAPHY.

BY A. DE CONSTANT.*

At the September meeting of the German Photographic Society in New York, a discussion arose on the subject of my remarks relative to whitening the walls of the camera. On this occasion M. Schène, one of the members of the Society, explained that he had made trial of this modification, and found the action of the same to be *nil*. Such a statement as this startled me very much, for the influence of the white interior, either as regards hastening the result, or softening the shadows, is so very marked, that it would seem impossible almost for the same to escape observation in experiments conducted in anything like a careful manner. So important, indeed, was the action, that I was actually compelled to give up the employment of white fittings in the camera altogether, as I found the head of the model lost its plasticity, and the picture became too flat, defects not remedied by the quicker action of the light. Inasmuch as I ascribed these defects to the strong reflection of the light rays which are thrown by the white walls direct upon the sensitive film, I am not in any way astonished to hear that M. Schène has obtained results of a similar character by means of a white cloth placed in front of the model; in the latter case, direct reflections are formed which operate in the well known vigorous manner of all white surfaces.

Anyway, this latter method of softening the shadows is not a new one. I have myself employed it frequently to

* *Photographisches Archiv.*

dissipate the shadows given by a very long nose or too prominent chin; but, at the same time, I think it well, as a rule, to avoid a bottom light, seeing that it interferes so much with the relief of the image.

After abandoning white light and white fittings, I employed red reflecting surfaces in the camera, and found therein a positive advantage, the best tint being that of a delicate rose, without mixture of violet. The direct reflections had disappeared; a sufficient acceleration was apparent, and the relief and vitality of expression were visibly improved. Since then, as I have already stated in the *Archiv*, I have found considerable advantage in the employment of an arrangement for portraiture in which the camera walls are left black, while the rosy reflection is brought about in the studio itself. By operating in this manner, the camera merely reproduces, with its customary accuracy, a soft and harmonious effect of lighting which already exists. It is the satisfactory results afforded me in practice by this method of proceeding that has caused me to recur to the subject.

My studio is of the ordinary shape, and glazed throughout, with the exception of that end against which the model is placed. The material I employ for imparting to the light its warm appearance is English muslin, moderately transparent, such as ladies employ for ball dresses, and possessing a delicate rosy hue. When I first arranged this stuff in the vicinity of the model, I found that the white light in the remainder of the studio interfered considerably with the rose-tinted light, and the clearness of the picture suffered in consequence. Upon this I fitted up the whole of the studio with red curtains, placing under the glass roof two sliding frames, to which the rose-coloured muslin was attached. The whole of the light being now coloured, exhibited a very agreeable harmony. The closed end of the studio was, when necessary, also provided with a screen of like colour, for the purpose of brightening the shadows.

The camera itself stands in a darkened space opening into the studio, an arrangement which cannot be too strongly recommended.

If the muslin has been selected of the right description of tint, the light of the studio is excessively soft, and the repose and rest to the eye so favourable, that even the weakest sight feels relief, and becomes full of that life and vivacity which contribute so much to a good likeness. When the red reflections are so strong that the object to be reproduced appears coated with colour, this is a sign that the shade of the tint is too deep. The muslin must be of quite a light and delicate colour.

Before, I suffered much in my studio from the unfavourable influence of some large white houses opposite, which, despite curtains of all kinds, always caused me much annoyance, and prevented my operating in sunshiny weather, besides causing other annoyances. Now, I am able, by means of a couple of frames stretched with rose-coloured tissue paper (muslin is too transparent for this purpose), to hinder altogether the presence of white reflections, and at any time of day, and even in the brightest sunshine, I invariably enjoy the most excellent light. To photographers, therefore, who find themselves in any way inconvenienced by the presence of white houses in the vicinity of their studios, I cannot advise the adoption of this expedient too warmly.

But I must not forget to mention the advantages to the model of this method of lighting.

In the first place, as I have already said, this description of light is exceedingly pleasant to the sitter, and the latter will not, therefore, lose his natural expression, as is the case when surrounded by a glaring white light. Under the influence of this warm harmonious illumination, the light side of the portrait retains all its fineness and half-tints to the most delicate degree, while the shadows, the hair, &c., lighted up by the rosy light, become quite transparent, and instead of the flat surfaces so frequently seen when white light is employed, all details show the highest elaboration.

This point appears to me of very great importance indeed, and leads me to the one next in order, namely, the acceleration of the photographic action, or shortening of exposure, which my method of proceeding entails.

In this respect some explanation is necessary. If, by short exposures, one understands those instantaneous landscape views without half-tone, or portraits secured in a couple of seconds, in which one cheek is represented by means of white paper, and the other by an inky stain, portraits with expressions of pain or fright, such as are produced in studios flooded with white light of the brightest description—I say, if these be understood to be short exposures, such rapidity and action must not be expected from rose-coloured light. But this modified illumination will be found to furnish a soft, harmonious portrait, full of modelling and detail, in about half the time necessary for its production in an ordinary studio, which has been so closed in, as to yield a similar result. Moreover, it must not be forgotten that an exposure of fifteen seconds in a rose-coloured light is far less trying to the sitter than a pose of three or four seconds in a blinding white light.

It is in this sense that I claim acceleration of the photographic action by means of rose-coloured illumination. The arrangement of the details of light and shade, such as the Salomon school of artistic portraiture necessitates, is more easily brought about by this means than in the ordinary way. Unfortunately, in our time, everything tends towards attaining the greatest amount of rapidity—to making things quickly and badly—and these sins one must be very careful to guard against. In my long experience as landscape photographer, I have never been able to obtain satisfactory results either in bright sunshine or by very short exposures. But I find my thoughts have caused me to wander from the subject, and I will return, therefore, to my red studio, just to say a few words upon M. Meuwssen's recent remarks upon the new mode of illumination.

I can readily believe that the red alcove or niche in which M. Meuwssen places his model approaches very nearly, as Dr. Liesegang truly says, to the Adam-Salomon system of lighting, and that the red glow furnishes portraits very similar to my own. But the front portion of the niche, it must be remembered, permits the entrance of white light, which, as stated above, interferes with the red illumination, and gives rise to difficulties which could not be overcome except by colouring the whole of the light in the studio, as I was compelled to do.

As a parting word, I may say, that after an experience of some months, I again heartily recommend this manner of illuminating the studio.

[Dr. Liesegang adds the following note to M. de Constant's communication. The pictures taken with the white camera are very soft and delicate, but not plastic; those secured with a red camera are more life-like, but, nevertheless, do not equal in clearness, transparency, and general excellence, the portraits taken in the studio illuminated with rose-coloured light.]

ON PHOTOGRAPHY IN THE PRINTING PRESS, BEING A DESCRIPTION OF THE WORKING OF THE HELIOTYPE PROCESS.

BY ERNEST EDWARDS, ESQ., B.A. (CANTAB).*

It will be well, before entering into a detailed explanation of the special process before us to night, to revert for a few minutes to the past history of photographic printing, and especially to the past history of permanent photographic printing. It is but a few years since the paintings of the sun took the world by surprise, but the wonder that they caused soon gave place to the commercial value that attached to them. Speedily a new trade, of enormous dimensions, was found to have sprung up; photographs were

* Read before the Society of Arts, April 28.

manufactured and supplied to the public by millions, and the public were satisfied so long as what they obtained appeared good. This lasted for a time, and then came a reaction. It was not long before it came to be known that, at all events in photography, the proverbial thing of beauty was by no means a joy for ever. The possessors of collections of photographs opened their portfolios to find, too often, little better than blank paper where they had last looked on treasured gems. A whisper—the forerunner of the voice which now speaks with no uncertain sound—was heard next, that silver photographs not only might, but, sooner or later, must fade, and a cry was raised for photographic printing which should admit of no reasonable doubt of permanence. Experimentalists soon produced satisfactory results in this direction, but, in the meantime, silver printing—that is to say, the process by which what we are accustomed to call photographs are produced—had established, most unfortunately, a certain standard—a standard, that is, as regards results by which all new processes were to be judged. This is what the workers in the new field have had to contend against; this is what, more than anything else, has harried their progress. No matter how beautiful the results of a new process may be; no matter that these may be proved to demonstration to be permanent, to be cheaper, to have a thousand other qualities not possessed by silver prints, and to be more artistic, the first point raised always is, Can they be mistaken for silver prints? Not are they more artistic, but, are they so like silver prints as to be mistaken for them? This method of comparison is what I protest against, for a silver print is what nothing but the fugitive salts of silver can produce. It is impossible for a silver print to be so like a drawing in black chalk as to be mistaken for it. So I conceive it is impossible for a drawing in black chalk, executed by light (which is neither more nor less than a photograph in carbon), to be so like a silver print as to be mistaken for the latter. Silver photographs are things *per se*—unlike everything else. Artists do not admire them; they are not in effect altogether pleasing, nor can any known pigment match them. Nevertheless, unfortunately for carbon printing, the standard is set up, and unless we can show a print that shall be mistaken for a silver print from the same negative, our efforts are, in many quarters, esteemed all but useless.

The ordinary method of photographic printing is based on the fact that paper treated with certain salts of silver darkens on exposure to light. If certain parts of such paper are shielded or screened from the light, these parts will remain white, and the remainder will darken and form a picture. This is what (by protecting certain parts and allowing light to act on others) the photographic negative (or shield) does. When the picture has been thus formed it requires to be fixed, to prevent the further action of light. Unfortunately, after fixation, there remain in the proof certain combinations, which of themselves contain the elements of instability, and which it is not possible entirely to eliminate, so that, sooner or later, the silver print fades.

The action which is at the bottom of nearly all the permanent photographic printing processes is that of light on gelatine in presence of a bichromate. Gelatine, or glue, which is simply a common form of gelatine, is, as is well known, readily dissolved in warm water. If we take gelatine, dissolve it in hot water, and having added to the solution some bichromate of potash, again dry it, we have a compound which is sensitive to light, but sensitive in a way entirely different to ordinary photographic paper. If we expose this compound to light, we shall find, not that it has changed colour to any marked extent, but that it is no longer soluble in hot water. If we shield a portion of the dried gelatine and bichromate from light, that portion will dissolve as readily as before, but the portion which has been acted on by light is now unaffected by the hot water. The discovery of this action was made in various steps, the first being announced by Mr. Monge Ponton as early as 1839. It is most important to keep this fundamental

principle clearly before us, for if we fail to do so, we shall fail to comprehend all that is built upon it. I may be allowed, therefore, briefly to restate it. Gelatine, or glue, is readily soluble in hot water, but if a sheet of dried gelatine containing a bichromate is exposed to light, it is found to be converted into a tough, tawny substance no longer soluble as before. This remarkable property was speedily laid hold of by experimentalists, and two groups of processes have been founded upon it. In the first group, this action is brought into play in the production of every proof. That is to say, every picture is produced by the action of light on bichromated gelatine. In the second group one picture is produced by the action of light on bichromated gelatine, and this picture is made by various devices to serve as a printing matrix, from which any number of impressions may be struck off by mechanical means.

In the first group is included what is ordinarily called carbon printing. If we take a sheet of paper prepared with a coating of bichromated gelatine, and, having exposed this to light under a negative, wash it in hot water, the portions unacted on by light will be washed away—that is to say, in those portions no gelatine will be left on the paper; but where light has acted, the water no longer dissolves the gelatine, which, therefore, is left on the paper. In other words, we have a proof, not in light and shade, but in relief and depression, some parts of the paper having gelatine left on them, others having none. Now, if previous to coating the paper we mix with the gelatine some pigment (such as carbon), and proceed as before, we shall have obtained not only a picture in relief and depression, but also in light and shade; for where gelatine is left on the paper, there will also be colour, in virtue of the carbon which is imprisoned in it; but where the gelatine is unacted on by the light, and is washed away by hot water, there the colour is also washed away, leaving the paper bare, and thus we have a carbon photograph. Herein, it is true, we have the rudiments of a process, but something more than this is wanted. A negative does not consist simply of parts where the light entirely passes through, and of parts where it is entirely obstructed. The whole beauty of a photographic negative consists in what is called half tone—that is, where the light is partly obstructed and partly passes through; and a good negative contains a thousand variations gradating in intensity from black to white. The difficulty of reproducing these was the first great obstacle to the progress of carbon printing. The action of light through such a negative on to a sheet of gelatine and bichromate is like that of cold on a sheet of water. The whole surface of the latter may be frozen over, and the ice be apparently of equal thickness throughout, but where bridges, and hanks, and trees have afforded shelter, the ice is thinner, so that though the upper surface is perfectly level, the lower surface varies with the degree of cold to which it has been exposed. So it is with the picture on gelatine. The whole of the upper surface—that surface which has been next the negative—is acted on by light, and the part that has to be washed away is underneath, between it and the paper. Directly, therefore, such a proof was put in hot water, the picture (being on the surface, and having nothing to support it) floated away, and the paper was left bare. To obviate this a very ingenious proceeding is adopted. Paper is coated with bichromated gelatine, and the carbon or pigment which is to form the picture. It is printed on by light under a negative as described; but, before being put into hot water, it is glued face downwards—that is to say, the side which has been exposed to the negative downwards on another sheet of paper. Then comes the washing with hot water. As before, the intermediate layer between the first paper and the gelatine picture is dissolved, and the first paper is left bare; but the picture itself, instead of floating away, has been glued to the second piece of paper, on which you thus have a print containing all the gradations of the negative. This,

broadly, is the basis of the present method of carbon printing. The magnificent reproductions by Brann, of Dornach, and those of the Autotype Company, are produced by such a method. It is difficult to conceive anything finer than Brann's reproductions of the paintings in the Sistine Chapel; and each one of these, and of the autotype prints, has been produced in the way indicated, and consists of a film of bichromated gelatine, having imprisoned in it any convenient colouring matter.

In the second group the gelatine picture is used as a matrix for producing a printing base, or is itself used as a printing base, which is then, in either case, printed from by mechanical means. The first successful attempts in this direction resulted in the process which is known as photo-lithography. A print is produced by the action of light on gelatine in the way first indicated. It is found that lithographic ink will adhere to those parts where light has acted. The gelatine print is accordingly inked with a lithographic transfer-ink, and the print thus produced is transferred to the surface of stone or zinc. But a lithographic stone does not do more than discriminate between black and white; it will not recognize half tone. The process is not, therefore, suitable for the production of aught else than bold work, either in dots or lines. For this purpose it is very extensively used by the Ordnance Survey Office at Southampton, by Mr. Griggs at the India Museum, and commercially in many other places.

In photo-galvanography, introduced by Herr Pretsch, of Vienna, the picture in gelatine having been obtained, a gutta-percha mould is made from it. On this an electrotype is formed, which is printed from as in copper-plate printing. Here again, as in the lithographic stone, the copper-plate does not do more than discriminate between black and white; it will not recognize half-tone, save by the conventional methods of dots and lines of greater or less degree of fineness. And it was found in practice that so much work was necessary to prepare the electrotype-plate for printing, that it became almost equivalent to an entirely new engraving. Accordingly, the process soon fell into disuse. Various improved forms of this principle have been from time to time introduced, and some are now in use—namely Mr. Dallas's photo-electric process, and, in Paris, Garnier's photo-engraving process.

Mr. Woodbury proceeds on an entirely different plan. A gelatine picture, having been obtained by light, is placed in contact with a sheet of soft metal, and submitted to heavy hydraulic pressure. Bearing in mind that the gelatine picture is a picture in relief and depression, the metal counterpart obtained by pressure will also be in reversed relief and depression. A mould will have been obtained, which it will only be necessary to fill with a solution of gelatine to obtain a duplicate, so to speak, of the gelatine picture from which the metal mould was struck. The resulting picture will be one in relief and depression; but if, as in the case of carbon printing, colouring matter is poured into the solution of gelatine used to fill the metal moulds, it will also be in light and shade. The mode of proceeding is extremely simple. A little solution of gelatine in hot water, containing suitable colouring matter, is poured into the metal mould, a piece of paper is placed on the top, and a level lid pressed down on it, so as to squeeze out superfluous gelatine. In a few minutes, the lid is opened and the paper removed, bringing with it the adhering gelatine, which, with the colouring matter, forms the picture. This is repeated indefinitely, and it remains only to fix the proof to prevent the further solution of gelatine, to possess—produced by mechanical means and independently of light—the analogue of the carbon photograph previously described. At present no pictures have been produced by the Woodburytype larger than about 11 in. by 9 in., and there is a necessity for subsequent mounting, but the cleverness and ingenuity of this beautiful process cannot be too highly spoken of.

(To be continued.)

THE "EDINBURGH REVIEW" ON PHOTOGRAPHY.*

THE Autotype process, the longest established and the best known of the different arts which have within these few years come before the public as a consequence of the want of permanency in silver prints, is the only one which can be worked by the amateur photographer, inasmuch as the whole apparatus consists of hot and cold water baths, a sheet of bichromatized and transfer paper, which may be procured from the patentees. The method of manipulation is simple enough in action, but rather too complicated to describe well, which will be the less necessary as the patentees invite the public to see the practical working of their process every Wednesday, at their establishment in Rathbone Place. It will be sufficient to state that bichromate is the chemical agent in this, as in all the allied processes, by which the most literal transcripts are obtained, not only of the most delicate silver prints, but of the artist's own work, his touch, the spirit of his brush being rendered in monochrome in the most unerring manner. We need not say, that however eminent the engraver may be, this literal translation is beyond his art. Indeed, the very eminence of an engraver is built upon a certain method of rendering effects which is peculiar to himself, and although his labours may be excellent as works of art, yet it interposes a mannerism between the artist and the public. The advantage of the Autotype, in common with the Woodburytype and Heliotype, is that it places the original picture at once before us, with the very method of the artist's touch, thus adding an immense charm and sense of truthfulness to the copy. Amid the splendid gallery of autotypes to be seen in the establishment of the Company at Rathbone Place, the great works of Michael Angelo in the Sistine Chapel are the most powerful examples. We will venture to say that before these magnificent transcripts were produced, the works of this mighty master were entirely unknown to the public, and, indeed, to artists themselves. The darkness of the chapel, the progress of age, and, as some say, the fumes of the incense, have so subdued the colour, that even the outlines of some of the upper figures, and especially those in the spandrels of the windows, are not discernible from the floor, as most visitors to the chapel must, to their regret, have discovered. This very disadvantage has proved most favourable to the autotype copies which have been successfully taken of them in monochrome—a kind of bistre, very like the tint to which the originals are reduced by the causes we have mentioned. The artist has only to compare these precious works of art with the best line engravings of the same subject to convince him how superior they are to the latter. The grand sweep of the brush of this giant in art is placed before us; the figures seem to live as they do on the walls of the building where there is light enough for the spectator to see them. The photographic negatives from which they are reproduced were taken by the aid of the lime-light, without the aid of which it would have been impossible to copy them. Another beautiful reproduction by this process is Turner's "Liber Studiormi." These sketches were painted by Turner in sepia, hence its reproduction was accomplished with facility, and with the exception of a little flatness in some of the drawings, it may be said to be a perfect fac-simile of this great artist's work. This great text-book for draughtsmen, hitherto a closed book to the public, may now be purchased at a reasonable cost. Another very charming work, the illustrations to Her Majesty's "Tour in the Highlands," by Adam, are rendered with a freshness and vigour the engraver could not approach.

It is needless to say that any drawing in chalk, Indian ink, or any monochrome, in fact, can be matched to the exact shade. Thus the artist does not lose by the translation of his work into another tone of colour. Red

* Continued from p. 185.

chalk drawings are reproduced with admirable effect. The attempt to copy in ordinary oil colour, however, presents certain difficulties, which have not yet been overcome, and possibly never will until the art of producing colours by the camera on a photographic plate is accomplished. As it is, in the initial stage, the silver print copy, certain colours, as we all know, do not respond well. Thus blue and the aniline tones come out white, whilst yellow and red print black. Thus the lights and shades of a picture painted in these colours would photograph with the balance of light entirely altered. But there are many low-toned pictures which take very well. As a rule, French pictures photograph admirably. A subdued tone is the fashion of the French school, and we may note that the canvas upon which those artists work, instead of being a yellowish-white like ours, is of a pale stone-colour. This ground, we are informed, after a time shows through and gives a prevailing grey tone, which is very favourable for taking photographic copies. In the show room of the Autotype Company there are two copies of well-known pictures—"The Arrest of Hampden when about to embark for America," by Lucy, and "The Princess Elizabeth hearing Mass," by Marcus Stone. We do not remember the balance of light in these pictures, but in the autotype copies it is admirable; but this effect has not been produced by the simple process of copying. The method is either for the artist to make an Indian ink drawing of his picture for reproduction by this process, or, if the details are too elaborate, the picture is photographed and the proof sent to the painter, who corrects any faults as to arrangement of light caused by the photographic transfer, either with his chalk or brush, and from this corrected copy the prints are reproduced. The negatives when thrown out of balance from the reason before mentioned are retouched, and a large number of artists are employed in this kind of work. Landscapes from nature require to be corrected in the negative, and the vast number of photos from popular pictures are reproduced by what may be termed this appreciative and intelligent method of translation, which can only be effected by a certain artistic skill.

The facility the autotype process offers to artists to enable them to give the public transcripts of their works cannot be looked upon as the least advantage of the discovery. The ordinary process of line engraving is denied to all but the highest class pictures; no one but a great capitalist will undertake such works. The expense is enormous, and the time consumed in their accomplishment renders the chance of their being finished in the lifetime of the artist very problematical. Raphael Morghen occupied six years in engraving the "Transfiguration;" Doo was twelve years at work in engraving the "Raising of Lazarus," and it was not finished when it passed out of the veteran engraver's hands. It is true we have no longer such great works as these demanding the labours of the engraver; but the genius we still have in the artistic world cannot fail to benefit by these newly discovered rapid means of reproducing their works. In a week after a picture has left the painter's easel, a proof impression is presented to him for correction.

But in a very large number of cases these corrections are not needed. We all know how many charming photographs, both of figures and landscapes, meet our eye in the shop windows. We feel quite sure that the majority of these have received no correction in the course of being printed, as they could not otherwise be sold so cheap. When we say that literal copies of all these, in almost any tone desired, can be given by the Autotype Company, and by the other processes we have mentioned, it will be seen how vast is the work they will be called upon to accomplish. The galleries of the Continent have already been reproduced by M. Braun, of Dornach, who holds the autotype patents for France and Belgium; and the rarest pictures of Vienna, the Louvre, and the galleries of

Florence and Venice, can be procured at the establishment of the Company at a price which is merely nominal as compared with line engravings, to which, in some cases, they are superior. The Autotype process, as far as we can see, is the best adapted of any of the allied methods for the production of the larger works of art. From this field the Woodburytype method is excluded by the comparatively small size of the hydraulic press used, and the Heliochrome method by the size of the Albion press by which its impressions are rolled off, neither of which could take the impressions as large as four feet by three, which the Autotype has just accomplished. But it must be remembered that the Autotype process is a comparatively dear method of production. Every print is accomplished by hand work, and it is not capable of reproducing with great rapidity, by mechanical means, like the other methods. For this reason it will be confined to the higher class of works, for which the comparative cost will be a minor consideration.

LITTLE DODGES.

BY C. A. WINSOR.*

I AM pleased with the disposition manifested by many of our shining lights in photography to impart so much valuable and useful knowledge as they are now doing through your deeply interesting journals. New formulas by which we can revolutionize old ones are not what we can or must expect, but nothing can work a greater revolution in the studios of *wen's* of short experience than to find so many "little dodges," as many term them, while I know, from sad experience, that many of them are very large indeed to a young operator, who would have them to work out without the assistance of others. Let them come, and, by your permission, I will add a few:—

1st. To mark stereos I fold the print together, and cut the ends of both prints at one time; then remove the pattern a little, and, with the knife, cut off just enough of the inner corner to be seen, and, when mounted, the corners go at the ends of the mount. Save time and a sure mark.

2nd. I mount all my prints wet by throwing them, face down, on a piece of glass and draining out the excess of water, arranging them so that I can paste eight or twelve at once. By no means new, but cannot be beat. Cut prints before toning, which I always do.

3rd. I make all my dishes for toning, fixing, washing, &c., by making wooden ones of $\frac{7}{8}$ by 2 to 4 in. stuff (pine), rabbeted to let the glass in $\frac{1}{2}$ in.; bed the glass in good putty, and tin it in and putty same as window glass is set; coat the wood all over with paraffine (or paint the outside), and your dish is ready for use. I have used one 20 by 24 for more than eighteen months, that has not leaked a drop. But to mend a leaky one, heat a piece of iron, and run it round the inside when perfectly dry, and it is mended. Cost of such dishes from 50c to \$1.25, according to size.

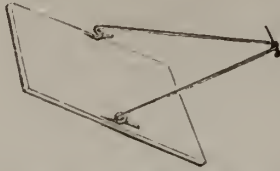
4th. I albuminize my negative glass and sell my old stocking-legs. First soak the glass in nitric acid and water. Filter a large bottle of water, also a bit of alum (white of three eggs, 60 ounces of water, and a little ammonia to keep it). I take my plates out into a pail of water, proceed to the dark room, where I have a board with nails driven in rows, and commence operations by taking a plate from the pail, washing it under the tap with my hand, rinsing it with the bottle of filtered water, and flowing it with albumen on one side only; put it on two nails to dry, top out from the wall.

I think the small amount of albumen used in this operation will not turn yellow enough to do any good; besides, the plates are reliable, seldom streak, film never slips off. It is cheaper than alcohol and rottenstone, say nothing of elbow grease.

5th. To hang frames in your display-room all over the wall with cord is no small task. They will not hang to

* *Photographic World*.

suit you, or the string of one will interfere with another, and so on. To beat such fellows I bend a wire thus, put



the ends up through the screw eyes, and hang on a nail directly behind the frame. The ends of the wire keep the top of the frame out from the wall; and this is also very cheap. Cord, if old, becomes moth-eaten, and the frames drop down, smashing things.

FOCUSING AND EXPOSING.

BY ELBERT ANDERSON.

[MR. ANDERSON proceeds with his dialogue instructions in our Philadelphia contemporary, his present lesson consisting of hints on focussing and exposing.]

A. Having now all our chemicals in order, it were well we inspected our camera. Mr. Carey Lea says:—"Any camera that is not thoroughly good, is absolutely worthless." I say Amen to that. And our mutual friend, Edward L. Wilson, says:—"In choosing your apparatus, you are told to 'get the best,' otherwise your apparatus will inevitably 'get the best' of you." In my camera I have taken the liberty of making several important alterations which, for my use, are a decided improvement. The swingback, especially, is vastly improved by placing the pivot (which is now erroneously placed in the centre of the ground glass), intermediate between the centre and the top of the box. By this change the focussing can be done in less than half the time, as when hung in the centre.

M. It is highly essential, I believe, that the ground glass and the sensitive plate, in the holder, should occupy exactly the same plane in regard to the lens. Is it not?

A. Don't be too sure of that, Mr. Marshall, or you may be led into a wilderness of trouble.

M. Why, you don't mean me to tell me that if—

A. Yes, I do mean to tell you that if—your chemical and visual foci are not "corrected," your negative will not be sharp. The focus will be either too far back, or too far front.

M. By Jove! I never could get my negatives sharp; the focus was always too far back, *back, back*. I focussed with the greatest care, and I could only get it sharp by moving the ground glass back after sharp focussing. I always imagined something was the matter with my eyes. I thought I was perhaps too far-sighted.

A. It appears you were not far-sighted (!) enough to discover the cause. I'll explain it. Take a piece of paper four or five inches long, upon which is some printed matter, in fine type, running along the whole length of the paper. Set this up in front of your camera (which must stand perfectly level) in an oblique position.

M. What do you mean by an oblique position?

A. The paper must not stand at right angles to the tube, but must be inclined slightly, so that the lettering on one side of the paper shall be nearer the camera than the other.

M. Just so.

A. With a microscope, focus as sharp as possible the centre letters, on the ground glass (which must, of course, stand perfectly true with the camera). Observe that the letters on the extremities of the paper must be slightly out of focus, the one side being too far back, whilst the other side will be too far front. Now put in your plate-holder (containing a piece of flat ground glass in lieu of the sensitive plate), and notice very particularly if the paper presents the same appearance in both instances. If not, the plate-holder

is wrong (provided always this has not been done on purpose). If, on the contrary, they both coincide, coat a plate and make a negative of the printed slip of paper. Examine the negative carefully, and if it is as sharp in the centre as the printed slip was, you are all right, for the chemical and visual foci agree. If, however, the ground glass and the plate-holder do not agree, and still the negative is sharp in the centre, this will show that the foci did not agree, and that the plate-holder has been adjusted so as to correct this difference. Finally, if the ground glass and the plate-holder do agree, and your negative is not sharp in the centre, observe where it is most sharp, either back or front of the printed slip. If back, the ground glass must be approached nearer the lens; if front, it must be set further back from the lens, and you may easily correct the difficulty yourself. Now, all being in readiness, Charley will sit.

M. How much time shall I give?

A. What a question! This will simply depend upon—first, the quality of the light; second, the quantity of the light; third, the state of the chemicals; fourth, size of diaphragm; fifth, nature of subject; sixth, nature of background.

M. Is that all? Shall I make one or two on a plate? What do you think of this sliding plate-holder arrangement?

A. Provided you make the two exposures exactly alike in position, light, &c., I think well of it; but if you change the positions and light, I consider it a perfect abortion.

M. Why, you astonish me. I always thought it a capital arrangement. What is your objection to it?

A. Let me answer (!) that question by asking you another. Coat a plate, and, before exposing it, let it stand a couple of minutes in your plate-holder; now expose and develop at once; mark that plate No. 1. Coat another plate and expose at once, but do not develop it for two or three minutes; mark that plate No. 2. Coat another plate, and expose and develop at once; mark that No. 3. Now, which do you suppose will be the best of these three, the conditions of light, subject, exposure, &c., being the same in all these instances?

M. Why, the last one, No. 3, I should think.

A. Why?

M. Because I have always been taught that the plate should be exposed as soon as properly coated, and developed with all convenient dispatch after exposure, in order to secure the best chemical effects.

A. Assuredly. But, admitting that both numbers 1 and 2 are good?

M. Then they would have been still better if they had not been subjected to this loss of time. But no one would think of taking negatives expressly, in the manner you have just stated.

A. Oh, my dear sir, you are entirely mistaken. The very fact of taking two differently lighted pictures on one plate accomplishes this very thing, and what makes the matter still worse, is in the development. For, in the first instance, should the plate have inadvertently stood too long, either before or after exposure, the development might be controlled, there being but one picture to manage; but the case is vastly different in this latter case, as one picture may be entirely over-developed before the other is sufficiently brought out, and you are just as likely to lose the best one; in any event, one of the two must needs be the sufferer. Granting, then, that neither had moved, and you save both, still you admit, under the best of circumstances, they would have been "still better" if sooner manipulated. Now suppose one has moved, you cannot, of course, tell which until after development, thus you may possibly—nay, probably—ruin the best one in trying to save the worst. Finally, you are lucky (for it is nothing but luck), and you succeed in saving the best one. You now set to work to make another negative of the other position. Pray, Mr. Marshall, what have you gained? Just nothing; on the contrary, this is a great loss of time. For had you taken both positions alike—

first, your development would have been easily accomplished; second, you would have had a double chance of securing a good picture; third, you coat another plate and have all these advantages for your second picture; fourth, and finally, experience proves that, even when both positions are alike, more time must be given for the second exposure. Consequently, when the positions and light are changed between the exposures, it required a very practiced hand to determine the time so accurately that they may doth develop together.

M. I never thought of that.

A. Naturally not; you, as the artist, have your mind on the pose and light; but go into the dark-room, and ask your operator what he thinks of it. Believe me, sir, the only advantage I see in it is when you wish to take several negatives all alike (and this must be a case of very rare occurrence), or where you take two with the hope of getting one good one.

IMMODEST PHOTOGRAPHS.*

PHOTOGRAPHY is very justly looked upon as one of the greatest blessings of modern civilization. That wonderful combination of sunlight, cyanide of potassium, and a dexterous manipulator can effect almost everything but the transfer of colours. Form and proportion we get to perfection, and nothing comes amiss as a subject, from a skeleton leaf to that cumbrous monster, the rhinoceros of the Zoological Gardens. Photography can bring into the bosom of our families the expressive lineaments of a bench of bishops or a board of guardians, a vestry meeting or an "All England Eleven," a "man of the people" or a crowned representative of the Divine right, a life-boat crew or a group of bridesmaids—in fact, anybody or anything the world is supposed to include among its choicest treasures. The familiar carte-de-visite not only perpetuates the pleasant memory of our friends, but possibly retards the process of ossification in the hearts of our enemies. More than this, the "counterfeit presentments" of photography bring us face to face with our teachers of the pulpit and the stage.

For these small mercies (especially the latter) it is to be hoped we are sufficiently grateful; but human nature is perverse, and many persons would possibly be content to see fewer portraits of our so-called actresses boldly confronting them from the shop-windows of stationers and photographers. The unsophisticated youth quietly contemplating a galaxy of stage beauty behind plate-glass, may well wonder what manner of women these can be who parade themselves and their not too voluminous costumes in the glare of day. The "chariest maid," as *Laertes* says, "is prodigal enough if she unmask her beauty to the moon." What, then, shall be said of those who confide themselves to the tender mercies of the camera when *Phœbus* is at the meridian? Is this walking into the sky-parlour of a photographer a sublime form of womanly devotion and self-denial for the good of the dramatic profession? Certainly not; and by no stretch of toleration can such a proceeding be defined as anything but a lamentable mistake, and a cruel insult to the worthier members of a profession the world is always glad to honour when it honours itself.

Photography, it is said, can never lie, or misrepresent; but it can, and does, when it gives the collective term of "favourite actresses" to this crowd of brazen, impudent, shameless creatures who attitudinize on velvet couches, elevate one leg on a property style, throw a shapely limb over the arm of a chair, or sit on the edge of a table to be photographed in their stage dresses. These Cupids and Pages, who simper and leer from the polished surface of prepared paper, are nonentities rather than actresses. They have gained confidence in the ballet, graduated in slang

and impertinence in that literary monstrosity we call burlesque, and have taken their full degree in the most wonderful of all theatrical institutions—opera buffé.

Speaking charitably, or, it may be, in strict accordance with facts, and looking upon all these semi-nude divinities as patterns of well-meaning modesty, it is lamentable to think what risks they run of being misrepresented. The world is censorious, ill-natured, and malicious; and beauty comparatively unadorned, though ever so well-intentioned, must expect to suffer by companionship with the *demi-monde*, even in a shop-window. The dispensation is hard, but propriety must inevitably lose caste from the most innocent association with *Lais* and *Phryne*. No one "behind the scenes"—that is to say, conversant with things as they really are in the much-abused theatrical profession—would for one moment venture to place these gabblers of half-a-dozen lines, these pretty dolls, elegant dummies, and, happily, speechless Princesses, on an equality with intelligent women able to think, willing to study, and competent to act. There is a wide difference between the two classes, and where actresses, in the strict sense of the word, are known for their ability, these alluring damsels in silken hose, the nattiest of boots, and with no trunks to speak of, are distinguished solely for their reckless assurance, not to say immodesty. Not even the superscription, "Lillie Northbank," in a handwriting as bold as the charming creature herself, recalls any nobler triumph than a breakdown or a vulgar song in a burlesque; and after contemplating the portraits of these small celebrities of the stage, the question, "Who on earth are they?" very naturally follows.

Seriously, this overflow of half-nude figures, ticketed, labelled, and described as representatives of the English stage, is a source of pain, of disgust, and infinite disquiet to the respectable portion, male and female, of the profession. The best of the "players" are, fortunately, not afflicted with this portrait mania. By their absence from the throng they enter a silent protest against an infatuation which cannot minister to the true dignity and honour of their calling. Their reserve, and determination not to follow an unworthy lead, is greatly to their credit; and, seeing the new kind of star now to be found in the theatrical firmament, and multiplied indefinitely in the shop-windows, the choice of the few is not to be wondered at.

An actor may give himself up to pictorial association with others not worthy of the name, or he may decline altogether to have his portrait scattered broadcast over London. There are actors pure and simple, it must be remembered, and there are actor-advertisers. The former are content to be before the public only when following their vocation; but the end and aim of the latter seems to be to keep their names before the public aforesaid at any risk. Which are the worthier, common sense will soon determine. Credulous and unthinking as most people are in matters relating to the stage, there is a certain limit, after all. The least reflective refuse to take it for granted that the actors and actresses they see the most of are the cleverest of the craft; and with this lingering conviction is possibly allied the thought that the less common our men and women of the stage make themselves, the more highly they are likely to be thought of by the world in general. This is the simple truth, and is worthy of consideration by all who have the well-being of their profession at heart.

As for the unpleasant sign of the times to which we have particularly alluded, time and the advent of a purer taste can alone remove it. Nothing can be done to remove this vain thing, which casts a reproach upon the stage. The impure bubble must eventually burst, like any other which rises to the surface of social life; and, in the meantime, the world at large will do well to believe that the respectable section of the dramatic profession is even more scandalized than other people can be at the exhibitions made and the bad taste shown by those bound to uphold the dignity of an honourable calling.

* *Morning Advertiser.*

Correspondence.

VICTORIA CARDS.

DEAR SIR,—We notice in a recent number of your journal, in a letter headed "Albums for New Styles," some remarks relative to Victoria mounts. The firm who sign the letter advance some very unintelligible notions with regard to the demand for novelties, &c. Pray, what are manufacturers and dealers in business for, if not to create a demand for their goods; besides, Messrs. M. are not consistent; they begin by deprecating the introduction of novelties (of which, by-the-by, photographers cannot complain they are surfeited); they give their opinion and dispose of the Victoria mounts as unsuitable, and immediately intrude a novelty in the shape of cameo vignette portraits, any orders for which, we should imagine, would, as much as the Victorias, be so much from the carte or cabinet.

That there is a demand for Victorias the letters of your correspondents and our own experience sufficiently prove. We believe we have done as much, if not more, than any other house in the trade in bringing them to the notice of photographers, and we are receiving orders daily for the same. It is our humble opinion that it is a convenient size between the carte and cabinet, and we feel sure they will come largely into use.

With regard to albums, as Messrs. M. are making them, they can be no further difficulty on that score.—Yours obediently,
97, Newgate Street, E.C. FLEWER AND EVANS.

[Messrs. Flewer and Evans send us some capital examples of mounts of various qualities for the "Victoria cards."—Ed.]

ALBUMS FOR VICTORIA CARDS.

SIR,—When Messrs. Marion and Co. replied to "Middlesex" that he was mistaken in supposing the Victoria albums not obtainable, I and others, including yourself, it would appear, assumed their statement to be simply correct. I shall feel obliged if you will allow me to say that, on applying to Messrs. Marion and Co. on Wednesday last, they replied they had none. They were making some, but that none would be ready for two months.—I remain, sir, respectfully yours,
May 3rd. MIDDLESEX.

THE GRAPHOGENIC V. THE GRAPHOROTATIC.

DEAR SIR,—I cannot quite see of what practical use "Ingenio's" letter is likely to be to any of your readers. In his first paragraph he appears to make out a claim for sympathy in consequence of his endeavours to "astonish" the "photographic world" by the exhibition of his "new tent" having been cut short by the introduction of Mr. Edwards's "photogenic" apparatus. He tells us that his "labour" has been rendered "vain" by the fertile ingenuity of "friend Edwards," and then arrests our sympathizing sigh by the anomalous assurance that his tent possesses virtues which the photogenic apparatus "lacks;" and then he afterwards enumerates at length his grounds for preferring his own "portable bantling" to its disappointing rival.

If "Ingenio's" invention is really better than Mr. Edwards's, I cannot see why he should so impetuously rush at the conclusion that his "labour is vain." Surely photographers have sufficiently quick discernment both to distinguish and appreciate. Let "Ingenio," who objects so strongly to patenting ideas, show us his roomy tent "running on wheels," and presenting so many conveniences, and carrying so much, and I, for one, will thank him.

I am an old photographer, and have experimented long and largely with tents of various construction, all good in their way; but I have had no hesitation in applying Mr. Edwards's invention to one of my cameras, which I hope to take with me to the top of the Caradoc in about a week.

A tent upon wheels, however cleverly constructed (and ingeniously the one now especially referred to no doubt is, as its patronymic clearly implies), I question whether many of your readers would not find insuperable difficulties in dragging or pulling up ascents which I hope to mount with ease, even with the few pounds additional weight of the graphogenic apparatus.

I have had some correspondence with Mr. Edwards on the subject of his application of india-rubber to his portable bath,

and have ventured to suggest that the easy replacement of this substance should be considered in the construction of the apparatus, which, I am happy to find, has been done.

I am a dry-plate worker of twenty years' standing, but I can assure your readers that I hail the introduction of the "graphogenic" with great confidence; that I shall find in it all the necessary conditions for working the wet process out of doors with ease and certainty.

My impressions entirely accord with your own, that Mr. Edwards's invention is of great value, and leaves little to be desired. Still, I hope, for his own sake, no less than for that of the photographic fraternity, "Ingenio" will bring his invention out of the "cold shade" into which his diffidence has needlessly thrust it, for elucidation in your valuable pages.

By way of distinction, perhaps it might be as well to call "Ingenio's" invention the "Graphorotatic," or, which may possibly be preferable, the "Photorotatic."—I remain, dear sir, yours faithfully,
W. L.

THE GRAPHOGENIC APPARATUS.

DEAR SIR,—I read with regret the remarks of "Ingenio" in last week's NEWS, respecting Mr. B. J. Edwards's "Graphogenic," and, as both Mr. Edwards and "Ingenio" are entire strangers to me, you will see that personal objects are not the reason of my writing. In the interest of the profession, anything new should not be attacked in the way "Ingenio" attacks the Graphogenic, as of course, if he himself does not approve of it, the remedy is simple—he can leave it alone. But why abuse it to the loss of the patentee? Such criticism, in my mind, is calculated to deter others (not such veterans as Mr. Edwards) from making known their inventions, to the loss of the profession. I think if such gentleman as "Ingenio" cannot do anything for the advancement of photography, they should not waste their brains (if they have any) in conceiving ideas to retard its progress. If I remember rightly, "Ingenio" attacked Mr. Edwards's combination printing frames in something the same way, evidently showing there is a little personal feeling in the matter; at any rate, it looks like it. I myself think that we ought to be grateful to Mr. Edwards for his endless contributions to the NEWS. Only a fortnight ago we read of his developer, which, I might say, I tried with marvellous results.

Hoping I have not occupied too much of your valuable space, I am, sir, yours respectfully,
Justice.

May 2nd, 1871.

PS.—"Ingenio's" hope of astonishing the world is not gone if he has anything better to bring out.

DEAR SIR,—Many thanks to your correspondent "Ingenio" for calling attention to the advantages of the graphogenic apparatus for out-door photography compared with his "roomy" running on wheels contrivance, capable of carrying camera, chemicals, great coat, umbrella, and "grub." Photographers are well acquainted (to their cost) with the "virtues" of similar cumbersome appliances; it now remains for them to test the efficiency of the simple means I have introduced of getting rid of the "impedimenta" and discomfort hitherto connected with manipulating wet plates in the field. I am content to wait their verdict. Meantime, if your correspondent has room for other "ideas" than his own, let him give us his opinion, after actual trial, of the developer of which I have given the formula. This "idea" I have not patented; but, if I may judge from the number of letters of approval which I have received, it is considered a matter of no small importance, and is already "esteemed" so highly that it is exclusively used in many of the best photographic establishments.

I cannot understand why "Ingenio" should be so anxious to break a lance with me, unless it be that, remembering his former defeat, he wishes to redoem his laurels. If so, I have no objection, but would suggest that he select a more appropriate "nom de plume," or adopt the more manly course of signing his own name, which, after all, may not be utterly unknown to yours very truly,
B. J. EDWARDS.

SIR,—Will you allow me to ask a few questions of your correspondent "Ingenio?"

I. Has he seen the open air apparatus of Mr. Edwards?

II. If he has seen it, has he anything better to suggest?

III. Why he does not describe something better, instead of sneering at something good?

Readers of the NEWS will scarcely thank him for speaking with contempt of an invention of which the Editor has spoken so highly, unless he is prepared to show them a "more excellent way."—Very respectfully yours, SCRUTATOR.

PS.—Is it possible, as a friend has just suggested, that "Ingenio" is a friend of Mr. Edwards, adopting the old theatrical dodge of aiding in puffing a thing by pitching into it, so as to admit of further publicity in letters of defence?

RETOUCHING OLD NEGATIVES.

DEAR SIR,—I had occasion a day or two since to retouch an old negative, but found that, owing to the glass-like surface of the varnish, the pencil would not "bite." I then thought that if I could possibly give a so-called "tooth" to the varnished surface, it would answer the purpose, and I may say the plan I adopted was perfectly successful.

I dust a little fine flour emery over the surface of varnish, and, with a light circular motion of the finger, rub the powder until a mat-like surface is produced on the negative. You will find the pencil take nicely. Try it, Mr. Editor, and if you think it worth noting in the NEWS, do so; if not, drop this note in your waste paper basket.—Yours, &c.

May 2nd, 1871.

W. BRITTON, JUNR.

Talk in the Studio.

¹ PHOTOGRAPHIC SOCIETY OF LONDON.—The next meeting will be held on Tuesday, 9th May, at the Conduit Street Gallery, when Lord Lindsay has kindly promised to exhibit his eclipse apparatus, and Mr. Ernest Edwards, B.A., to describe the mode of working his heliotype printing process. Novelties in the way of apparatus will also be shown by Col. Stuart Wortley and Mr. Whiting; and the prize prints of the Amateur Photographic Association will be exhibited.

WHERE TO GO WITH THE CAMERA.—A "Practical Man" remarks:—"In addition to hints as to where to go, it may be satisfactory to many who intend taking a summer trip for a week or two, to point out what they are likely to meet with in the shape of 'camera food.' Every county and district have peculiar and different features; and, by hinting at and pointing out the same, a choice will be offered to excursionists as to different objects of interest and places of note, so that they may have an opportunity of selecting a route that may yield a series of subjects coming up to their wishes and wants. The individual wishing for a collection of 'bits' of the lake order would be somewhat ashore at the Land's End; and the one desiring quiet, sylvan, sleepy, cozy hollows would be terribly abroad among the rough tors, granite boulders, cromlechs, and huge monoliths of Dartmoor and the Carradon Downs. The district pointed out by a gentleman in the NEWS of the 21st is an admirable one, and will well repay a visit. Any one inclined to try the same place might possibly find some advantage in proceeding from London direct to Birmingham, the once 'Hardware Village,' now the great iron metropolis of the Midlands. Here he will find much of interest and beauty at Aston Hall, the once noble and interesting mansion of the Holte family, built in 1618. Here he will find a great hall and decorated ceiling, a great staircase and grotesque carving, a great drawing room, and a gallery 136 feet long, with ornamented ceiling and magnificent chimney-piece. Then Astou Park, the property of the Corporation, with the fine avenue of trees, planted during the reign of James I. A judicious hunt up and look out will yield a vast amount of most interesting pictures, proving that the great city of brass and huttons can yield many good things in addition to pins, needles, steel pens, frying-pans, and iron candlesticks. From the Great Western Station, Snow Hill, Warwick can be reached in twenty-one miles, Leamington in twenty-three, and Stratford-on-Avon twenty-seven; or, from the Great Central Station in New Street, where the Western and Midland lines converge, Rugby can be reached in thirty miles, Kenilworth in twenty-five. By this same line visits may be paid to Lichfield, with its Cathedral; Tamworth, Burton-on-Trent, Derby, and Nottingham, on the north and east; and Cheltenham and Gloucester on the south-west. It would take a large amount of room and space to note down or hint at a

tithe of the 'bits,' views, churches, mansions, old bridges, old mills, and the thousand and one objects of interest and places of note to be met with round and about the various places named and indicated. Much of this can be supplied by a reference to any of the guide-hooks or maps now so plentiful, and of such use and value to the tourist."

MATCHES AND PHOTOGRAPHS.—The Chancellor of the Exchequer, it seems, never doubting, that his match tax would receive the approval of the House, had already prepared a large stock of stamps for the boxes. Mr. Bernal Osborne discovers that the motto intended for matches will answer equally well for photographs, and recommends a tax on portraits simply to utilize the stamps. In a recent speech in the House he said:—"The right hon. gentleman (Mr. Lowe) has gone to considerable expense—not himself, because we shall have to pay it—in having a new stamp, with the motto, *Ex luce lucellum*, which, for the benefit of the successful capitalists I see around me—I may say means, 'From light a little gain' (laughter). Well, the stamp is ready, why should he not attach that motto—and it is apposite to the subject—in the way suggested by an hon. gentleman who sat behind me the other night, and who, after attacking his budget most furiously, made it up with him and walked into the same lobby—I mean the hon. member for the City of London. I say, why should he not attach that *ex luce lucellum* to the trade in photographs? (a laugh.) Such a tax would be quite unobjectionable, being a tax on the vanity of men and women (loud laughter), and not a necessity of life, and we may be assured, for the reason I have stated, that it will be a most successful tax (hear, hear). Well, as *ex luce lucellum* is ready, let him apply it in that way, and take something off our income tax (cheers and laughter)." During a subsequent debate Mr. O. Morgan remarked:—"The hon. member for Waterford suggested a tax on photographs, with the view of utilizing the device "*Ex luce lucellum*." Having been himself a victim of that diabolical art, he should have no objection to a prohibitory tax on photographs; but he strongly suspected that if that suggestion were adopted, some hon. gentleman opposite would discover that photographic chemicals were produced at the East End, and there would be a procession of photographers with a petition, just as there had been a procession of lucifer match makers ('hear,' and a laugh)." Mr. Morgan is ungrateful for unusual privileges. We have reason to believe that the first photograph for which he sat was produced by Dr. Diamond, whose rare skill in securing portraits which ennobled the "victim" is well known to all familiar with his work. When Mr. Morgan's photograph was shown to various friends, it caused a serious tax on Dr. Diamond's friendly courtesy, so many wished to secure photographs equally pleasing. Amongst others at the time were Mr. Edward Hawkins, F.R.S., chief of the Antiquity Department of the British Museum, and the well-known author of the "Lives of the Judges." As Mr. Morgan was not "taxed" in any way for his photograph, it is ungrateful to wish to see photograph taxed.

PHOTOGRAPHIC ADVERTISING.—Anthony's *Bulletin*, explaining a plan of photographic advertising devised by Mr. H. M. Boozer, says:—"Photographic advertising is based on the fact that no advertisement is equal to that of the personal presence of the proprietor himself—this being the next thing to it. Any system that can, at not too great cost, make him more generally known to the public, in connection with the business he represents, does for him and his business a great work. It makes doubly effective all he has done, is doing, or may do, with printer's ink. Being thus known, he is liable to be making sale or purchase, as the case may be, equally as well abroad as at home—thus greatly enlarging his sphere of operations by placing him outside the limits to which circumstances have otherwise assigned him. It is of great value to be thus known, and of great advantage to the public generally in their relations to each other. Pope's truism, 'The proper study of mankind is man,' is a very pertinent one in this connection. In the study of the pictorial, it is rare to find greater general attraction than the gallery of portraits, especially when with their originals there is more or less partial acquaintance; and experience has demonstrated that the photographed human face will hold the attention of both the student and the curiosity seeker sufficiently to secure the attentive reading of the ideas printed in connection. A very wealthy and practical business man, who had just made a gift of \$25,000 to an educational establishment, remarked: 'I have always had a great

personal antipathy to having my likeness in the hands of others; but I see this is based upon sound business principles, and as such I recognize its real value, and give it my cordial support. It is one of the best things that has ever come up for business men, and I hope to soon see it in universal use."

GERMAN PHOTOGRAPHIC SOCIETY IN AMERICA.—In New York is a photographic society consisting entirely of German photographers, of which Mr. Kurtz has just been appointed president for the ensuing year. The third anniversary just held appears to have been a gay social reunion. From our esteemed Philadelphia contemporary we learn that "the members had come from far and near; from the city, the suburbs, and the country. They all came to a focus around their fair partners. A merrier and more family-like party it would have been hard to find. The rooms were decorated fittingly for the occasion. A splendid camera-box and tube stood in the centre window, draped by American and German flags, surmounted by a large solar print of Dr. Vogel. The walls were hung with specimens of all styles of photographs, portraits of every variety of light effect, out door views, Albertypes, photo-lithographs, &c., the whole tastefully surrounded by evergreens and national emblems. After tripping the light fantastic toe after the enchanting melodies of Strauss, Offenbach, &c., the company sat down to a solid repast. The first toast drank was "The Photographic Art and the German Photographers' Society." It was responded to by Vice President O. Lewin in a few happily chosen and appropriate remarks. The next was 'Dr. Vogel, the eminent labourer in our art and the genial companion,' given by Mr. Ch. Hansgrath. The last one was 'The Ladies,' responded to by Mr. H. Schoene in some very nice rhymes. Geniality and good humour reigned supreme, and we did not adjourn till the first rays of morning admonished us to go home to the sweet home of the skylight."

SUBSTITUTE FOR ALBUMEN.—The *Scientific American* says: "The enormous consumption of whites of eggs in albumenizing paper for photographic purposes may be doomed to come to an end. *Dingler's Journal* announces a substitute for albumen for this purpose, under the name of lactarine. It is a white or slightly yellow powder, with the odour of casein. When subjected to ether, a small amount of saponaceous fat may be extracted from the mixture. The powder resists water, but is accessible to the influence of the alkalies, either caustic or carbonated. Treated with the proper proportion of either acetic or hydrochloric acid, a curd is precipitated, which is found to be soluble in excess of the acid. In use, it is dissolved in ammonia, and can be coloured to any required shade.

To Correspondents.

BEGINNER.—There are several causes which may occasion the excited paper to dry irregularly, producing the spots of which you complain, and which you will find caused by the solution accumulating in drops instead of draining off regularly. One cause is, with some samples of paper, the use of a silver bath stronger than is necessary. Another cause is, keeping the paper in an exceedingly dry place before exciting it, so that it is very repellent to the solution. The remedy consists in using the silver bath of the strength recommended by the manufacturer for the paper in question; or keeping the paper in a slightly damp atmosphere a short time before exciting the paper. Whenever the silver solution is seen to stand in drops on the paper instead of floating off in an even wave, or when the drops are seen to have formed soon after the paper is hung up to drain and dry, the use of a piece of clean blotting-paper will remove the evil. 2. When your toning bath becomes pink, it shows that the gold is in process of precipitation, and the bath will soon be useless. It may be the result of various causes. Sometimes merely standing in the light will produce this result; sometimes contamination with dirty fingers; and sometimes an alkali condition will produce this result. 3. Add a drop of pure nitric acid to your bath. If the streaks do not disappear, neutralize and sun it. Sometimes moving the plate in the bath laterally during the process of sensitizing will remove the tendency to vertical streaks.

L. G.—If a photograph be not registered before copies are sold and circulated, the copyright is lost. No copyright is secured in portraits taken in the ordinary way of trade without an express agreement in writing between the parties

X. O.—If the facts are as you state them, you are quite safe. You are in no sense breaking the law.

DRY-PLATE.—We have not tried the process in question, but we suspect that the cause of failure is thorough washing after first sensitizing. The washing should be only very slight, we think, to secure any good degree of sensitiveness. Further, you should develop with pyrogallic solution to which a few drops of silver solution have been added. Give a full exposure—at least six times as long as for a wet plate.

V. D. MAYER.—The lenses commonly used in magic lanterns are of a much less perfect character, and different construction, to those used in photography. They are usually of larger size, shorter focus, and non-achromatic. A photographic lens may be used for a magic lantern, and will give much finer definition than the common lens; but, as a rule, a much smaller field of illumination must content the experimentalist.

J. W. S.—We cannot speak with certainty of the amount of structure in various commercial samples of collodion, but as the presence of high temperature and full proportion in the preparation of the pyroxyline tend to the production of structureless collodion, that sold as Hurdwisch's collodion, said to be made on such principles, is most likely to suit your purpose. Pyrogallic acid development will undoubtedly yield a more amorphous deposit than iron development; and, since rapidity is not an object, we recommend the pyro for your purpose. 2. We cannot speak with certainty of the structural condition of any of the commercial dry plates. 3. With a suitable collodion, we apprehend that any of the dry processes would answer, and that alkaline development would be favourable to your purposes.

G. LEWIS.—The gum-gallic plate without backing reached us in fragments: that with the backing whole. We exposed the latter, and found no especial defect in it; but from your description, and from the appearance of the wet process negatives enclosed, we are disposed to regard slight over-iodizing of the collodion as the cause of the irregular streaks. Try diluting each ounce with about a quarter of an ounce of plain collodion. The thin fogged effect of the negatives suggests that your collodion is new and unripe, or that your bath is out of condition. Try the addition of a drop of utric acid, to remove the tendency to fog. If that does not succeed, try neutralizing and sunning. Your collodion seems to be thin and wanting in body. Is this so? If so, try adding a little pyroxyline. Your chemicals must all be in good condition, and working well in the wet process before you commence to prepare dry plates.

S. H. JEFFRYES is glad to find other photographers are taking up the idea of "scroll" or "effectograph" portraits, but wishes it to be remembered that he first worked out the idea, and suggested it to our readers. He encloses us some examples with fresh designs, in which a ribbon or scroll surrounds an oval with inscriptions, such as "Yours sincerely," in the scroll. He says:—"I beg to hand the same to illustrate what photographic printing can be made to do, being two of my latest designs in "effectography," all being finished in the printing frame, and requiring no extra touching with pencil or colour. Various devices, of course, be used in the shape of words, &c., according to the desire of customer, or the oval shape can be printed in blank to allow of an ordinary medallion bust to be mounted in the usual way, and allow of the callographic device being kept in stock ready for use, and making an advantageous use of the carte-de-visite full length negative as well as the vignette.—I remain, yours respectfully, S. H. Jeffryes."

TIBER.—After a picture is burnt in it can only be removed by grinding away the surface of the tablet.

J. CUNNINGTON.—In our next.

Several Correspondents in our next.

Photographs Registered.

MR. J. LEACH, Staleybridge,
Photograph of Mr. F. S. Powell.

MR. W. BEER, Exmouth,
Two Photographs of the Rev. P. Fugh.

MR. CRANE, Guildford,
Two Photographs of Mrs. Fox.

MESSRS. BARRAUD AND GERRARD, Gloucester Place, W.,
Photograph of Mons. Capel.

MR. J. T. ALLERSTON, Bridlington Quay,
Eight Photographs of Storm at Bridlington, Feb. 10, 1871.

MR. W. MELVIN, Oxford,
Three Photographs of the Rev. W. Williams.

MR. A. GOODCHILD, Redcar,
Photograph of H. Denton, Esq.

THE PHOTOGRAPHIC NEWS.



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MODES OF OBTAINING LARGE PHOTOGRAPHS.

FOR some years past there has been a growing taste for large photographs. This taste, which seems to arise as a reaction upon the rage for card and cabinet pictures, is not necessarily in any degree antagonistic to the popularity of the smaller sizes, but may be cultivated as opening a new branch of the art, rather than superseding anything in existence. The desire for photographs which may be framed and hung has always existed in greater or less degree, but, from a variety of causes, has never been fully met. That the desire and taste are increasing is manifest from varied forms of evidence. Nothing has better illustrated the direction of photographic taste than the character of the pictures contributed to photographic exhibitions during the last two or three years. There has been at each exhibition a general resemblance in the degrees of excellence and in the qualities upon which excellence has depended; but there has been a steady growth of size. Three or four years ago the rage for what has been termed Salomoneseque portraiture set in. At first the size of the French master was adopted, and ten by eight portraits became common; next we had an advance to twelve by ten; then came Mr. Blanchard's grand examples of the same style, extended in size to sixteen by twelve, and Mr. Slingsby's noble portraits on whole sheets of paper. Mr. Warwick Brookes, and others, illustrated the same tendency in portraiture, and Col. Stuart Wortley in his fine and massive portrait studies. Instantaneous sea views, with the exception of one or two *tours de force* by Le Gray, used to be confined to stereoscopic slides; but we have of late the magnificent pictures of this class, sixteen by twelve in size, by Messrs. Robinson and Cherrill, and the still larger examples by Col. Stuart Wortley. In landscape we have had the noble pictures of Mr. Earl, and others, all tending in the same direction.

It may, of course, be remarked that the production of photographs of large size is no novelty: it is not; but the production of photographs of large size and exquisite excellence is a novelty. We have no hesitation in saying that the introduction of the card machine to a revolution in photographic manipulation. A degree of excellence before unknown, or, at least, very exceptionally obtained, became imperative. First came mechanical perfection, in the shape of clean, spotless, stainless, negatives; freedom from mess and irregularity in backgrounds;

then delicacy of gradation, modelling, and diffusion of definition; and gradually, in greater or less degree, higher artistic qualities, or, at least, more general diffusion of the appreciation of and desire for artistic qualities. The influence of the education and progress in photography thus achieved by small work has of late years shown itself in more ambitious pictures, and large photographs are now produced which are well worthy of taking the place of engravings for domestic mural decoration.

When Mr. Dunmore, in a recent paper, called the attention of the South London Society to the demand for large photographs, his statement was endorsed by those who may be trusted as exponents of public taste in the matter. These, and other evidences not necessary to examine in detail, demonstrate the fact that, both amongst photographers and the public, large photographs are growing in favour.

The question, important to many, will arise, as to which is the best method of producing large pictures. Many, possessed of the necessary appliances in the shape of lenses and cameras, will declare at once that, within certain reasonable limits, the production direct of the negatives of the full size is the best method; and they might point triumphantly to the examples exhibited at the last exhibition in confirmation of their views. Unfortunately, however, to many photographers, especially amateurs and portraitists with modest establishments, the facilities for such direct work are inaccessible, whilst the work itself would be difficult. For these, and many other reasons, the production of small negatives, with a view to the subsequent production of large prints, presents itself as the most desirable and available mode of working. The best mode of enlarging becomes, then, the important consideration. The use of the solar camera possesses undoubtedly many advantages. The finest possible enlarged prints are obtained by printing-out on albumenized paper by means of the solar camera. But the days upon which this process is possible in England are so few and so uncertain that no steady reliance can be placed upon this as an available method. Developed prints, with very rare exceptions, are not sufficiently perfect to be of value without considerable retouching; and if developed prints were perfect, or sunny days plentiful and certain, the solar camera demands an extent of space for its arrangement, and experience for its working, quite beyond the reach of a very large number of photographers. Development printing by the aid of the magnesium light, and the production of enlarged negatives to print direct, both possess advantages, but, as a rule, the productions require considerable retouching. Mr. Dunmore, in his recent paper before the Photographic Society, called especial attention to the advantages of the production of enlarged paper negatives as an aid to the production of large prints, and as we some years ago

recommended a similar course, we are quite prepared to endorse Mr. Dunmore's recommendation now.

For large pictures, as we have before pointed out, paper negatives possess many recommendations. The minor advantages of decreased risk and trouble in printing and storage need not be dwelt upon: but the especial facilities they present for the intervention of the skill of the artist is of vital importance. It rarely happens that a photographic portrait approaching in any degree to life-size possesses, or can possess, sufficient delicacy to be tolerable without retouching. Minor defects inherent in the art, minor defects belonging to the model, scarcely appreciable in a small picture, become very offensive when rendered on a large scale. So landscape photographs, which, when small, are suggestive little gems, become, when large, no longer suggestive, but bald and empty, requiring the ameliorating touch of the artist in various directions. The art of retouching negatives skilfully on glass has of late, it is true, attained a high degree of perfection, but for large pictures the broad treatment desirable would be scarcely possible on the glass negative. The retouching of a paper negative, either with lead pencil, chalk, or water colour, is a comparatively easy thing, and, in artistic hands, capable of broad, free treatment, comparatively little work will yield admirable results. With a negative so treated, the prints need present no obtrusive evidence of manipulation, and each print is perfect without further touching.

Large paper negatives may be produced in various ways. Regarding some very fine ones exhibited by Mr. Dunmore at the Society, he was not, unfortunately, able to give details of production beyond the fact that the solar camera had been employed; and he suggested that if photographers generally gave attention to the importance of such pictures, it was probable that the production of the negatives from small negatives supplied might become a branch of trade. This would, of course, meet many purposes, but not all. Many photographers prefer, if possible, to do all their own work; some object to send their negatives out of their own possession: and, for various other reasons, it is often desirable to have a simple means at hand of effecting the work at home if desired.

The simplest method of producing paper negatives with which we are acquainted, is one we have often practised with success. It consists, first, in producing from the negative a good, vigorous, well-exposed transparency of the size desired. This is easily effected without extensive or expensive appliances: a small room—the ordinary dark room will often answer—which can be made dark: a hole in the shutter to admit of the negative: a good card lens; and a screen upon which to rest the sensitive plate: the appliances, in short, which we have before described for producing the transparencies for Seeley's photo-crayons. Thus equipped, without large camera or lens, the large transparency can easily be produced. From this it is simply necessary to produce the negative on paper by contact printing. We have found that a piece of albumenized paper, immersed in the bath instead of floating, printed deeply, and fixed without toning, would generally give a negative of sufficient printing vigour admirably suited for working upon, the highest lights being applied by the pencil. Where sufficient vigour is not obtained by printing-out, development printing may be adopted, the ordinary calotype formula being used, and a few seconds only of exposure in the printing frame. We have found also that paper prepared with flour of silver, printed until a slight image appeared, and then developed with gall-nut, gave an image of fine tonal colour, well suited for printing purposes. The paper negative, after finishing and toning, should, of course, be waxed, to render the paper transparent, in the manner generally employed in the calotype process.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

EX LUCE LUCELLUM—PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION—VICTORIA CARDS—THE GRAPHOGENIC APPARATUS—THE PHOTOGRAPHIC SOCIETY OF SCOTLAND.

PHOTOGRAPHS and photographers, it seems, have this time had a narrow escape from taxation. Members of Parliament, various journals, and common gossip, have been marvellously unanimous in concluding that photographs ought to be taxed, although very diverse reasons have been alleged as justifying such taxation. Mr. Crawford, in the House of Commons, suggested that photographs should be taxed instead of matches, because they were taxed in America as well as matches. Mr. Crawford evidently did not know that the tax had been found in America to be so irksome and inconvenient that at the earliest opportunity it was removed. Mr. Crawford could scarcely be seriously blamed for ignorance of the removal of the tax, when a photographic journal did not know, and referred to the tax as still in existence. Mr. Bernal Osborne recommended that photographs should be taxed, because the stamps prepared for the match boxes might be used for photographs, the motto thereon, *Ex luce lucellum* (from light a little gain), would apply equally as well for photographs as for matches. Mr. Osborne's joke loses point, from the fact that the stamps intended to bind round match boxes, preventing the opening without destroying the stamp, would scarcely have been available upon *cortes-de-riviste*. Mr. O. Morgan would tax photography, because it was a "diabolical art" of which he had been a victim; possibly looking glasses might be taxed and railed against on similar grounds. It is fortunate, however, that the Chancellor of the Exchequer is not fond of suggestions, otherwise the weakness of the reasons for imposing the tax would not have saved the photographs. They are safe now, however, for twelve months.

The display of photographs at the International Exhibition is now accessible to the public, and, whilst the excellence of the examples cannot be impeached, nor what you have termed the representative character of the contributions, I think few people can fail to be disappointed at the limited, I had almost written insignificant, proportions of the display. The official report for photography at the Exhibition of 1862, having done justice to the really magnificent collection of photographs then shown, and recognized the progress made since the former Exhibition in 1851, expressed a belief that the next International Exhibition would show results to which those he had just described would "bear but a small proportion in beauty, vastness, and importance." That in some element of beauty there is advance there can be no doubt, but in other respects this is almost a travesty of the 1862 display. The limited space devoted to photographs, in the first place, and the plentiful lack of novelty which prevails in the next place, tend sadly to rob the Exhibition of interest. Another year, it is to be hoped, photography will occupy a more creditable position. Nothing is so detrimental to the completeness of a display of this kind as uncertainty, and this element has prevailed throughout the arrangements for photography at this Exhibition. There was uncertainty as to when application was to be made, uncertainty as to what space could be devoted to the department, uncertainty as to the space available for any individual, uncertainty as to the material to which the photographs were to be submitted for selection, and uncertainty, as it finally turned out, as to whether novelties were at all a desirable condition in regard to the pictures sent to compete for places. Seeley and his fellow-workers, indeed, to be prevailing defects of the photographic department which prevailed at South Kensington, and, indeed, on the opening day of the Exhibition, in a pair of crumpled medals. Mr. Nottage and Mr. England, armed with every kind of "pass"

and "permit" which forethought could devise and secure, and prepared with suitable appliances for obtaining negatives of the opening ceremony, found themselves at the vital moment thwarted at every point by petty officialism armed with a little brief authority, and so the golden opportunity passed, for which a heavy premium had been paid, without a plate exposed. The same indefinite and uncertain element prevailed in relation to many of the tickets sent out, which kept groups of ladies in the streets around the doors with tickets, apparently intended to admit them to the ceremony, in their hands. It appears to have been a joke indulged in by the official mind to prepare tickets, apparently to admit to the "opening ceremony," which the official mind in charge of the turnstiles could construe as only admitting after the ceremony.

Returning to the photographs, however, after allowing for the serious detriment effected by this element of uncertainty, it must be admitted that the committee have done their best with the space at their disposal, and the photographs sent to fill it. The pictures are arranged and hung admirably, as, with the great experience in such matters of Dr. Diamond, they could scarcely fail to be; and the general effect, so far as it goes, is excellent. The jealous alarms which seemed to have been aroused by a possible competitor taking part in selecting and arranging, and which appears to have been groundless, soon subsided when it was known that none of the committee would exhibit. I have heard the question asked, it is true, how far this pact is maintained when Col. Stuart Wortley exhibits in the conservatory. The fact that a few fine transparencies from his negatives are effectively used as adding to the decorative arrangements cannot in any sense be construed into exhibiting; and, being apart from the photographic department, they cannot be supposed for a moment to affect, or be affected by, the selection of photographs in the photographic department.

I cannot learn that the Victoria card anywhere meets with warm favour in this country. I hear many photographers say, "Oh, I shall go in for them when the demand has set in," which is, of course, a very easy and tranquil sort of enterprize, and somewhat reminds one of the dictum of fond parents, who forbid their sons to bathe until they have learnt to swim. The demand cannot come until photographers have created it. Whether the thing is worth the effort of creating a demand for it I do not now discuss, beyond remarking that, as a rule, anything is worth the slight effort required here, which will give a new stimulus to the business of the portraitist.

The new apparatus patented by Mr. B. J. Edwards for obtaining negatives without a dark room is likely to prove a boon to many. I do not like the name "graphogeuic;" it may be "natural" and Greek, but it is not descriptive. Without some account of its purpose, no one would arrive at a conclusion of its real character merely from its name. But the invention itself seems to be most valuable, and if in practice it is found to carry out all its promise, I shall not be surprised to see it create a revolution in amateur, and possibly in professional, photography.

The Photographic Society of Scotland, it seems, is in a singular dilemma: it possesses funds for which it is unable to find a legitimate purpose, and, in sheer despair, proposes to establish some memento of its existence—not by means of photography in any form, not even by establishing a photographic scholarship, or a photographic charity, but by purchasing a painting (!) to be presented to the Royal Scottish Academy. Who shall say in future that photography has not been a handmaiden to art? I remember hearing a gentleman say, when he received back the unused balance of his contribution to the "Goddard Fund," that he was uncertain whether to hand it over to the Earlswood Asylum for Idiots, or the Hanwell Lunatic Asylum. But amid the projects for disposal of

the Scottish Society's money, is it not strange that no one has thought of presenting part of the sum to the London Photographic Society? In its state of renewed vitality and activity, there can be little doubt that it could use the money to great advantage for the art; and the act would be one of rare and fraternal gracefulness.

A HIGHLY SENSITIVE PAPER FOR PRINTING BY DEVELOPMENT.

A METHOD of preparing a very sensitive paper for the solar camera is given in *Licht*, which allows of the possibility of obtaining pictures by this apparatus in dull and unfavourable weather. Ordinary paper which has been prepared with arrowroot, and treated with a salting solution, is floated, for the space of three minutes, upon a mercurial solution, prepared according to the undermentioned formula:—

Water 2½ litres, or 88 ozs.
Bichloride of mercury... 125 grammes

After treatment for the above period, the sheets of paper are removed from the solution and hung up to dry. When perfectly desiccated the sheets are further floated on a bath of—

Water 30 cub. cents., or 1½ ozs.
Nitrate of silver... 1½ grammes

A couple of minutes suffice for this operation, and the paper is then in a state of exquisite sensitiveness. On this account great care must be taken that, after the second treatment, the sheets are well preserved and sheltered from the action of light, which acts upon the surface with surprising rapidity.

After exposure to the action of the solar rays, stretched upon the screen in the ordinary manner, the image is forthwith developed by immersion in an iron developer compounded in the following proportions:—

Water 2½ litres
Sulphate of iron 95 grammes
Acetic acid 190 cub. cents.

In this solution the sheet of paper is allowed to remain until the picture is perfectly developed, when it is rinsed, fixed in a hyposulphite of soda bath (1 part soda to 4 parts water), and finally subjected to a thorough washing.

AMERICAN CORRESPONDENCE.

PHOTOGRAPHY IN MONTREAL—RETOUCHING STUMP—A CURIOUS CASE—OUR EXHIBITION.

A WARM desire to see a Canada winter induced me to go from Littleton to Montreal. I had seen Montreal before, in the autumn, when the capering breezes had barely awakened, when the trees were yet fresh and green, and when the noble St. Lawrence hurried by, tumbling over the rapids near by, as if hastening on with some message of love; but, as our mutual good friend, Mr. Notman, declared, I had never seen Montreal in winter. I have now, and I am happy in the experience. A brighter, merrier city than Montreal in mid-winter can scarcely be imagined, at least, so far as the streets are concerned. The first considerable snow is the signal for bidding farewell to anything like conveyances on wheels. The family carriage and the cumbersome carts are alike stowed away, and the sleighs, and the sleds, and the jingling bells are brought out in their place, and are what make the city so full of life. The tough Canadian ponies never go on a walk, so you can imagine the scene when the broad streets are filled with sleighs and sleds, going hither and thither, every horse on a trot, whether hauling a load of hay, or carrying a sleigh-load of merry children. One unaccustomed to such scenes becomes quite excited over it, and charmed with the novelty.

In the evenings Montreal is also gay, for then the skating rinks are the great attraction, and he is a dull boy who

cannot find pleasure there amid the games of la crosse, skating, snow-shoeing, &c. There is no more pleasant scene than a motley crowd gliding over the ice on one of these great rinks, while the music enlivens the brain, and all sorts of catastrophes excite the risibles. Among the other amusements at these rinks, I must tell you of one which I saw enacted at the great Victoria Riuk, a photograph of which you have from Mr. Notman. A number of headless barrels are laid down upon the ice, side by side, in different parts of the rink, their open ends towards the starting point. A lot of half-grown boys on skates are then let loose, and, like hungry hounds, they make for these barrels. The luckiest ones get their heads in the barrels first, and then their object is to struggle through the barrels, skate on to the next ones, and so on through them, and around the rink several time, the one "going through" the most barrels being the victor. You can imagine how ludicrous it looks to see a dozen lads rolling over and over in these barrels in their struggles to rid themselves of their appendages. It is quite as amusing as to see a lot of crabs going it sideways over the beach with their partly shed shells on their backs, only much more so.

But this is not photography. I could tell you many things about Montreal, and the social, hospitable subjects of your beloved Queen who reside there, and of how the noisy St. Lawrence is hushed, her bosom nought but one solid cake of ice, and of how we crossed the river to the French village on the other side, and of how we rode upon the river for miles; but I must not occupy so much space with such details.

Photography in Montreal is undoubtedly headed by Mr. Wm. Notman, with whose admirable work you are well acquainted. He has an immense establishment, with a large force of assistants, and the quantity and quality of work turned out there by no means allows one to feel that photography has had its day, as some croakers aver. Mr. Notman's average plain photography equals any that is made in the world, without doubt, both in excellence of manipulation and in pictorial effect. His profession was that of an artist before he undertook photography, and he is still an artist of the strictest sect, making and educating all of his employées to work to that great end in photography, *i. e.* pictorial excellence. Such men in the profession have a wide influence upon others, and I only wish we had one in every city. Mr. Notman makes all sizes, from the carte-de-visite to life-size, and employs five or six artists to colour. Composition pictures are in considerable demand with him, and he makes them of all sizes, from those with hundreds of figures in, as the Skating Carnival, which you have, down to small groups in the family library. How he does these I will try to tell you in some future letter. If you will visit our coming Exhibition in Philadelphia, you shall see a fine display of Mr. Notman's work, without the trouble of going to Montreal, although he has authorised me to invite you to visit him if you do come to the Exhibition. I assure you of a sound welcome at both places.

Mr. Alex. Henderson is also a very skilful photographer in Montreal. Besides a good portrait business, he also gives much attention to out-door work, and showed me some excellent things, both from wet and dry plates. Mr. Henderson is an ambitious artist, constantly striving to excel, and I am glad to say he is successful.

Mr. J. Inglis is also a growing photographer, producing excellent work, and always striving to do better. You are familiar with his work also, as I have seen it noticed in your columns. Mr. Inglis deserves great credit for his persistence and energy in trying to make himself one of the best.

There are many other photographers in Montreal, but the above are the principal ones. Mr. Notman also has a branch at Toronto, in connection with one of his best artists, Mr. Jno. A. Fraser (firm Notman and Fraser), to which I paid a visit on my return home; and also branches at

Ottawa, Halifax, N.S., and St. John, N.B. Thus you see the good elements are spreading hither and thither.

There is also another place of photographic interest here. I allude to the photo-lithographic establishment of Messrs. Geo. Desbarats and Co. You some time ago described the Leggotype process in your pages, a process for obtaining transfers upon stone, which may be printed in the steam lithographic press, and the invention of Mr. W. A. Leggo, of Montreal. While many others have been experimenting to obtain a method of reproducing drawings and photographs from nature, these gentlemen have quietly accomplished it, as you shall see by the specimens I send you. I mail you several copies of the *Canadian Illustrated News*. It is published by Mr. Desbarats, and the whole outside pages, letter press, portraits, landscapes, and all, are printed in the steam lithographic press. You observe that the illustrations are of no mean quality. The services of an etcher are made considerable use of, as you see, on the negatives, before the exposure of the film is made, and it would defy any one to tell some of the results from the finest wood cuts, while they are produced at a comparatively small price.

Mr. Desbarats has everything here in the neatest and best of shape. His glass house, 28 by 34 feet, is arranged principally for purposes of reproduction, and he uses the Ross wide-angle doublet lenses, having one of eight inches diameter mounted on a huge camera, and another smaller one, in use. It is a model establishment, and a credit to any country. For many years Mr. Desbarats was printer to the Queen in Ottawa, and his father before him. I wish I had space and time to describe his establishment minutely, but must deny myself until some future occasion.

I had a long, dreary ride from Montreal to Toronto, over the Grand Trunk Railway. Let all jolly Englishmen who come to this country be sure to take that ride. It will settle them down in a way which they will not forget, besides give them a good lesson in forbearance. It is the roughest road I ever travelled over; the trains are always behind time, and very many cars lying alongside of the track here and there suggest frequent smashups, which are anything but pleasant to contemplate while riding along.

At Toronto I found Messrs. Notman and Fraser taking the lead, and doing the same splendid class of work as that done at the parent establishment in Montreal. Messrs. Ewing and Co. also have a fine establishment, as well as a fine house for supplies. They are also agents for the News, for the Ross lenses, and many other English materials. Mr. W. O'Connor is also a live photographer here.

At Hamilton, whence I proceeded from Toronto, I found two or three very creditable establishments. Mr. Inglis has just opened a branch, under the care of Mr. Jarvis, and Mr. J. M. Edy also prospers here.

From Hamilton I proceeded to Niagara; saw it in its winter garments, and also by moonlight and sunrise and then wended my way homeward to a huge pile of accumulated work, such as you only, being an editor photographic, can have any conception of. Yet I have gained many ideas and notions by brushing against so many good photographers, which I pray your readers may sooner or later become apprised of by the increased brilliancy of this correspondence.

Retouching Stump.—I must add a little squib, as you are partly responsible for it. A correspondent says: "When I wrote you a short time ago, I thought I had made two important discoveries; one of these I enjoyed for the space of three days, and then discovered that Mr. Wharton Simpson, in his "Notes In and Out of the Studio," for December, had made the same. The other, if old, will deprive me of all my laurels, and leave me as bare as the forests about me. One day, while retouching a negative, I bethought me of the stump used by the artists in monochrome twenty years ago, and the first trial satisfied me that I had found the best, and it is this: collect the finest grained and softest velvet cork, and, with a sharp, thin-bladed knife, cut it into

strips suitable for the porte-crayon; trim the end to a fine square point, and you have all that you can desire."

1 Curious Case.—Here is another curious thing which may be of use to you, from another correspondent, who says:—

"I enclose you two ferrotypes. The one, as you will see, a mass of fog or stain, similar to that produced in many respects by light, or an old plate-holder; the other, you will see, is perfectly clear.

"I will explain the cause of the trouble with the first plate. I am using an Ormsbee box with matched half-tubes. The cut-off was a little loose, and, being in a hurry, I picked up a sliver of wood, as I supposed, for a temporary wedge. That sliver was a bit of a match, and only had on it sulphur about the size of the head of a small pin. I hunted for the cause of the trouble for several hours, and finally smelled the faint odours of sulphur, scarcely perceptible at all; I removed it, and my work was as good as ever.

"The next plate is the one I enclose. It speaks for itself. It cost me about ten dollars to find out the trouble, as I could not send my customers away.

"I say, then, beware of the fumes of sulphur near your sensitized plates."

Our Exhibition.—I send you our plan of proceedings for the Exhibition. The affair promises to be a grand success, and we are indulging the hope that our good friend Mr. G. Wharton Simpson will be with us. He will receive a hearty welcome, be assured.* We are looking for some fine things from England, which are, no doubt, already on the way.

Indulging the hope that I may soon see you face to face, I am truly yours,

EDWARD L. WILSON.

PORTRAITS AND PICTURES.

BY JOHANNES GRASSHOFF.†

WHEN publishing my last paper upon this subject, now about a year ago (see PHOTOGRAPHIC NEWS, 10th June, 1870), it happened, either by accident, or from the fault of the compositor—or, shall I say, editor?—that at the end thereof the words "to be continued" were omitted. Fortunately this little circumstance did not prevent my friend Petsch from writing a sequel to my remarks (see PHOTOGRAPHIC NEWS, 30th September, 1870), and I now take the opportunity of thanking him for his valuable remarks upon the influence of individuality in portraiture. At the same time, I would ask permission to give a continuation from my own pen.

M. Quide has remarked that individuality in a portrait is a proof that the picture has actually been produced from the person who served as model, a circumstance which sitters are at times apt to question. No doubt this statement was made in reference to a tableau exhibited by one of thirty different photographs of one and the same person. Now, I have, it is true, employed all kinds of skilful dodges, Rembrandt and such like effects, in my work; but then, what will not the poor photographer do for the sake of art, for the fair sex, and for business? Many of my black-fingered colleagues have asked me how I manage to produce such pictures from many of the faces I meet with. My answer is very simple: I do not know myself; it is simply a matter of feeling.

Petsch has given us a very detailed and graphic account of the studio-life of photographers in large aristocratic cities, but he has forgotten altogether the existence of the provincial photographers in smaller towns, who are, it must be remembered, just as desirous of producing fine and delicate pictures for their customers. But how is it possible

* It is due to the kindness and generosity of our American friends, that we should inform our readers that they have not only given us a very hearty invitation to be present at the next Annual Meeting of the National Association, but have also asked our acceptance of a passage ticket to and from America. The exacting character of our duties does not, unhappily, permit us to take this pleasant holiday; but we cannot refrain from thus publicly recording their kindness, and our high appreciation of it.—Ed.

† Photographisches Mittheilungen.

to reproduce the leathery, or smoked-meerschaum countenances possessed by most of our country cousins in a soft and delicate manner. The unfortunate behaviour of the various colours which give such different results is here at fault, and the cause of all our difficulty. According to friend Petsch, it is always desirable that the nose, at any rate, should be tinted white, when it is not convenient that the whole mask should be coloured; with such dark brown features, however, it is necessary almost to lay on white oil colours, for white powder is often of no avail. We shall, indeed, always have difficulties of this kind to contend with, until some one has succeeded in improving the negative process, so that truer results may be obtained. Landscapes, as also reproduced oil paintings, give us particular proof of the injurious influence of colours. Every month almost, some new Lichtdruck or other similar process is invented; but as regards the improvement of the negative process, nothing at all seems to be done.

M. Petsch has, no doubt, had some experiences of this nature in his recent work before Metz, when depicting the fair-haired Germans from East Prussia and the Polish frontier. Some subjects of this kind appear more cautious in their photographs than in nature, and *vice versa*; and yet it is difficult to point to the reason of this. The cause, in most cases, lies in the colours of the face and the traits of countenance. How many ladies that dazzle one with their natural colours are reproduced in photography without being rendered full justice to! for the camera often only reproduces the form of the face, and sometimes even, as in brunettes, reverses the order of the colours. For this reason it is that one hears the oft-repeated complaint: "We have never been well taken!" and that general satisfaction is so difficult to afford. When persons such as these desire to have large vignette busts taken, I always produce the pictures on not too large a scale, and secure, on the same plate, a three-quarter portrait. Almost invariably is the latter preferred when the pictures are seen, the smaller head appearing the more favourable.

That there are persons, of course, specially designed to plague the photographer in his duties we must all agree (thin, hungry faces of grey-haired spinsters, for instance); and, with people of this kind, it is best to have recourse to some novel or particular lighting effect or prominent method of printing, whereby the attention is somewhat distracted from the portrait. It is often difficult, I know, to screen in this way the most marked parts of the picture; but, as far as my own experience goes, I have generally managed to do so successfully.

To one peculiar point in portrait photography I should like to call attention: Why are so many photographs printed in the vignette style? Is the general aspect of the picture thereby improved? In many cases the presence of stains and imperfections in the plate may be advanced as a sufficient reason for this manner of printing, but we see even the best kind of plates printed in this style, and it would appear, therefore, to be a comparatively easy task to produce vignette pictures.

When the portrait-painter or artist produces a sketch—a so-called study from nature—he makes but an outline of the background and bust, the sketch serving as the foundation for a real picture to be finished afterwards. But photography yields something more at the present moment than sketches; and, as we never see a vignette bust or three-quarter figure running about, it is surely more natural to represent the whole of the model complete. If two pictures are printed from the same perfect negative, the latter having been produced with a well-chosen and harmonious background, the one picture being plain and the other vignette, the former will, without doubt, be the more effective. And this is more true even with three-quarter portraits, in which the legs often appear to stand in water. We need, indeed, merely go to any exhibition of oil-paintings to see that in no case is a finished oil-picture painted in the form of a vignette.

A SUGGESTION FOR MOUNTING GLASS POSITIVES.

BY JOHN C. BROWNE.*

IN my experience, the greatest obstacle in preparing slides for the magic lantern is not the chemical manipulation required, but the mounting or preservation of the picture from injury occasioned by dust or scratching. The neatest form of mounting is that adopted by Mr. Langenheim, of Philadelphia, in which the positive and glass cover are cut circular, and inserted into a wooden frame of a size to fit any lantern of usual dimensions; but the risk of breaking the glass, and the time required in cutting the circles, is a serious matter to the uninitiated, and, taking the frames into consideration, somewhat expensive. The more general method of mounting slides is to cut the positive and glass cover $3\frac{1}{4}$ inches square, fastening the edges together with thin strips of black muslin, paper, &c., using a paste composed of flour, or what is known as bookbinders' paste; the latter is the best. Slides pasted with gum-arabic are not reliable, as the paper or muslin will crack off by heat and constant use, rendering the picture liable to injury. But this plan of joining the two glasses together by pasting is troublesome, and requires considerable time.

The method that I propose is to use a metal frame somewhat similar to a ferrotype preserver, but of heavier metal, finished plain, without any of the embossed or raised work that such frames have on the front side. The edges for turning over and protecting the two glasses need not be made wide enough to interfere with the picture when thrown upon the screen. Some months ago I wrote to a manufacturer of ferrotype preservers, asking him to stamp for me a few quarter-size frames in heavier metal, and stated that it was desirable to make the embossed work as smooth as possible. The result answered my expectations perfectly, as regards the frames being strong enough to preserve the picture, but the size was not desirable; also, the embossed work (although lightly stamped) prevented the picture sliding smoothly. As a suggestion, I propose that frames be made $3\frac{1}{4}$ inches square, and stamped in a plain die. Pictures can be rapidly mounted by the use of this frame, and the labour of pasting entirely avoided. When exhibiting pictures, a wooden frame can be used, having a square cut in the centre, which will bring each picture into the exact position desired on the screen, and will require but little change of focus.

PHOTOGRAPHY AND THE STEREOSCOPE.

BY JOHN HENDERSON.†

THE time which has elapsed since stereoscopic photography ceased to be a novelty, and the copious manner in which the subject has been ventilated, almost demand some apology for again bringing it forward. I have, however, the less hesitation in doing so as I conceive that the matter has latterly received less attention than it deserves; that it is a branch of photography especially fitted for amateurs; and that as the stereoscope received its impetus mainly, if not entirely, owing to its early connection with the infant art-science of photography—so, as long as an interest is felt in the phenomena of binocular vision, as long as it is conceded that the photographic views of most objects are seen more vividly and naturally in this than in any other manner, and while, as an educational instrument, the stereoscope can be shown to have value, so long may we derive recreation and advantage from the practice of stereoscopic photography.

I need scarcely remind you, at the outset, that from a very early period the fact was noticed that each eye saw an object under different aspects, which conveyed to the brain the impression of one solid. Euclid (300 B.C.) knew that each eye in one view saw different pictures; Galen, in the

* Philadelphia Photographer.

† Read at a meeting of the Liverpool Amateur Photographic Association.

second century, expresses the same idea more clearly. Writing in the sixteenth century, G. Baptista della Porta further illustrates the theme. Two pictures at Lille, executed about this by Chimenti, were, as recently as 1862, thought to have been done in illustration of the binocular theory; but the close resemblance of the pair is not now believed to have had any such intentional origin.

In the seventeenth century a learned Jesuit, Francis Aguilonius, wrote so fully on the subject that it was scarcely again taken up till the present century, when Professor Elliott and Mr. Wheatstone, independently it would seem, gave more tangible expression to the idea by the construction of stereoscopes in different forms. In 1823 Mr. Elliott wrote an essay "On the Means by which we Obtain our Knowledge of Distances by the Eye." About 1834 he conceived the idea of an instrument whereby two dissimilar pictures might be combined. In 1838, at the meeting of the British Association, at Newcastle-on-Tyne, Mr. Wheatstone contributed a paper, which he had prepared shortly before for the Royal Society, on the "Physiology of Vision," and exhibited a reflecting stereoscope. In the following year, 1839, Mr. Elliott, unaware of this fact, exhibited at a meeting of the Polytechnic Society of Liverpool, then just formed, an "ocular" stereoscope, consisting simply of a deep box, destitute of any optical arrangement, at the bottom of which were shown two moonlight views about two and a-half inches distant, representing the right and left hand aspects of a landscape in three planes of distance, and which combined on examination. Later still, Mr. Walter Hardie, of Edinburgh, invented an ingenious modification of the reflecting stereoscope, which, while compact, was capable of exhibiting large-sized pictures placed above each other, and viewed through reflecting prisms after the manner of the camera lucida. In the years now under review the Daguerreotype, Talhot-type, and kindred processes were brought out; and just previous to the era of collodion Sir David Brewster had worked out the idea of his lenticular stereoscope, which he first exhibited at the meeting of the British Association, at Birmingham, in 1849.

Some few instruments were made in Scotland, chiefly at Dundee, but here they failed to attract the attention of those most interested. In Paris the inventor was well received, and on the 30th December, 1850, M. Duboscq showed the instrument to the Imperial Institute of France, and caused a quantity of Daguerreotype views to be taken, which, with a number of stereoscopes, were first publicly shown in England in 1851. The publicity which the Great Exhibition of that year secured for them led to their universal popularity in this country, to which the manufacture rapidly extended. The stereoscopes of that day scarcely differed from those now ordinarily in use, which, however well adapted for Daguerreotypes, where the illumination has to be carefully controlled, or for transparencies, fail to admit sufficient light to paper prints, and the chief advance has been towards improvements in this direction. In the improved achromatic mirror stereoscope of Smith and Beck the lenses revolve to assist eyes otherwise imperfect, or to correct errors in the mounting of the prints.

The first pictures for the lenticular stereoscope consisted of drawings of geometrical solids, of lithographs from calotype pictures, of laborious hand drawn binocular pictures, such as Cruikshank's "bottle" series, and of Daguerreotypes. When collodion had prepared the way for the easier and cheaper reproduction of paper prints or glass transparencies, a "stereo" mania was aroused—a *Stereoscopic Magazine* was started, which came to an untimely end, and a Stereoscopic Company, which survives. Among the earlier aberrations from truthfulness, "ghost" effects may be classed. Photographs of an unworthy character appeared later on, though it is not easy on this or any other grounds to account for the comparative neglect into which stereoscopic photography has fallen.

It is difficult to teach the uninitiated how to combine stereoscopic views without a proper instrument, in which

the lenticular prisms or semi-lenses magnify the images, and also refract the two pictures towards a common centre. In ordinary vision the two eyes converge towards a point more or less remote. In combining views without the aid of a stereoscope the eyes look in parallel directions, or even diverge. Where the two views have been omitted to be transposed, they are similarly combined by the operation of squinting.

In viewing any landscape or object, the attention, as already stated, is always concentrated upon a point in any one plane of distance, and the eyes insensibly judge of the distance of such point by the angle, more or less acute, which is included by the convergence of the optic axes. This is precisely what occurs in the examination of a stereoscopic picture taken and viewed under proper conditions; and it is the wonderful illusion then practised, when our "eyes are made the fools of the other senses," that constitutes the charm of the stereoscope.

Complementary colours presented to each eye in the stereoscope, produce by combination a dirty white. In colours of differing intensity, the most intense will assert itself to the exclusion of the other. Where the intensity is similar, they mix as they would on a palette—yellow and blue forming green, and so on—though these results are not always obtained without an effort of volition.

In our ordinary vision of surrounding objects it will be found that one eye sees, so to speak, while the other presents the relief of the thing seen to the mind; that is to say, if we sketch any object, the relation of its parts to the whole, and of the whole to surrounding objects, will be found, on the completion of the sketch, to have been the view as presented to one eye only, as may be proved by comparing the picture with the actual view as seen by the right eye, while the left is closed, and *vice versa*. The truth of this idea may be further illustrated by viewing the reflection of surrounding objects in a mirror, when, if the eyes are alternately closed, it will be found that the "miud's eye" has been viewing in relief the images as represented on the retina of one eye rather than those seen by the other.

In viewing a near object especially it must be obvious that the perspective, and even the relative, size of the object, as presented to the eye nearer to the object, must differ from that presented to the eye further from it. Practically, this is not perceived, and the solution of the difficulty is that all parts of the object, &c., beyond the point under view at that moment, are really seen double on other portions of the retina; but the altered direction and convergence of our vision are acts so rapid and involuntary that, under ordinary circumstances, the fact is not noticed.

I must now pass on to considerations of a more practical nature, by giving a few hints in connection with the production, mounting, and viewing of stereoscopic pictures, in so far as they differ from single photographs. As it is desirable that a large amount of subject should be included in the small space at command, the use of short-focus and wide-angle lenses will be often advantageous, though, in this respect, great caution and judgment are needed.

Softness and detail being more important than brilliancy, very full exposures should be given. Natural skies may be taken on a second plate before removing the camera, and printed by combination. More than usual care should be taken in the focussing, and the same may be said of the preparation and development of the plate, as any defect tells its own tale.

A good foreground is a necessity in all cases to give the proper relief, and where it cannot be had, and the principal object is at a considerable distance, the two views may be taken from points much wider apart than three inches.

The prints for mounting, if including subjects of interest near the margin, may be cut three inches broad, but leaving the corresponding distant points about two and three-quarter inches apart when mounted; otherwise the corresponding points may be two and a-half inches apart, and the prints cut larger in proportion—say two and three-

quarter inches. This method bears some analogy to that which occurs when viewing any object of less than two and a-half inches in diameter, and it is justified by the practice of some of our best authorities. For use with the stereoscope of Messrs. Warner and Murray, they may be cut as high as five and a-half inches.

The prints may be rapidly and neatly cut by a knife upon a glass plate, using two rectilinear glass guides, one seven and a-half by five inches, and the other three inches square. Let A be the right and B the left-hand view, as yet attached and untransposed. With the long guide cut the base of both views and the left of B, from which base, with the square guide (which is henceforth used) cut the right of B at the proper distance, then cut the left of A, upon which place B, and, having marked off the width, cut the right of A. Superimpose both prints, and cut both tops together. All this is done in less time than it takes to describe, and the result is two rectangular prints exactly alike in size. By doubling up the upper portion of the prints, the four upper corners may be rounded by hand with scissors, which sometimes gives a finish, and removes that which it is not desirable to retain. Before commencing to cut the prints, the right-hand view should be marked at the back. The ordinary mounts being rectangular and twice as long as broad, one may be used to draw a pencil line, dividing the face of the other into two squares.

After mounting, the prints should, if possible, be rolled ho.

The finished pictures, to be truthful, should be seen in the stereoscope at a distance from the eyes equivalent to the focal length of the lenses employed to produce them in the camera; and if the lenses in the stereoscope are of too great focal length, and especially if the views have been taken with wide-angle short-focus lenses, then the innermost edges of the last named lenses may be used themselves with advantage.

It is further important that the very inclination at which the camera stood at the time of exposure should be preserved in viewing the finished picture. Several views now shown, taken vertically, and in other unnatural positions, bear out this assertion.

Architectural views—including vertical lines at the edges, and taken with short-focus single lenses, but which lean slightly—will be found to assume their proper position when viewed in a stereoscope whose lenses have a high magnifying power, and are duly corrected. If the camera, however, has been "tilted" even slightly, the picture will not then represent correctly the height of the original.

Were I inclined to dwell at length on the inducements which this branch of our art-science holds out to the amateur, I might speak of the compactness of the apparatus, of the adaptability of this size of view for lantern subjects (in which case, indeed, two dissimilar views may be taken on the one plate), of the charm of instantaneous views, and of the ease and frequency with which views suitable for the stereoscope present themselves. I might further point to the attention which some of our best professional landscape photographers have given to it, and to the hints and models which their productions afford. I might likewise point to the field which it presents for the delineation of low-power microscopic objects. But I have already exceeded the limits which the subject, perhaps, demands; and, if I succeed in reviving an interest among any of our members in the study and practice of stereoscopic photography, my object in bringing forward such an old theme will have been attained.

THE "EDINBURGH REVIEW" ON PHOTOGRAPHY.*

AFTER a description of the heliotype process, the writer remarks:—

"Heliotype is fitted for all kinds of work, and does not require special negatives, as the picture is not reversed in printing. The pictures can be printed in any colour;

* Continued from p. 211.

and, indeed, the painter seeks a point even in ordinary prints, of giving two things to the picture—one for the dark shadows, and ordinary black ink, and another is a golden hue, for the better tone—and the effect is very good. The progress in Italy this process are very beautiful. The portraits of Vasdyka and Reinhardt in recent numbers are admirable examples of its power of rendering, with perfect clearness, the vigour and depth of the original paintings; while the rendering of Mount St. Michael, Northam, is a faultless specimen of rendering this grand scenery. This specimen of work we saw in the gallery of the portrait-gallery in the British Museum, and we have reason to believe that the keeper himself looks upon this specimen as a very worthy result of the new art. Heliography promises to give to literature what has been so long desired: printed transcripts of photographs at a cheap rate. The method of working and the cost of producing it is so small that it bids fair to invade all the cheaper forms of literature, and to reproduce for us drawings from various sources of inferior wood engravings and lithographs.

An account of lithography at Southampton Establishment follows, and its use for Ordnance survey maps, &c., upon which the writer observes:—

It was at first doubted that the reductions made by means of photography were sufficiently accurate, and in 1835 Sir Richard Neville stated in Parliament that the plans so reduced were not to be depended upon. Whereupon a committee was appointed, of which Sir Robert Mitchell was chairman, to report upon their accuracy as compared with plans reduced by the old process, and upon the saving effected by the photographic process. The result was that the committee stated that the greatest deviation in any part of the plan from perfect accuracy does not amount to one four-hundredth part of an inch in the angle of the rectangle, and that the saving effected is not incommensurate, and that the saving already effected has been £1,000 per annum, and is now more than £20,000 a year.

After some observations on photolithography and astronomical photography, the article proceeds:—

With regard to ordinary photography seems to be giving its powerful aid to medicine and its allied sciences. Dr. Sæverien, in a paper on the influence of the heart examined by the movements of respiration on the circulation of the blood, gives a plan of registering the rapidity and volume of the human pulse by means of the pulse-machine, which is made to record itself by a series of spring pens upon sensitized paper. This may be considered rather a curious than a useful application of photography, but it is eminently necessary to say that his aid is of the greatest value to the physiologist, the physician, and surgeon. The numerous changes made in the aspect of wounds are had a faithful record by smaller means, and the splendid success in the possession of the Royal Medical-Chirurgical Society is a testimony to the value placed by the profession upon this method of illustrating their cases.

The power of the sun's pencil in giving intense and subtle indications of expression in the human face has made its valuable testimony power in psychological medicine. The power of words to express certain types of insanity is feeble as compared with the whole aspect of the patient and the expression of his face, these the photographer can give with unerring certainty. Dr. Conroy discovered a valuable series of papers on the pathology of insanity by photographs of the different types taken by Dr. Deane from his asylum, and is at all times anxious they are truly valuable.

It has been suggested that before it is too late, the art should be made subservient to recording the types of the various races of men that are slowly disappearing as civilisation advances. This would be a worthy occupation for the Ethnological Society. Dr. Livingstone, we know,

received instructions in the art, and we may hope that he will bring us home portraits of the strange tribes he has been made acquainted with during his long sojourn in the interior of Africa.

Dr. Forbes Watson has made us acquainted with some of the leading types of India, but how little do we know of the infinite varieties that exist in that vast country, and in Asia generally! The physical aspect of man is a subject photography alone is capable of correctly illustrating.

With respect to the influence of the evil passions upon the physical eye, we have some record in the portraits of criminal prisoners. The prisoners of the criminal prisons furnish copies of these to the head station in Scotland Yard, and a valuable gallery of faces, as a rule, it presents. There is a photographic apparatus at the chief police station at Scotland Yard, and it was used some years since for the purpose of taking portraits, especially during the Feman excitement, but it has not been used since; in fact, there is no legal warrant for taking a prisoner's likeness, and it more than sometimes where this portraiture has been attempted it has been successfully resisted. Photographs are often a most valuable aid in discovering persons wanted, but they are nearly always furnished by other persons to the police.

A very singular case of a thief who was choist with his own portrait, occurred some little time since at the West End. A lock-off-five man, whose time had expired, called upon a photographer in the High Street, Kingsway, and managed to walk in the waiting-room, to pick up a lock and steal £10 in gold and silver. He remained for some time, and the photographer going to him to ascertain his business, he said he had an order for some card portraits, and he wished to be shown specimens, which was done. The photographer, unaware of his loss, as a reward for his trouble, expressed a wish to take his portrait, so that he might present him with several copies. The prisoner was not at all anxious to submit to the process, and it was thought that the likeness was worthless; as lock would have it, it turned out a particularly good one. The loss of money was discovered, the photo was handed over to the police, and by its aid, the thief was discovered and apprehended by an officer a few weeks after in Brompton.

The law has obtained, through its instrumentality, a witness to fact which it is difficult to gainsay. There is no cross-questioning such evidence. In cases of boiler explosion and accidents to machinery, and even the damage done to vessels by collisions at sea, the silent evidence of the signature is sufficient to settle many a disputed point; and not long since a lawsuit, in which Earl Spencer was one of the litigants, was decided by a photograph of a public road and a garden wall, which settled a point of disputed boundary.

Not the most extraordinary piece of legal evidence we have yet heard of occurred some time since in Australia. A gentleman named Black went with a surveyor to examine into the particulars of a certain mine claim, when he was suddenly seized by some rascals (supposed to be in the pay of the other party), stripped, smeared with tar, and, far worse of feathers, was ornamented with straw, wool, and other rubbish. When he managed to escape from his persecutors, instead of returning to get rid of his horrible ornamentation, he determined to take a note of it at once, and forthwith proceeded to a post-grayer, where his likeness was taken in this extraordinary costume, and with this evidence upon him, he proceeded to his lawyer, and laid the damage at 2000 dollars, which he ought to have obtained if he had not.

The War Office has taken advantage of the new agent to obtain pictures of all the modern battle-fields, and especially of the strategic positions and of the fortifications. We see such in records of the war, both of the Crimea and that of the Abyssinian expedition. The power of highly sensitive paper in giving pictures of explosions is of

great use to the Corps of Engineers. The height and the breadth of torpedo explosions are thus made patent to the eye; the powers of projectiles, as shown by the impact of shot in armour-plates, are also graphically rendered by the light-picture. It is the practice now to photograph all patterns of stores supplied to this department.

"If, in conclusion, we refer to the aid photography will be to art itself, we shall not have mentioned one of its least claims upon public favour. Those who have visited the annual exhibition of the Photographic Society in Conduit Street cannot fail to have marked the instruction the artist may obtain from these moments of nature arrested and fixed by the silver print. The grand sea-views by Colonel Stuart Wortley, in which not only the clear naked wave is painted by the pencil of light as it is rolling over, but the very drifting mist-like spray upon its crest as it dashes upon a rock. Who can estimate the value of such momentary records of details of nature to the artist—movements that would otherwise fade from his memory? How dignified even the commonest photograph is made by the delicacy of light and shade it presents. Every head has the power of a Vandyck or a Titian. Its teaching power in this respect is undeniable. Year by year the familiarity of the public with the works of this splendid draughtsman will make the acceptance of slovenly drawing impossible. In the art of design the facilities of the sun-picture cannot fail to be appreciated and taken advantage of. Mrs. Cameron, in some of her poetical groups, and her fine examples of form, has taught us its power of fixing grace upon the canvas [?], and the varying forms of human expression. The same flash of light which registers the drifting foam can seize the emotion of the human soul as depicted upon the countenance. Far be it from us to say that the gifted artist should work from such reflections as these, instead of going direct to nature, but their supplementary aid cannot be undervalued. They will not take the place of the poetical eye and skilled pencil, but they will afford excellent records of needful details and of fugitive expressions, to be stowed away for future use. The public knows nothing of the folios of sketches the artist keeps by him. These are the bricks, so to speak, out of which the finished picture is built up. Much of this work the photograph will do for him, leaving his mind free for the higher art of conception and design.

ON PHOTOGRAPHY IN THE PRINTING PRESS, BEING A DESCRIPTION OF THE WORKING OF THE HELIOTYPE PROCESS.

BY ERNEST EDWARDS, ESQ., B.A. (CANTAB).*

I HAVE NOW to describe the heliotype process. The action of hot water on gelatine is to dissolve it; the action of cold water is not to dissolve it, but to fill up the pores and swell it up, just as in the case of a sponge; and as, after exposure to light in presence of a bichromate, hot water will no longer dissolve gelatine, so, after exposure, cold water will no longer expand it—can no longer penetrate the pores. The light has, in fact, had the effect of closing the pores, and thus rendering the gelatine waterproof. If, then, we cover a glass plate with bichromated gelatine, and expose it to light under a negative, there will be certain parts of it which will be completely waterproofed, having the pores completely closed by the light; certain parts—the half-tones—which will be partly waterproofed, having the pores partly closed; and certain parts where the condition of the gelatine will be unchanged. Now, if we steep this plate in cold water, some portions of it—those where light has not acted—will absorb water, and others will refuse to do so, having been waterproofed by light. If we take grease and rub it over the plate, the result will be that where the pores are full of water—that is, where the light has not acted—the grease will not touch the gelatine; but where the light has acted the pores are closed, there is no water, and grease

attaches itself readily. Where the light has partly closed the pores, the small quantity of water absorbed does not prevent a small quantity of grease attaching itself. Lithographic ink is simply grease to which colouring matter has been added; and a lithographic roller charged with such ink, and rolled over such a plate, speedily reveals the light-produced image.

This method was discovered by Poitevin, and even patented by him, as early as 1856. But I doubt if he understood its true principle, for he appears to have considered that the action of light converted the gelatine into something of a waxy or resinous nature, which, on that account, took the greasy ink. However this may be, no results were produced by him, and the method in that form did not come into use. The practical difficulties met with in attempting to work it arose first from the spongy and delicate nature of the gelatine film in those portions where light had not acted, and, next, from the difficulty of obtaining intensity in the inking and sharpness in the image, and from other technical obstacles. Bearing in mind the character of the image on the gelatine, it will be understood that those parts of the gelatine not acted on by light were in much higher relief, from the presence of the water which they absorbed, than those parts which, having been acted on by light, did not absorb water. But it is the depressions which take the ink, and the walls on each side of the depressions prevented the roller from reaching them; and again, it is the depressions to which the pressure must be applied, in order to allow the paper to pick up the ink. It was found that when the requisite pressure was applied the gelatine was speedily destroyed, more especially as the description of pressure employed was that used in lithography, where the force is a scraping one over the surface of the stone.

MM. Tessie du Motay and Marcelal were the first to make use of Poitevin's method in any way commercially. They attempted to provide against the swelling of the unaltered gelatine by using a very thin layer of it, and only printing such subjects as gave but slight contrasts. The results produced, though sadly wanting in vigour and firmness, were, at the time (1868), considered satisfactory; but it was found that, after a very few impressions, the gelatine was crushed, and became useless, more especially as the film, to be at all manageable in inking, had been made very thin.

Herr Albert, of Munich, next produced some results by a similar method. We do not find that his plan of working has been published, but it is believed to be somewhat as follows:—

Instead of a lithographic stone, a glass plate is employed of considerable thickness. On this is placed a layer of gelatine and bichromate, which, when dry, is hardened all over by exposure to light; on the top of this is placed a second thin coating of gelatine and bichromate, and this is exposed to light under a negative. In this manner a compound printing film is obtained, having the necessary degree of thickness to stand a certain amount of wear and tear, whilst, from its construction, the difficulty of the swelling of the gelatine is, to a great extent, got over; the plate is then inked, and printed in the usual way. Some of the results produced by Herr Albert are most beautifully soft and delicate, but the whole are wanting in strength and robustness, and the process seems unsuited for the production of lines or subjects where firmness and strength are required. The films, moreover, are only mechanically united, and are very liable to injury in working, whilst the use of glass plates as supports, from their liability to fracture, introduces an element of uncertainty into the process that is very undesirable. But the results produced were so fine that, on seeing them, I was at once convinced that in that direction lay the future of permanent photographic printing.

There are many ways of closing up the pores, or of waterproofing gelatine. We have seen that the action of light in presence of a bichromate will do so completely. Admixture with alum, more especially chrome alum, will

* Continued from p. 210.

do so as completely without the action of light; and, after such treatment, the gelatine is converted into a tough, tawny, insoluble substance like leather or parchment, capable of standing an apparently unlimited amount of rough usage. In the course of my experiments I discovered that gelatine might be converted into this substance, but that it still retained its property of being acted on by light in presence of a bichromate, and of receiving and refusing greasy ink. The merest trace of water is sufficient to secure the repulsion of grease; and in chrome alum we have the means of closing up the pores of gelatine to any desired extent, and under the most complete control. Here, then, was a most important point gained. Instead of having to deal with a soft spongy mass of gelatine, so swollen with water as to be useless, I secured by this means a tough film of sufficient thickness, which, while it would absorb sufficient water to repel grease, was yet so little swollen as to present no difficulty in inking or printing—a film which was sufficiently dense to give perfect firmness of line, with entire freedom from the grain which is sometimes seen, and which was so tough that 100 or 150 impressions might be pulled from it without the least loss of quality. But I found, in practice, that when these films were used on glass supports there was great difficulty in getting contact between the gelatine glass plate and the negative during exposure to light. The slightest inequality in the surface of either negative or gelatinized glass, the slightest speck, prevented contact, so that line subjects were practically unobtainable, and many plates were failures on this account. Moreover, but a comparatively small amount of pressure could, with safety, be applied to a glass plate in the press; not nearly so much, indeed, as was desirable, and even with the greatest pains fractures were of frequent occurrence. To obviate these difficulties I devised the following method:—

The solution of gelatine and bichromate, to which has been added the requisite amount of chrome alum, is poured on to the surface of a carefully levelled glass plate, and dried. But the surface of the glass plate has been first rubbed over with a little wax, so that when the film is dry it is readily detached. We then have a film only, not a thick glass plate, to deal with, of the thickness of stout paper, and just as manageable. With this film there is no difficulty in getting contact with the negative, and we are able to obtain the most intense sharpness. There is no risk of breaking the negative, and the management of the film is as easy as that of the paper on which photographs are ordinarily printed. A piece of such a film is placed in contact with a negative, and exposed to light, the sufficiency of the exposure being indicated when the whole details of the picture are apparent. The next step is to attach it to the support on which it is to remain during printing in the press. For this purpose, a plate of metal is taken, such as zinc or pewter, and the exposed gelatine film is placed in contact with it under water. We have now to get rid of the water which is between the film and plate. This is done by means of a tongue of india-rubber let into a strip of wood—just such an instrument, in fact, as is used in cleaning pavements in dirty weather, and which is known by the name of the "squeegee." This instrument is passed sharply over the surface of the film, and squeezes out the water between it and the metal. Then the absorbing property of the gelatine is brought into play, and the film is attached to the plate by exactly the same force that a boy with a leather sucker is able to lift a stone of considerable weight; that is to say, by virtue of atmospheric pressure. The plate, with its printing film attached, is stepped in water for a sufficient time to soak out the superfluous bichromate, so as to prevent the further action of light, and is then ready for printing at the press. Instead of a glass plate, of necessity fragile, we have now a printing film to which we may apply, without risk, any pressure we please, and which, when the requisite number of impressions have been taken from it, may be removed from its metal support, and stowed away for future use. At any time it may be again laid down and

the printing proceeded with; and, as it is of a bulk but little greater than a sheet of paper, there is no difficulty in storing. I do not hesitate to say that this method of transferring the films increases the value of the process ten-fold. Having obtained our gelatine matrix on its metal support, we now come to the inking and printing.

(To be continued.)

STRONG AND WEAK DEVELOPERS.

BY ELBERT ANDERSON.

[Mr. Anderson continues his hints on exposure and development.]

M. I believe I understood you to say that an insufficient exposure could not be remedied by strengthening the developer.

A. Yes, I said so.

M. And I believe you further said that you keep a strong and a weak developer, which you mix together as occasion calls.

A. I said that also.

M. What, then, is the nature of the circumstances which require this change of developer?

A. I do not know whether you are aware of it or not, Mr. Marshall, but you have now approached a subject of the greatest possible moment, and I advise you to listen well to what I am about to state. Now for another experiment. I will coat this plate and expose it twenty seconds, on a certain subject, and develop with a strong developer—that is, strong iron solution.

M. This comes up very quickly.

A. I will now coat another plate and expose on the same subject the same time—twenty seconds—and develop with a weak solution.

M. This comes up much slower; is this the only difference?

A. The negatives are both fixed and washed; come, look at them.

M. Why, bless my soul, what a difference! This one is thin and flat, without much contrast, and was made with the weak developer, of course; whilst that one is strong, with much more contrast, clearly showing the effect of a strong developer.

A. My friend, you are all wrong. It is just the reverse.

M. What do you mean by just the reverse?

A. The negative with these strong contrasts was made with the weak developer, and the flat one was made with the strong developer.

M. Is that so? How do you explain this seeming paradox?

A. Mr. Marshall, I assure you, that when you see two such effects and opposite results produced with exactly the same exposures, it cannot but strike you most forcibly that, of all the manipulations of the negative, nothing can exceed in importance that of the development. It is the very key of the whole making of the negative. Talk of the secrets of the dark room, this is the secret! I showed you some time back the effect of strengthening a negative. I showed you that the second development (strengthening) was in proportion to the first deposit, and I will now show you that the first deposit is in proportion to the strength of the developer. The stronger the developer is in iron the arid being the same in both cases, the more rapid the development; this you already know; but you may not know that with a weak developer the reduction is so slow that the lights, *i. e.*, the most impressed parts of the plate appropriate to themselves the silver as fast as it is reduced, and it is not until they are overcharged that the shadows "get a show"; thus the negative has strong contrasts. But with a strong developer the silver is reduced in sufficient quantities to supply both, the shadows as well as the lights, and if too strong, the shadows receive the deposit almost as fast as the lights, making the negative flat. Now you have only to still further increase the iron, when the reduction will take place so rapidly that the impressed image has not

sufficient time to dispose of the silver, which is reduced over the whole plate.

M. Result, a healthy old fog. Why, I had no idea that so much depended upon the development.

A. It is of every consequence; and here it is where you want your wits about you. It requires the utmost care, good taste, and judgment on the part of the operator. It is far better that you over-expose ten seconds than under-expose one half a second. The former can, in a measure, be remedied; the latter is hopeless. I have shown that too rapid a reduction will "fog" your negatives, and I shall show you later that a too slow development will produce the same effect.

M. Any other little suggestions on development? The smallest favours thankfully received, larger ones in proportion.

A. Sec, here is Miss Aurora Cynthia de Brown. I shall make two negatives of her: one in her pretty black velvet hat and feather and cloak, and the other in her white dress and laces. Now, if I use the same developer in both cases, I must give twice the exposure in the black suit.

M. That's what I should have done; but, gathering from what you have said just now, I suppose I had better give nearly the same time, and modify my developer.

A. Assuredly. In order to get fine detail in white drapery, give a full exposure and use your developer rather weak; keep your wits about you, and do not over-develop; and when she sits in her black suit strengthen your iron, and "look sharp."

M. Good; I'll try it.

Correspondence.

THE GRAPHOGENIC.

SIR,—When I ventured to point out what I considered defects in a new and much lauded system, I little expected to be assailed, unless by those pecuniarily interested in the Graphogenic, and must beg the favour of a word in defence, although I dislike occupying so much valuable space in your pages on a matter that has become somewhat personal.

Mr. Edwards has more than once objected to my adopting a *nom de plume*. Did I make an attack upon him, I should sign my name in full. As I have seen him but once, when he very kindly explained his Patent Printing-Framo, there is no reason for any animus against him, and it does not exist as "Justice" insinuates. I cried out against the high price Mr. Edwards charged for his Patent Frames, and he soon after gave up the two guineas for licence to use them. I look upon that as a recognition of the justness of my complaint, and not in the light of a defeat. Neither Mr. Edwards nor his partisans attempt to deny the defects I point out in the Graphogenic, but, like so many bulls, blindly charge at me.

Mr. Edwards asks me if I have tried his new developer, or want to break a lance with him? "Justice" says it is wrong to point out objectionable features in anything new, forsooth, because of the loss to the pateutee (!), and if I don't like it I can let it alone. "W. L." fails to be funny, and wants a description of what he is pleased to call my *invention*. "Scrutator" is simply coarse and offensive.

Now, I do not want to break lances with anybody; but to Mr. Edwards, and those who propose to "Graphogenicate," I beg to offer an "idea" which may be new, and will do away with one of the defects I alluded to. Have a slight frame of suitable size made, with a sliding plate of glass for a cover; in the centre of this plate drill a hole of sufficient size to pour the collodion through on to the cleaned plate beneath, the surplus collodion running into a reservoir at one corner; the frame, with plate, is now placed over the india-rubber bath, the plate dropped into its place, and sensitized in the usual way before transferring to the dark slide.

If "W. L." has experimented long and largely with tents, and has been a dry-plate man for twenty years, his experience would be valuable to many of your readers who, like myself, too poor to pay for expensive tents which do not meet our wants, set about making one for ourselves. I do not claim any superiority for my "baunting," but I have got what I cannot get at a

photographic warehouse. Rather than stagger, loaded like a porter, with a 10 by 8 or 12 by 10 camera and "Graphogenic" one mile, I would wheel my apparatus, with its conveniences, five miles.—I am, sir, your obedient servant,
INGENIO.

KEEPING PLATES MOIST AFTER DEVELOPMENT.

DEAR SIR,—Will you have the kindness, in your "Answers to Correspondents" in next week's NEWS, to inform me what your Indian portraitist, in p. 206 of this week's NEWS, refers to when he speaks of "Robinson's delightful process, the syrup?" I cannot quite make out whether, in the case referred to, the writer uses the syrup as a preservative *before* exposure, or whether it is applied after exposure and development, to keep the plate moist for intensifying after it is brought home. I suspect that a solution of vinegar and treacle boiled together would answer extremely well as an application to plates after development in Mr. Edwards's Graphogenic Apparatus, and obviate the necessity of keeping the film moist by the use of a metallic box. Perhaps, however, it might be better to employ a boiled solution of loaf sugar, with a dose of strong, colourless acetic acid, as likely to diminish the tendency to reduce the silver in the film, which the application of the more impure saccharine matter might possess.

I have very great faith indeed in Edwards's Graphogenic invention, the action of which I am going immediately to test by actual work.—Yours very faithfully,
W. L.

[The allusion in question is to the use of a mixture of equal parts of golden syrup (molasses) and water applied to the plate after development. It at once arrests development, and keeps the plate in good condition for subsequent intensification and fixing. The action of molasses in regard to reduction is of a singularly retarding nature; added to the iron developer it is one of the most powerful restrainers we know.—ED.]

PHOTOGRAPHY WITHOUT DARK ROOM.

DEAR SIR,—I find by an article by Mr. B. J. Edwards upon a new apparatus for working the wet process without a tent, that we have been working in the same direction. The contrivance I use is similar to Mr. Edwards's in principle, but widely different in detail. The idea struck me nine years ago through a friend in trouble. He had a commission for a picture larger than he had a bath to excite the plate in. He came to me to know whether I had got one. I had not. A thought struck me that he might do it in the tray he used for exciting paper in. I told him to try it. He did so to his satisfaction, so he told me.

I then thought of turning the idea to account for out-door work. I made a dish or tray of wood, and one to fit over it to hold the plate, and to serve for a dark slide as well. I thought I had made a great discovery. So I had, so far; but I then found I wanted the principal part, which was a tray to develop the picture in. I made one; and when I went to develop the picture I was in a fog, for I could not see when it was developed enough. I tried to find something so that I could see, but could not succeed, so I laid it by, and tried several schemes quite different to the first one, but with the same result; so I gave it up for three or four years, but still believed it was to be done. I tried several times after that, but could not find out what I wanted, so I laid it by again, and other things occupied my attention, and I quite forgot all about it until I saw a contrivance by Mr. Barrett, which brought it to my mind again. I worked my brain again to no purpose, so I laid it by again, but still kept thinking, till at last I saw the very thing I wanted in the PHOTOGRAPHIC NEWS, which made my heart leap for joy. It was a description of a developing tray with a glass bottom by Mr. England, for which I heartily thank him, as he was the means of pulling me out of the mire which I had been floundering in so long.

I should have sent a description of it at the time, but being called away I have had no opportunity since of doing so; and now Mr. Edwards has got his out and patented I do not know what to do, as he may think I took the idea from him, and want to do him an injury by infringement upon his rights. I have not seen his, nor heard of it till I saw the article in the NEWS. My only object is to help others, if I can, without doing any harm. If you will give me your opinion upon the subject in the correspondence column you will oblige your humble servant.
E. MARSHAM.

[We shall be glad to see a detailed description, if possible, with diagrams, of our correspondents' contrivance, and we can

then better form an opinion. If it be the same as that of Mr Edwards, even with admitted priority of invention, it would infringe the patent.—ED.]

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

THE usual monthly meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, the 9th inst., Mr. J. GLAISHER, F.R.S., in the chair.

The minutes of a previous meeting having been read and confirmed, Mr. A. Johnston, of Wiek, was duly elected a member of the Society.

The CHAIRMAN announced with regret the continued illness of Mr. Hughes, and the consequent indefinite delay in the production of his paper on the carbon process.

LORD LINDSAY exhibited the ingenious apparatus attached to his telescope for exposure of a number of plates in succession to the image of the sun during the eclipse.

After some conversation, and a vote of thanks,

Mr. ERNEST EDWARDS, B.A., read a paper on the Heliochrome Printing Process, which was identical with that read before the Society of Arts (see p. 224). A number of fine specimens were exhibited, illustrating the capacities of the process, and the mode of printing was practically demonstrated, prints in different stages being produced and exhibited to the members. A print with little half-tone, but vigorous blacks and whites, as produced by a stiff ink; a print with much half-tone, but no vigour, produced by rolling only with thin ink; and then a perfect print, rolled with both inks, gave much interest to members.

In the course of conversation on the subject,

Mr. BEDFORD asked if it would be possible to produce a set-off on a stone, in order to produce tint stones for prints in two or three tints, as such a capacity would give the process great value for certain kinds of reproductions.

Mr. EDWARDS replied that all facilities of that kind possessed by lithography were available with the process.

After some further conversation, and a vote of thanks, the Chairman announced that Mr. Edwards had presented examples for distribution with the Society's Journal, and that each member present would also be presented with a specimen.

The CHAIRMAN also called attention to some fine cameo vignettes by Mr. G. Hooper, and to the specimens of the photographs of the Amateur Photographic Society around the walls. He also called attention to a number of useful contrivances for aiding manipulation, exhibited by Mr. Whiting.

Dr. MANN exhibited a very beautiful negative of the Pleiades and other stars, obtained by Mr. Rutherford. Some interesting details of the star photographs of Mr. Rutherford will be found in Dr. Vogel's recent articles in our pages on astronomical photography in America.

After some votes of thanks the proceedings terminated.

Talk in the Studio.

ANOTHER USE FOR PHOTOGRAPHS.—During a recent parliamentary debate on the Women's Disabilities Bill, Mr. Scourfield, in opposing it, expressed his disbelief in the genuineness of petitions sent to the House, professed to be signed by women desirous of votes. "As a means of testing whether the women of England really wished for the power of voting, he would suggest—and commend the suggestion to the attention of the Chancellor of the Exchequer—that every person signing a petition in favour of the extension of the franchise to women should be instructed to accompany the signature with a photographic portrait, and that Mr. Darwin or Professor Owen, who could distinguish the sex of animals from very trifling signs, should be retained to decide from an examination of the pictures as to the sex of the person represented, for he could not help suspecting that many of the signatories were not women, but men in women's clothing (laughter)."

ENLARGED AND REPRODUCED NEGATIVES.—We have just been favoured by Mr. J. W. Pickering with three very perfect photographs, which very excellently illustrate the value of his method of reproducing and enlarging negatives, described in our last YEAR BOOK. The subject is an alto-relievo of the Ascension of Christ, and is admirably photographed; the original being 6 inches square, another is 10 inches by 10 inches, and another 12 by 12 inches; and it is absolutely impossible to detect a trace of deterioration or lack of excellence of any kind in either of the enlarged reproductions.

To Correspondents.

A CONSTANT SUBSCRIBER.—The size of the mount for the Victoria card is 5 inches by 3½ inches. The size of the print is 4½ by 3 inches, and that is, of course, the size of the cutting-glass. The margin round the print is one-eighth of an inch sides and top, and three-eighths of an inch at the bottom. A saturated solution of sulphate of iron will produce crystals if a portion of the water is evaporated, or if the weather becomes cold, as the solvent power of the water is less at a low temperature than at a high temperature. The presence of a few crystals at the bottom of the bottle is satisfactory, as indicating that the solution is saturated. The addition of a little more water will readily dissolve the crystals.

1871.—Use a collodion with good body, containing very little bromide, and sufficiently long kept to acquire the colour of pale sherry; develop with a 10-grain iron solution containing a little gelatine; and intensify with pyrogallie acid and silver. If, after fixation, you require greater density, apply a 10-grain solution of bichloride of mercury, wash, and apply a 1-grain solution of iodide of potassium. You will generally acquire intensity enough by these means to give a vivid black-and-white print. Should you desire still further density, you may use pyro and silver again, after the iodide solution. 2. Only resort to boiling down a bath after neutralizing and sunning have failed.

ALF.—An acetate bath should always be mixed a day or two before it is used. If used at once it is not only apt to bleach, but also to produce a factitious appearance of toning, which disappears when the print is immersed in the fixing bath.

W. FAUSSETT.—Your gold toning bath made with vinegar instead of water cannot be used with advantage. The best plan will be to add protosulphate of iron to reduce the gold, wash the black precipitate of gold which will be thrown down, and then reconvert it into chloride by means of nitro-hydrochloric acid.

A. REEVES, referring to the claim of Mr. Jeffryes in relation to "seroll portraits," admits his priority of suggestion, but thinks that the crude suggestion does not constitute "working out an idea." As both gentlemen have contributed their quota to the method, any relative disparagement of each other's efforts is not desirable.

R. M. D.—The exposure for a collodion positive need not be so long as for a negative, but the chief difference is in the mode of development. For the positive it is desirable to add a little uric acid as well as acetic acid. A solution containing

Protosulphate of iron	15 grains
Acetic acid	15 minims
Nitric acid	1 minim

to an ounce of water will answer well. The development must not be continued nearly so long as for a negative, but stopped, and the solution washed away the moment the details have become visible. Fixing with cyanide is preferable to fixing with hyposulphite. We prefer dark velvet for the backing; black varnish gives a less pleasing effect. Crystal varnish, made by dissolving gnu dammar in benzole, answers well for varnishing positives.

C. E. F.—We are quite familiar with the difficulty you describe, but the steps you have taken to surmount it are precisely the opposite to those required. Instead of reducing the activity of your developer, you need to increase it. With an active developer reduction commences at the moment of contact; with a developer containing excess of restrainer the development does not commence rapidly. The sweep of the solution on the plate drives away a portion of the free nitrate before development commences, and so leaves the place upon which the solution was poured thinner, having been robbed of a portion of its free silver. Certain kinds of collodion are more liable to this defect than others, but by the use of a newly mixed developer of 15 grains of protosulphate and 15 minims of acetic acid to an ounce of water, and care in throwing the solution over the plate gently, these stains may generally be avoided. If you use a flat glass dish for development, like that recently described by Mr. England, you at once escape all difficulty. A vertical bath may be used, but the flat dish is better, and admits of the use of a small proportion of solution fresh for each plate.

T. B. HUTTON.—We are glad that you find the ridge-roof studio, built and arranged as we have so often recommended, so successful. The examples of portraiture enclosed are very good. The question how far good photographs need retouching, or how far they may be improved by retouching, is a wide one. As a rule, a little skilful retouching by a capable artist will render a photograph more pleasing without being less truthful. It may not need retouching, but it may be improved by it. Bad and unskilful retouching, and all excess of retouching, which works out all traces of life and nature, a kind of retouching which is only too prevalent, is much to be deprecated, as destroying all the truth of photography, and not substituting the truth of art.

Several communications in type are compelled to stand over.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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COPYRIGHT IN PORTRAITS.

NORWITHSTANDING that much has been written on the subject of copyright in photographic portraiture, and that the question has been repeatedly raised in courts of law, considerable misapprehension and uncertainty seem to prevail as to the actual law on the subject. We are by no means sure that we can determine the question in all its bearings with anything like absolute certainty, as the wording of the statute is undoubtedly sufficiently clumsy and ambiguous to admit of differences of opinion as to its meaning. On one or two points of importance to photographic portraitists it is, in our estimation, however, tolerably clear, notwithstanding the misconceptions which prevail. We shall very briefly state our view of the matter.

The misapprehensions to which we allude are various. The first we shall mention is a singular one. A correspondent sends us a letter he has received, and asks our opinion as to the dictum it contains. It runs as follows:—

“2nd May, 1871.

“DEAR SIR,—In reply to your letter of 29th ult., I maintain that, by the universal custom of the trade of photography, the person photographed has no special property in the negative, which undoubtedly belongs to the photographer; consequently he is justified in supplying from such negative any number of photographs to any number of disinterested parties.”

It is scarcely necessary to affirm, we imagine, that the conclusion here expressed is utterly erroneous. That the negative is the property of the photographer we unhesitatingly maintain; but that he is therefore at liberty to supply prints to other persons than the sitter without the consent of the sitter is manifestly opposed at once to equity and common sense. It is not necessary to point out the inconveniences which might arise from such a course; nor can we define the exact legal risks involved; but it is probable there is more than one remedy for the sitter in case the photographer sells his portrait without his permission. In our view, no copyright is obtained by either photographer or sitter in the ordinary transaction of the business of a photographic portraitist. A copyright in a photographic portrait can only be acquired under special circumstances not generally existing, but to which we shall refer presently. The sitter has, it has been alleged, a property at common law in his own face, and, we presume, in the design thereof; in which case he could maintain an action against the photographer for disposing of copies of that face without his permission. The photographer is, moreover, entrusted with a photographic copy, in the form of the negative, of the sitter's semblance, for a special purpose, and any use of that negative for other purposes would constitute a breach of trust for which the photographer could be rendered amenable.

But there are circumstances under which a copyright in

a photographic portrait can be acquired. The copyright in a photographic portrait commissioned in the ordinary manner can be acquired by either photographer or sitter by the simple process of an agreement or assignment in writing. Without such written agreement we hold that no copyright is acquired by either party in the photographic portrait as usually commissioned. The first section of the Act reads as follows:—

The author, being a British subject, or resident within the dominions of the Crown, of every original painting, drawing, and photograph which shall be or shall have been made either in the British dominions or elsewhere, and which shall not have been sold or disposed of before the commencement of this act, and his assigns, shall have the sole and exclusive right of copying, engraving, reproducing, and multiplying such painting or drawing, and the design thereof, or such photograph, and the negative thereof, by any means, and of any size, for the term of the natural life of such author, and seven years after his death, provided that when any painting or drawing, or the negative of any photograph, shall, for the first time after the passing of this act, be sold or disposed of, or shall be made or executed for or on behalf of any other person for a good or valuable consideration, the person so selling or disposing of or making or executing the same shall not retain the copyright thereof, unless it be expressly reserved to him by agreement in writing, signed at or before the time of such sale or disposition, by the vendee or assignee of such painting or drawing, or of such negative of a photograph, or by the person for or on whose behalf the same shall be so made or executed, *but the copyright shall belong to the vendee or assignee of such painting or drawing, or of such negative of a photograph, or to the person for or on whose behalf the same shall have been made or executed*; nor shall the vendee or assignee thereof be entitled to any such copyright unless, at or before the time of such sale or disposition, an agreement in writing, signed by the person so selling or disposing of the same, or by his agent duly authorized, shall have been made to that effect.

It has been maintained by some that the sentence which we have placed in italics gives the copyright to the vendee, or to the person on whose behalf the portrait is executed, without any written assignment, and, hence, that the copyright rests in the sitter; but it seems to us that this is negatived by the closing sentences of the section, which state that the vendee shall not be entitled to the copyright except by an agreement in writing. But even if this were not so, it is clear that in any case the sitter would not be entitled to the copyright, unless he purchased the negative as provided for by the terms of the statute. And further, to secure the copyright to the sitter, even if he were entitled to it, he must comply with the registration conditions, which not one sitter in ten thousand would dream of. Under the ordinary circumstances of photographic portraiture without written agreement or registration, we maintain, then, that no copyright exists.

But there are circumstances in which a copyright is obtained by the photographer without any agreement or assignment whatever. The author of any original painting, drawing, or photograph, produced, not as a commission, but by his own choice, acquires an exclusive property or

copyright of the design therein, and he retains this until he for the first time sells it, and in the case of the photograph, he retains it until he for the first time sells the negative, as the statute expressly provides. This being so, we are distinctly at issue with the views maintained by Mr. Cunningham in a letter on another page. He affirms that in a recent case of alleged piracy, Mr. Taunt, the photographer, had no copyright in his photograph of the Oxford boat crew, because no written agreement between himself and the crew had been entered into. But if the crew, as was doubtless the case, sat to Mr. Taunt at his request, then assignment or agreement in writing was in no sense necessary, any more than would be the agreement of the artist's model sitting for a painting. The photograph was not commissioned by the crew, but produced by the photographer for his own purposes, and the copyright rests in him until he disposes of the negative. The observation of Mr. Lewis was, therefore, no *non sequitur*, but a bare statement of the fact. The case of Col. Burke has no bearing on that of Mr. Taunt, as he did not sit to the photographer for the photographer's own purposes. Neither would the Oxford crew, or any of them, have any right, we apprehend, as Mr. Cunningham suggests, to prevent the farther publication of the group. The supposed case of Mr. Cunningham would not apply. If Mr. Cyanide, being commissioned to take the portrait of Mr. Blank, produced, besides the commissioned portrait, another negative to use for his own purposes, he would subject himself to legal action, the form of which, as a layman, we need not discuss. Such conduct would, moreover, be a manifest breach of trust, which, independently of its legal risks, would so thoroughly ruin the reputation and connection of any portraitist, that it is scarcely a contingency sufficiently probable to consider.

The notion that a celebrated person sitting to a photographer constitutes a valuable consideration in the sense held by Mr. Commissioner Kerr, and argued by Mr. Merriman, appears to us to be the sheerest nonsense. The consideration as mentioned in the Act is the equivalent of payment. The question at once arises, therefore, payment for what? If there be no commission or purchase, there can be no payment. If the royal duke, or Mr. Bright, or boat-crew, sit to the photographer at the request of the photographer, and for his purposes, there is nothing for any of them to pay for, and therefore their sitting cannot be regarded as the substitute or equivalent for any payment. If the royal duke, or M.P., or boat-crew applied to the photographer for a number of portraits, and offered as payment to sit, and to enter into an agreement assigning the copyright of such portraits, then the sitting might be regarded as part of the valuable consideration mentioned by the statute; but where the sitting is made at the request of the photographer, and for his own purposes, it is clear that the notion of treating the sitting as a consideration is, *pace* Mr. Commissioner Kerr and Mr. Merriman, utterly absurd.

The motives of the Oxford crew or of other distinguished persons in sitting at the request of photographers for portraits for publication scarcely affect the question in any way, legally or morally. If the photographer attain his copyright in accordance with the provisions of the statute, the intentions of the sitter as to the steps the photographer shall be at liberty to take in vindicating his copyright do not affect the question. Nor if the conditions of the statute are not complied with, will good-will on the part of sitter make the copyright valid. But if the sitter possessed the power, which Mr. Cunningham suggests that eminent persons fancy they have, of ordering the sale of a portrait to cease at any time they think fit, they might do the photographer serious injustice, and cause him serious loss. The contingencies, however, to which sitters, photographers, or pirates are subject, only affect the question so far as they communicate additional importance to a clear understanding of the matter. If photographers in the position of Mr. Taunt have a copyright without written agreement with any one in photographs which they produce uncommissioned, solely

for their own purposes, the consequences of infringing such copyright, as must the consequences of all law breaking, rest on the heads of the law breakers, and it is cruel kindness to attempt to make the pirates believe that they are the victims of the capricious decisions of incompetent magistrates. In the case of Mr. Knight, it appears that he voluntarily run the risk of breaking the law by selling a print about the copyright of which he was uncertain, the only information on the subject being derived from a boy twelve years of age, whose parents had been convicted of piracy. Mr. Cunningham sympathises with the pirates because he believes the law is strained to oppose them. We sympathise with them so far as they are poor, ignorant, and sorely tempted, but not where, without the excuse of ignorance and poverty, they voluntarily run risk of breaking the law and defrauding the honest trader.

A NOVEL NITRATE BATH.

A NEGATIVE nitrate bath of a very novel and curious character is described in the letter of our esteemed American correspondent. Mr. Black, of Boston, has forwarded to him a large negative, the plate for which was excited in a nitrate bath containing only fifteen grains of nitrate of silver to each ounce of water. This is, of course, an unusually weak solution for a negative bath, but the especial novelty does not consist in this fact. The negative bath is, as our readers know, rarely employed of a strength less than thirty grains to the ounce; but we have known cases in which an old bath which has been kept in successful working for some time has been found, on careful testing, to have been reduced to a strength of eight grains. But the startling peculiarity of Mr. Black's bath consisted in the fact that it contained not less than fifteen ounces of nitric acid in five gallons of nitrate of silver solution, or about half as much nitric acid as nitrate of silver. Col. Stuart Wortley described a bath for producing instantaneous pictures in which he employed two drops of nitric acid to each ounce of silver solution; but Mr. Black's bath contains more than four times that proportion. In the old days of collodion positives, we remember a bath being recommended for use with a highly bromized collodion containing four minims of nitric acid to the ounce of solution. In using more than double that proportion Mr. Black discards bromides, and uses a chloride in the collodion, in what proportion, or in what relation to iodide, is not stated. The claims made for this new formula are, that it gives equally good or better results, and works more quickly than the usual method with a forty-grain bath without excess of acid, and the deposit of silver, contrary to what might have been anticipated, is stated to be finer than that obtained in the ordinary manner. Mr. Black is an exceedingly skilful and thoroughly experienced photographer, whose dictum is of value in relation to any novelty he may recommend. We shall look with interest for further development of this novel style of working.

OBITUARY.—SIR JOHN F. W. HERSCHEL, BART.

THE death of Sir John Herschel removes one of the group of philosophers to whom photography owes its birth. Contemporaneously with Daguerre and Talbot he was experimenting in the production of sun-pictures, and was the undoubted discoverer of the use of hyposulphite of soda as a fixing agent. In January, 1839, before the publication of the experiments of either Daguerre or Talbot, Sir John Herschel produced a camera image of his telescope on paper prepared with carbonate of silver, and fixed with hyposulphite of soda. "This," Sir John observes, in a letter addressed to us, "was, I believe, the first picture ever fixed from an optical image ever taken in this country; at least, I have heard of none earlier." His first experiments with the hyposulphites as solvents of the salts of silver were published

in the *Edinburgh Philosophical Journal* in January, 1819. Throughout the whole of his long scientific career Sir John Herschel has devoted himself ardently to every form of research connected with the physical laws upon the operation of which photography is based; and besides valuable theoretical contributions on the science of light, he has added to photography many practical processes. Various of these (classed, at the time of their discovery, under various heads, amongst which we may name the cyanotype, the chrysotype, the amphitype, and other processes), although not now applied in their original form, have furnished the bases of operations in general use. In his early experiments he discovered that the range of substances sensitive to the action of the sun's rays was much more extensive than had been imagined, and expressed a conviction that the idea associated with photography consisted no longer in "an insulated and anomalous affection of certain salts of silver or gold, but one which, doubtless, in a greater or less degree, pervades all nature." To mention the specific facts of photography associated with the labours of Sir John Herschel would involve the writing of a full memoir of his life; we may mention, however, that to him was due the discovery of the extreme heating and actinic rays of the spectrum beyond the red and the violet; to him was due the first use of glass plates in photography; and the varied range of iron processes. He experimented largely in the production of photographic images in natural colours, and with some success. One of his latest contributions to photographic literature was a communication which he addressed to this journal upon this subject, in which, without expressing a disbelief in its possibility as a fact of any practical value, he furnishes an illustration of his idea of its difficulty. He remarks:—

"The problem of chromo-photography here presented may be likened to that offered to the decipherer who should be called on to discover the purport of a succession of letters which, interpreted by their proper key, should land him, not in an intelligible grammatically constructed and orthographically spelt English document, but in the same document concealed in another cipher equally or more difficult, and requiring to be read by its own proper key, which need not of necessity be that of the first cipher." Accompanying this communication Sir John forwarded a cryptographic puzzle to test the ingenuity of our readers.

Few men have occupied a higher position as a scientific philosopher than Sir John Herschel. At once an original investigator in a large range of physical sciences, and an expounder luminous and popular, but never superficial, his impress upon his age will never be effaced, nor his place readily filled. Probably no man has contributed so largely to the science of photography as he, his interest continuing from the earliest days of the art to the last days of the philosopher. He died, full of years and full of honours, on the 11th instant, aged seventy-nine years.

AMERICAN CORRESPONDENCE.

OUR EXHIBITION—CONCERNING HYDRATE OF CHLORAL—NITRIC ACID INSTEAD OF NITRATE OF SILVER.

Our Exhibition, to be held in this city in June, is now absorbing more attention than anything else, and great preparations are being made to have a most interesting and profitable time. In addition to the exhibition of photographs, chemicals, and apparatus, which we expect will crowd one of the largest halls in the country, and where we hope to see England well represented, there will be two of Prof. Morton's inimitable lectures on light; a grand lantern entertainment, which will bring into use a variety of lights adapted to the purpose. The meetings of the Association, aside from business matters, will be devoted mainly to the reading of scientific papers from those eminent in the art, and to discussions on practical topics; the Committee on the Progress of Photography will make an interesting report; and the Committee on the Scovill and Holmes Medals

will also have many interesting things to report. Among the matters already offered to the committee in competition for the medals is a process for burning-in on glass; another for producing "imperishable" photographs on porcelain; others for retouching varnishes, plate-holders, backgrounds, &c.; all of which are to be examined for their value as improvements in the art of photography. The whole will open with a grand public reception; and to all we invite our *conferes* from abroad, promising to take special care of them if they will but come. We are confidently expecting our good friend the Editor of the News as our guest.

Concerning Hydrate of Chloral.—You have already suggested the use of this compound in collodion to your readers. With us we find it most effective in ferrotype collodion, as it seems to impart an extra brilliancy to ferrotype pictures. Mr. David Duncan writes me concerning it as follows:—

"Recent experiments with hydrate of chloral in collodion, as suggested in the *Philadelphian Photographer* a short time since, have been so far satisfactory. Dissolving about one per cent., as recommended in collodion, certainly increased the sensitiveness, although not to an extraordinary degree. A cadmium collodion, which gave pictures slightly veiled, yielded clear negatives when the chloral was added, without loss of sensitiveness. It dissolves readily, and does not leave cloud or sediment. It imparts also an extra brilliancy to ferrotypes, and does not, apparently, affect the bath.

"The hydrate of chloral is now extensively used in medicine, both in Europe and this country; and although discovered thirty years since by the famous German chemist Liebig, it has attracted the attention of chemists, medical men, &c., but a very short time, being brought before the Medical Society of Berlin for the first time June 2nd, 1869. It results from the action of chlorine on alcohol, the latter of which gives up five of its six equivalents of hydrogen to the former, producing five equivalents of muriatic acid, and combines, in their place, with three equivalents of the chlorine to form the substance we write of. The change is supposed to take place in the following manner:—The alcohol ($C_2H_6O_2$), by the loss of two equivalents of hydrogen, becomes aldehyde ($C_2H_4O_2$), of which the radical acetyl (C_2H_3) gives up its three equivalents of hydrogen, and takes three equivalents of chlorine, forming a new radical (C_2Cl_3), and this, combining with one equivalent of the oxygen, and with the remaining equivalent, each of hydrogen and oxygen, form chloral ($C_2Cl_3O \times HO$), or a variety of aldehyde, in which the three equivalents of hydrogen of the radical are replaced by three equivalents of chlorine.

"Anhydrous chloral is an oily, pungent fluid. On standing it undergoes decomposition, and ultimately becomes solid. It combines with water to form the crystalline hydrate, therefore, as pure chloral readily undergoes decomposition, the comparatively stable hydrate is the form in which it is best kept for use. It is used in medicine because it is an excellent anodyne and soporific, equal, in these respects, to chloroform, without the unpleasant and often inconvenient local irritation produced by that remedy. For giving a nervous and excited photographer a good night's rest after a hard day's work it is invaluable. The dose is from thirty to fifty grains."

Nitric Acid instead of Nitrate of Silver.—Here is a photographic nut for you to crack. It has just come to my hands, and I have not had the time to try it yet. It comes from one of our oldest and best photographers, and is, therefore, worthy of trial. I allude to Mr. J. W. Black, of Boston, who says:—

"I send you a 11 by 14 negative, made to-day, taken under a not very favourable light, in a silver bath containing only 15 grains of silver to the ounce of water, with 15 ounces of C. P. nitric acid to five gallons of solution. The bath has been in use one week. I use no bromine, but chlorine instead in my collodion; found it to make as good a negative as with the usual amount of silver of 40 grains to the ounce, and worked very much quicker."

Mr. Black says that it makes a finer deposit of silver, works smoother and softer, and is more economical; he did not see the use of so much silver in a bath when so little was used. A few years ago 80 and 90 grains of silver were used in printing, now hardly any one uses over 40 grains. There is no danger of getting heavier shadows without bromine in collodion if the proper exposure is given.

I submit this to you, and shall send you some of the results presently.—Very truly yours,
Philadelphia, May 1st, 1871. EDWARD L. WILSON.

ENLARGED LANDSCAPES.

BY H. BADEN PRITCHARD.

I CANNOT help thinking that the subject of large photographs, to which Mr. Dunmore called attention on a recent occasion, is one which, sooner or later, will attain to very great importance. It seems to me such a pity that the grand scenery of Switzerland and the Tyrol, which is so frequently reproduced in stereoscopic and cabinet pictures, should not be rendered in a size and form more suited to the subject, so that we might be in a position to form a fairer and more true conception of the original landscape. The tiny sketches of this kind now taken are all very well for the album and the stereoscope; but the question arises, whether we cannot obtain pictures of larger dimensions, such as would be suitable for the library or dining room, and would take the place of engravings that now usually occupy our walls? Anyone who has viewed one and the same photograph in its original size, and then enlarged upon a screen by the solar camera or lime-light apparatus, cannot have failed to perceive the very marked difference exhibited by such pictures; the impression upon the mind of the spectator being much grander in the case of the enlargement.

Of course, there are many difficulties to be urged against the production of these monster prints, but these are, I think, for the most part to be avoided. A special apparatus for enlarging is required, as also a special operator well versed in his work, for it is not to be supposed that in this branch of photography, as in many others that are being developed from day to day, that the ordinary manipulator can undertake delicate manipulations of this kind without the possession of certain appliances and some amount of skill. Indeed, to produce successful enlargements of this kind it would, no doubt, be necessary, supposing they were obtained by direct enlargement in a solar camera—the method, beyond doubt, best suited to the purpose—to give one's whole attention to the subject, and to study it as a distinct branch of the art.

By making a special business of this class of photography, experience and skill would soon be gained, and more perfect pictures obtained than it would be possible for an ordinary professional photographer, engaged in miscellaneous work, to produce. It is, in truth, a common error with photographers of the present day to attempt too much. Our art is getting so extended, its applications and modifications are so numerous, that it is simply impossible for any one man to keep himself *au fait* with every method or process that is made known; if he desires success, he must confine himself to one particular branch, and pursue it alone and uninterruptedly, otherwise he will be powerless to reach such pioneers as may have already made way along that particular route before him.

But there is something else to be mentioned in regard to pictures of this kind. With the general public it has always been considered a *sine qua non* that all photographs should be perfectly sharp and distinct, and that, indeed, they are best seen through a powerful magnifier. Now, so long as this idea prevails, it will be impossible almost to render enlargements popular, as they will always fail to satisfy the vulgar test usually applied. Once, however, get the public to look upon these large views in the same

way as they would paintings and engravings of like size—viz., at a distance whence a comprehensive view may be obtained—and there is no further doubt of their ultimate success as a commercial speculation. Who would not, for instance, purchase enlarged photographs of some of England's and Gordon's charming landscapes, were such works of art obtainable printed in permanent pigments, and sold, perhaps, for half the price of an engraving of similar size? The gems of lake and mountain scenery produced by Constant-Delessert are, again, eminently suited for amplification, as, indeed, are all those pictures of exquisite delicacy which have received little or no intensification.

As already stated, it is by no means every photographer who can manage these enlargements. If produced by means of the solar camera, some very expensive apparatus and considerable experience are necessary. But these points should not be considered as serious obstacles in the matter, seeing that an important branch like this should furnish work more than enough for any photographers devoted exclusively to this class of labour. Portrait enlargements have never been much favoured by the public, and the reason of this is obvious: the amplifications were often as large as—nay, even larger than—the original models, and, besides occasional distortion, the numerous little defects interfered materially with the complexion and features, which invariably required retouching before being presentable. With landscapes, however, when enlarged even to the most colossal dimensions, no chance of distortion need be feared; but, on the contrary, small details are thus thrown up and developed, which previously were totally hidden from view. No better proof of this can be given than that afforded by good enlargements in a dissolving views apparatus, when the appearance exhibited is one very closely allied to nature itself.

THE PROPOSED TAX ON PHOTOGRAPHS CONSIDERED.

BY W. T. BOVEY.

STUDENTS of modern chemistry are often wont to smile over the absurd infatuation which induced the alchemists of old to waste a life of laborious research in vain attempts to transmute the baser metals into precious gold. It must, however, be admitted, as evidence in favour of those ancient fosterers of chemical science, that their governing ideas were at least consistent, inasmuch that they sought means to convert matter of a grosser kind into a substance possessive of enhanced purity and value. They certainly made no attempt to produce something out of nothing. Giants of intellectual perseverance, they worked by the light of their day and generation, which certainly did not include the advantages of gas, paraffine, electricity, and lucifer matches. We, possessing all these, may work in a blaze of light, so we put on a great show of superior wisdom, and egotistically pool-pool the folly of our erring ancestors. Yet, if truth must be told, we are bound to confess that, like the portly simpletons of "Gotham," we are wont sometimes to perform very foolish parts in the drama of life, not the least of which is the new-fangled notion, now growing into fashion, that conceives of the possibility of extracting something out of nothing.

Bombastic and empty-headed communists, and other remodelers of society of like kidney, are seeking to elevate labour by knocking away the natural props on which all useful labour depends for its protection, procreation, and existence. Frantically those purveyors of logicless rhetoric shout "liberty," whilst they crush poor liberty beneath their iron rule. Loudly they boast of equality, whilst they are blind to the fact that equality implies a cessation of labour, for labour made aristocratic cannot stoop to "vile work," and a community subsisting on non-reproductive means must soon sink into a state of bankruptcy; and which, unchecked, would drive men back to a savage state of existence, and an internal disorder. *Wealth cannot be created out of*

nothing. Happily, the ridiculous doctrines taught by communists can never take deep root on English soil. Your true Briton loves work, or, at least, he boasts of such a liking. Rest the matter as it may, he goes on working, and only kicks against fate when poverty or the tax-gatherer crosses his path to disturb the even tenor of his way. Yet both are natural accompanists of civilization, and whilst poverty will ever exist, the periodical budgets of Chancellors of Exchequer will be equally lasting. What a boon would it prove to national purse-bearers if they only knew how to provide the something needed to grease the wheels of State out of nothing! "Take nought from nought, remains nought;" at least, a man of figures reaches this finding in the arithmetical problem, and, as a rule, Chancellors of Exchequer are pretty apt in the vulgar rules taught them in days of boyhood, which rules, in the main, are generally found correct. But, although the impossibility of extracting something from nothing can be comprehended by any one of sound intellect, the possibility of drawing a great deal from a very little requires a higher range of mental power to readily understand; most certainly, none but a born genius could hit upon the plan.

All hail! that genius lives, moves, and has a being. We "Britishers" obtain his ideas from over the water. Our Chancellor has received the earliest intimation of the discovery of a salve that, "well rubbed in," would heal the sore places in his budget. "Tax vanity," prescribes the genus. Now, vanity being vaporous—a mere nothing—our Chancellor cannot, of course, see his way clear to make good his defeat by levying a tax on nothing. Our genius is, however, equal to the occasion. "Photographs are offsprings of vanity; tax them" Behold the simplicity, the wondrous equality, of the arrangement! The larger the amount of vanity, the more frequent will it sit before the camera; thus vanity will be taxed in just proportion with its degree. Besides, "the negatives cost little or nothing," and the prints are produced at about the same outlay of cash. A deal of money was presented to the lucky individual who suggested the perforation of postage stamps, and it is scarcely probable that his saviour of our national solvency can fail to meet with his reward. Mr. Lowe, in duty bound, should at once snap his fingers in the face of opposition. Stay; he has recently burnt his fingers whilst playing with lucifer matches; let us hope that he will be restored to his normal coolness; that he may be able to reflect ere he is tempted to act on the arch-tempter's proposal. And how tempting the conditions! "Photographs cost little or nothing for their production." I am inclined to think that the astute Chancellor is too well versed in the intricacies of political economy to catch at the bait so enticingly presented. That wily gentleman is well aware that there are many things besides photographs which might be taxed on similar grounds. He is fully aware of the fact that nature offers the whole of her mineral wealth and vegetable production in exchange for labour, and that the value of an object is simply the value of the labour expended in its production. Articles which require but little skill to produce always command a supply of labour in excess of the demand, therefore such objects are sold cheap. Under circumstances where exceptional skill that requires long training is needed, the articles produced will ever command high prices, because exceptionally high skill is rarely injured by competition. There are, of course, instances of sudden riches being obtained by lucky findings of gold or precious stones, but if we take the losses of the unlucky searchers into consideration, the fortunate one has scarcely found that which, if divided, would remunerate the whole of his fellow seekers. Nature is wonderfully harmonious in her dealings, depend upon it.

Now, taking it for granted that the materials of which a photograph is composed cost little or nothing, it would prove no difficult task to pile up necessary and contingent costs which would suffice to show that a photograph is not produced at so cheap a rate as is generally supposed.

1st. There are the time and labour expended on the production. Both are of money value.

2nd. There are the building, the cameras, lenses, accessories, &c. These cost a considerable sum, the outlay for which the photographer has an undoubted right to recover by dividing the amount among the number of pictures he sells.

3rd. There is waste of chemicals, occasioned by re-sittings; repairs and depreciation of working plant; wages to pay; bad debts to allow for; printing and stationery to be provided; in short, if we go into all the details of expenditure, we might readily expect to convince the most sceptical that a photograph, after all which has been said to the contrary, does cost something more than "next to nothing," for, in its production, a vast amount of diversified labour has been expended.

Apart, however, from the question of cost of production I ask, Would it be politic to tax photographs? I reply emphatically, it would not. A tax, to be kindly received and tolerated, must be concealed, as far as possible, from the public gaze. Simultaneously, or in turn, we have had taxes levied on our teas, sugars, coffee, bread, wines, beer, and spirits. And that famous taxing-master Pitt, after levying duties on window glass and daylight, he, "Lulu" fashion, took a tremendous leap, and alighted in the salt-box. But in most of the articles taxed, the duty is paid into the State coffers before the goods reach the retail dealers; and custom has made the imposts sit tolerably easy because they remain in the background. Our clever Chancellor of the Exchequer must be strangely ignorant of English prejudices, or he would never have made shipwreck of his Budget. A more fatal error he never committed than when he proposed a tax on matches; and equally fatal would the taxing of photographs prove, if photographers for the once will unite, and, by cohesive effort, show a bold front should the tax-collector be set on their track. If photographs are to be taxed, enlist the sympathies of the public by giving them to understand that the extra burden must be cast on their shoulders. Make them aware that, for the sweet-sounding "*Ex luce, lucellum*," an extra halfpenny must be charged for each copy of the motto. Such an impost would be hated by the "vain" public; and, to stare the broad truth in the face, those who watch the signs of coming events see that society grows democratic in its notions. It will pay taxes readily, but they must not be too obtrusively paraded.

If, in the future, it is seriously intended to tax photographs, I would strongly urge on Mr. Lowe, or any finance minister who may adopt the scheme, to levy the duty on the raw material, for a tax on the finished photograph would be both impolitic and intolerable. Speaking personally, I regard indirect taxation in any form to be a great mistake. It might work smoothly because it has been engrafted in our institutions by custom, but it would be by no means difficult to show that consumption is lessened and labour curtailed by its operation. Besides, it presses unequally on individuals; the family man is taxed for the non-producing children who are destined to maintain the State hereafter; the miser enjoys immunity from taxation because of his niggard abstemiousness, and so on. But I am drifting into the depths of economical science, so must bring up short to offer, by way of conclusion, a word of instruction and advice.

Photographers! at the first hint of coming danger, rally around one common standard, appoint a committee to organise opposition, and the lever of opposition, if judiciously handled, will, as a matter of course, succeed. If the small cost of a photograph is urged against you as an excuse for taxation, point to the canvas, paint, and brushes of the painter artist. I have just been told of a picture now hanging at the Royal Academy which realised £8,000, and took eight months to paint. Why not tax such pictures as that? The material surely cost proportionately less than the material of which a photograph is composed! We are

told that *art* must remain untrammelled—free. Well, we have certainly a dearth of art culture in England; but if Mr. Lowe will only read the excellent article on the subject by Tom Taylor, he will perceive that photography is our sheet anchor, for by its aid *fac similes* of the most famous works of art are being cheapened, and made accessible to the million. There has hitherto existed a deplorable lack of taste among English artisans, simply because art products have been kept beyond the reach of their slender means. A love of that which is beautiful is as inherent in an Englishman as in an equally taught foreigner. But our continental friends of Germany and France enjoy superior advantages. It was but a few years ago that the walls of every English cottage home were disfigured with glaring daubs made still more hideous by dottings of gold and silver. The workman was regarded as a mere child, and amused accordingly. Photography has done much to revolutionise all that nonsense. Keep the tax-gatherer from the art, and it will in time do for the English labourer what it has already accomplished for the more fortunate German. As labour is wealth, a nation's interest is best studied by improving the capabilities of the producers. A tax on the means of conveying knowledge means the intellectual impoverishment of the poorer members of a community, and that kind of impoverishment denotes a growth of moral degradation. The human mind must have something to feed on—wheat or tares. The duty was removed from paper. Oh, how glorious the fruits of the withdrawal! Books cheapened; newspapers multiplied by tens of thousands; and who can calculate the results? I cannot, for the fruits of knowledge are boundless.

ON FIXING AND INTENSIFYING COLLODION NEGATIVES BY DAYLIGHT.

BY HERMANN KRONE.*

To obtain soft negatives with delicate half-tones, it is usual, as we know, not to develop the plates too deeply, but, if necessary, to intensify after fixing. Those who are in the habit of fixing with hyposulphite of soda require to exercise extra care in the washing of the plate, and cannot even then prevent the presence of a small quantity of this salt, which, by reason of the capillary action in the pores of the image, remains in the film. On this account it may be asserted that the more carefully and thoroughly a hyposulphite negative is washed the more durable will it be. Granted that careless washing influences, in any case, the permanence of a negative, there is yet one other circumstance which exercises an essential action upon the stability of the plate, one to which, as yet, no attention has been paid. There is a great difference, namely, in the durability of a plate, whether the same has been fixed in hyposulphite in the presence of daylight, or in obscurity, or whether it has been intensified after being fixed.

1. Those negatives which are fixed in the presence of daylight are, by its means, modified as regards their future behaviour, although there is nothing dissimilar at first sight in their appearance between such negatives and those fixed in darkness. When imperfectly washed, however, they gradually become covered with yellow stains or spots, while those badly fixed in darkness show white patches, increasing in size, but with no yellow crystallization.

2. Negatives fixed with hyposulphite in darkness, well washed, and then, in the presence of daylight, intensified with pyrogallie acid and silver, soon become covered with yellow spots when exposed to the sun in the printing frame, assuming at last a yellow tint all over; the more hyposulphite there remains in the pores of the film, and the longer the intensifying liquid has remained upon the negative in daylight, the more yellow, indeed, will the plate become; while other negatives, fixed and washed in exactly the same manner, but intensified in darkness, will be found to remain for years perfectly clear and free from colour,

* Licht.

notwithstanding their frequent employment in the frames.

3. If a negative is fixed with hyposulphite of soda, and well washed in the dark, then inspected by daylight, and again taken into the dark room to be intensified with pyrogallie acid and silver, there will be found to be no modification of the film take place hereafter, either in the transparency of the plate, or the colour thereof, despite its exposure to sunshine in the printing frame for lengthened periods.

By a close investigation of these circumstances, we shall find that, as regards the third instance just enumerated, the residual soda retained by the capillary action of the film has not suffered any modification by the action of daylight any more than the whole surface of the image. In the first case, however, a change takes place in the hyposulphite of soda solution which is impregnated with silver salts, as likewise in instance No. 2, where the modification is brought about by the aid of the silver in the intensifying liquid with which the residual soda is treated. In both these cases the hyposulphurous soda and silver is modified in such a manner that it is with difficulty dissolved in water, and is less capable of removal, therefore; more residual soda thus remains behind, and by the repeated action of light, or more rapidly even by exposure to a moist atmosphere, this gives rise to the formation of sulphide of silver, which at first is seen in the form of yellow spots, but which subsequently colours the whole surface of the plate.

The best remedy for No. 1 instance seems to be repeated subsequent treatment with fresh and strong hyposulphite solution, which appears to dissolve away the double salt; in the second case there would appear to exist no specific whatever, as the formation of sulphide of silver already commences during the operation of intensifying in the presence of daylight.

This circumstance reminds one of the analogous behaviour observed by Stas of sulphurous acid, which, when prepared in the dark, and added to a solution of silver, forms sulphite of silver, which remains unchanged for a notable period; under the influence of daylight, however, a modification sets in, and sulphide of silver is formed upon the addition of a silver solution.

ON THE PREPARATION OF MEDALS BY MEANS OF PHOTOGRAPHY.*

MEDALS, seals, and articles of a similar nature may be produced by the aid of photography in the following manner:—A sheet of paper or glass plate is coated with a thick layer of bichromated gelatine, and this cake or film, when dry, is exposed to light under a positive; after printing, the soluble portions of the surface are washed away, and the film dried.

From the image in relief thus obtained an impression is taken by means of plaster of Paris, which is poured upon the matrix in a fluid condition after the latter has, in the first instance, been rubbed over with a little thin oil varnish. The plaster of Paris mould, when finished and dried, serves for the reception of an easily fusible alloy, which is poured in a molten state into the plaster form, and which then serves for a seal or other similar purpose.

These relief pictures generally possess the defect that the white portions, or highest lights, are far too prominent, and thus appear somewhat unnatural; but this is a fault that may easily be remedied afterwards. The relief becomes much more marked if care is taken to dry up the hollow cavities in the moist gelatine image by means of blotting-paper.

If it is desired, by means of the electrotyping process, to make a counter-mould of the plaster of Paris shape, the latter can be hardened by treatment with soluble glass

* De Navorscher.

(silicate of soda), which is brushed over its surface, and afterwards with a silver solution and sulphuretted hydrogen.

If the plaster of Paris is to be covered with graphite, it must, in the first instance, be saturated with warm wax or stearic acid. It is, moreover, necessary to cover the margin of the metallic surface with a pretty thick coating of wax, in order to prevent the action of the sulphate of copper solution, which otherwise would have an injurious influence upon the mould.

One of the best compounds to serve for producing electrotype prints, according to practical experience, is that suggested by M. Kress, of Offenbach, which is prepared by mixing together the following ingredients, viz. :—

White wax	...	...	...	7 parts
Asphalte	...	...	...	2 "
Stearic acid	...	...	...	3 "
Tallow	...	...	...	1 part

The asphalte is, in the first place, melted in a suitable vessel alone, and the wax, stearic acid, and tallow (which have been heated together in another utensil) are then added. As soon as all have been thoroughly mixed, as much fine black pigment is added as will impart to the mass a beautiful black tone; and finally, a small quantity of powdered plaster of Paris, and an equal amount of graphite, are added, to give more solidity to the compound.

The plaster form into which this mass is to be poured is previously placed in lukewarm water until air-bubbles cease to rise, a proof that the plaster of Paris is saturated with water. The form may also be saturated with lime-water if desired, but, in this case, it is necessary to coat the interior with oil before the mould is used.

NOTES ON DEVELOPMENT.

BY M. CAREY LEA.*

ONE of the last things that is acquired in the practice of photography is a knowledge of the exact relations which are required to subsist between exposure and development. Some never attain it; and even the most skillful often miss it. Perhaps the following remarks may prove of use to some, at least, of those who do not always succeed to their own satisfaction.

The badly lighted portions of a landscape indispensably require a certain prolongation of exposure, otherwise they cannot appear with proper detail in the development. The same is true in portraiture; but I shall direct these observations especially to landscape work, because the difficulty is there the greatest. In portraiture, the light can be varied and modified by the blinds, but in landscape work we must take the light as we find it.

If now other portions of the same subject are strongly illuminated, we are obliged to over-expose these. Of the two difficulties, of over-exposing the high lights, or under-exposing the shadows, it is, of course, always preferable to fall into the former, since it is possible to a considerable extent to remedy the evils incident to that course, whilst an under-exposure of the shadows is fatal.

The first precaution in these cases of great contrast is, of course, the use of a collodion containing a considerable amount of bromide. Having, then, used such a collodion, and having given a long exposure, let us consider the effects produced by a short and a long development respectively, with an iron developer of ordinary strength, say from fifteen to twenty-five or thirty grains of protosulphate to the ounce.

In consequence of the long exposure, the first application of the developer causes the image to flash out at once. If we at once cut this development short, and fix the plate, we get a clean, bright negative, which might, indeed, be suitable for making enlargements, but which, when printed in the ordinary way upon albumenized paper, yields a dark print, soft, indeed, but entirely wanting in force and character.

If, on the other hand, the developer be kept on the plate,

the image rapidly gains in density. If after thus prolonging the action we fix the plate, we have a negative that yields flat, light prints, as bad as, or worse than, the former.

Vary the action as we may, we always pass from one of these faults into the other. The prints are displeasing; the objects are not properly spaced out, but seem huddled together; the light and shade are displeasing; the effect is tame and characterless, by reason of want of contrast.

If now a tyro, finding this difficulty pressing upon him, consults authorities, he finds it always laid down that want of contrast proceeds from over-exposure. This is certainly true, but in a case like the present the information does not help him, but the contrary. For if he tries the effect of reducing the exposure, he obtains plenty of vigour, it is true, but falls into a new set of difficulties. If he gives a short development, his shadows are black and wanting in detail; if he prolongs it, the high lights become hard and blocky. One or other of these faults is certainly present, and in bad cases, both.

The remedy for these evils lies in regulating the developer. In cases like those which we have been considering, where a collodion with much bromide (that is, $2\frac{1}{2}$ to $3\frac{1}{2}$ grains to the ounce of collodion) has been used, and where the exposure has been prolonged, the sulphate of iron in the developer may be reduced to 10, or even 5, grains to the ounce.

This reduction, however, is not to be produced by simply adding water to the ordinary solution, because the acetic acid is not to be reduced in the same proportion, or, indeed, at all. But the five-grain solution is to have as much acetic acid to the ounce as the operator is in the habit of using with his ordinary developer.

Under such treatment the development becomes slower, and the high lights have time to receive a sufficient deposit of silver to produce the contrast necessary to give tone and force to the print.

The ideas involved in this explanation are very simple, and are known familiarly to very many experienced photographers. To many, however, they are not. The tendency at the present day is to give long exposures; formerly it was the other way, and one would hear the boast that such a negative was taken in so many seconds' exposure, as if that indicated anything. As time goes on, it became better and better understood that the object is to get the best possible result, not the best merely with any given means, but the best with any means that the photographer has the skill and talent to bring to his aid.

Generally speaking, the best negatives are not those that flash up under the developer, but those that come out quietly and regularly, neither springing out, nor, on the other hand, requiring much time and waiting.

A FEW REMARKS UPON BACKGROUNDS.

BY FRITZ LUCKHARDT.*

THE background is in the studio of the portrait photographer one of the most important objects, and has lately attracted very great attention in photographic journals, where the Salomon background has been much discussed. The construction of the uniform alcove background, as likewise the half cylindrical one recommended by Kurtz, of New York, must necessarily be attended with many difficulties; and, moreover, the application of both of them is a very limited one. The purpose of the Salomon background, for instance, is to render that part of the screen which is nearest to the light of a darker nature, so that the face of the model, which looks towards the shaded side of the studio, stands out in relief with greater effect from the other portion of the background. These backgrounds, irrespective of the difficulty in moving or shifting them, take up a large amount of space in the studio, and, in this respect, are much more inconvenient than simple stretched cloth backgrounds, that are easily moved to any position, and are, besides, useful for other purposes.

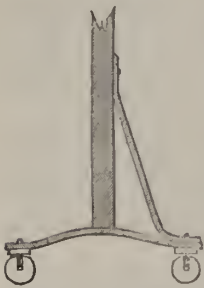
* Philadelphia Photographer.

* Photographische Correspondenz.

According to the nature of the illumination and character of the sitter, it is, in many instances, necessary to choose a dark or light background; and, for this reason, it is desirable that one should be in possession of a series coloured in different tints. The arrangement may be made to have a dark cloth stretched upon one side of a frame, and a light one upon the back, so that each stand serves two purposes.

The frames should be six and a half feet high, and five feet broad, and rest upon two iron supports two inches broad and one foot long, furnished with castors, so as to be easily moved about in the studio. As a matter of course, these serve only for bust and three-quarter pictures, as, for portraits of full length, the dimensions of these frames are not sufficiently large; and, furthermore, it is usual, in most studios, to use for such pictures backgrounds specially painted for the purpose. The accompanying sketch (fig. 1) shows the lower portion of a frame of the nature I have described.

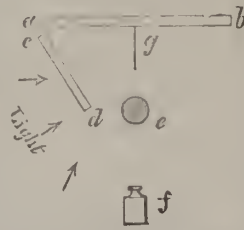
FIG. 1.



Backgrounds of cloth, irrespective of their moderate cost as compared to painted screens, possess the great advantage that they are not easily damaged and stained, and their effect, when properly stretched, and the sitter is placed at some distance, is equal in every respect to these. In order to obtain the same effect that is at once produced by the Salomon background, I employ a moveable screen about three feet by three and a half, and place it as shown at *c d* in fig. 2—at an angle, namely, with the background *a b*—so that the side light is cut off, and the shadow of the screen, falling upon the background, forms the required gradation from dark to light. By inclining the screen, *c d*, at a greater or less angle behind, of course, the sitter, *e*, or between him and the background, the most varied shadows may be secured, provided always the cloth background is itself properly adjusted.

As portraits are generally taken with the sitter looking towards the darkened side of the studio, we should, in the case (say) of a blonde, find the hair come out better from the shadow, and the face more plastic from the lighted portion of the background. With sitters having dark hair, on the contrary, this manner of illuminating the background would be more seldom employed, as the model then sits with his face to the

FIG. 2.



light. In order, however, not to lose plasticity in the head, I would recommend the use of a strip of card about one foot broad and a foot and a half high, fitted on to a headrest stand, as in fig. 3, so as to be capable of being raised or lowered at will. This arrangement is placed behind the head of the sitter, the height of his forehead, at right angles, and close against the background, so that a shadow exactly like the one above described, but not higher than the forehead, is cast upon the background, and throws up the face, while the dark hair stands out in relief from the light cloth screen. In this instance, the larger screen, *c d*, referred to in fig. 2, is not, of course, used at all.

This arrangement will be understood on a reference to fig. 2, in which, in front of the background, *a b*, the small screen *g* is shown in position; the model is represented by *e*, and the camera itself is placed at *f*.

In order that the shadow cast by the small screen is not too sharp and decided, the upper part of the card is cut in the shape of a dome, and indeed,



in this way, the rounded shadow appears upon the background as if it were the natural one formed by the head of the model.

ON PHOTOGRAPHY IN THE PRINTING PRESS, BEING A DESCRIPTION OF THE WORKING OF THE HELIOTYPE PROCESS.

BY ERNEST EDWARDS, ESQ., B.A. (CANTAB).*

In previous processes of this kind, either a lithographic scraping pressure, or a copper-plate rolling pressure, has been employed. I have discarded both, and use in preference a simple vertical pressure, such as is obtained in an ordinary Albion printing-press. By this means I obviate the risk of displacing or scraping the film, and greatly increase its power of wear. The plate has now to be inked, and in this operation I have been fortunate enough to introduce an improvement which gives a value to the heliotype process, possessed, I believe, by no other printing method in existence. If in inking one of these plates, we use what is called a very stiff ink, we shall find that it will only adhere to the deepest shadows; if we thin down the ink we shall succeed in getting the delicate half-tones, but we shall no longer get depth in the shadows. This has been the notable fault with the productions of analogous processes; either shadows of intensity were produced with no half-tones, or half-tones were produced with no intensity. My method is to use two or more inks in succession, of different intensities, one after the other—to begin the picture with a stiff ink, and to continue it with a thinner. To produce different effects the colour of these may be varied. For instance, a stiff black may be used, which will give us the deeper shadows, and on the top of this may be rolled a thinner purple or brown, which will give us the half-tones. Many of the pictures on the wall are produced with two or three inkings, and you will notice presently what a very marked effect the double inking has in the production of the picture. This ability to produce a bichromatic effect in a single printing places a great power in the hands of the heliotype printer. In order to produce prints with a margin, so as not to require subsequent mounting, a mask of thin paper is made, having an opening in it exactly the size and shape of the finished picture. The plate having been duly inked, this mask is placed on it, and over the mask the paper on which the print is to be produced. The press having been pulled, the picture is peeled away from the plate with a perfectly clean margin, being, in fact, mounted. The dispensing with the cost and necessity for mounting gives this method of printing a great advantage, especially in the case of book illustrations; indeed, I may say in almost all cases. With the mounted print, as it comes from the press, comes also the end of the process. The prints have only to be looked over, and any slight casual defects remedied, when they are ready for issue.

There are two questions regarding the process that I am continually asked—how many impressions can be produced from one plate, and how many impressions can be printed in a day? In reply to the first, we have printed as many as 1,500 impressions from one plate without any loss of quality, and the plate was only then stopped because no more were required. From accidents to the films, however, we are by no means free. We have to bear in mind that though our films will stand any usage of the right kind, they will not bear the kind of usage that lithographic-stones or copper-plates are accustomed to receive; and we have, moreover, to bear in mind that in a new process everything, from first to last, has to be provided for in a new way—new materials, new hands, new appliances. At present, therefore, we cannot look for freedom from such accidents as novelty necessitates, but when I mention that a fresh plate may be prepared in an hour, at the cost of a few pence, you will see that these are of comparatively small moment. In numbers, one man will print between 200 and 300 impres-

sions in a day. As regards this point, it is to be borne in mind that a dozen subjects may be printed together, or the same subject laid down on the film a dozen times, so as to produce a dozen impressions at one pull. Compared with lithography, it will probably not be so cheap for large numbers, but for small numbers it will be cheaper, as the cost of drawing will be saved, and in either case the result will be far finer and more accurate. It is, of course, infinitely cheaper than any photographic or carbon process, or any other photo-mechanical process. Touching its applications, I need only point to the results which we have already obtained, some of which are on the walls for your inspection, to indicate many of them. But there are others equally valuable which we have not yet had opportunity of working. Amongst these latter, I may point to the use of heliotypes for pottery and enamelling purposes. It is only necessary to use an ink mixed with suitable oxides, and print on a suitable paper, to have on all descriptions of pottery, and at a lower price, pictures of art value in place of the anything but art pictures we are accustomed to accept. Again, this process provides a ready means of making prints in suitable ink for transfer to stone or zinc, or to wood for the purposes of the wood engraver. Having for its base a coloured, or partly coloured, design, a new kind of photo-chromo-lithography is within reach. But the direction in which I conceive it has the greatest value is in the artistic and scientific education of the people, where it affords a means of bringing within the reach of all, reproductions of works of art and records of science which would be otherwise unattainable.

It is true that the reproduction of drawings by such men as Raffaele and Michael Angelo contain the inevitable faults of the photograph produced by their discolouration from age; nevertheless it is impossible to look at some of these—such, for instance, as the heads and bands of two of the apostles for the painting of the "Transfiguration," by Raffaele, or a sheet of studies of heads by Michael Angelo—without feeling that you have there the veritable work of the master—that his hand alone, that no other hand but his, has produced the copy as well as the original. In point of price, there is no reason why pictures such as these should not take the place of those which, at present, are used to decorate even the walls of cottages.

It is true, too, that, as in all processes depending on a photographic negative for their base, colour is unfaithfully reproduced. Hence, oil-paintings depending on colour for their effect, require an intermediate translation. A copy must first be produced wherein the defects so arising must be corrected, and this copy must then be again reproduced for issue. It seems to me probable that as progress is made there will be a distinct class of artists, who will be "translators of colour into light and shade" for use in this and analogous processes. Where paintings depend for their effect on light and shade or form, and not on colour, this intermediate translation is not so necessary. It is pictures such as these last of which we are accustomed to say that they photograph well.

For the reproduction of old or rare prints or engravings, this process is especially valuable, or for the reduction and enlargement of existing ones. Where there is a copper-plate in good preservation, there is obviously no point in the use of any repeating process, for there is the certainty that there can be no gain of work by the operation of photography. But where a reduction is desired, or the plate is destroyed, such a repeating process as this comes in with overwhelming force. To the inevitable question, will not engraving be superseded? I would say, no; engraving is an art of itself, and, as such, can never die. But one of the special objects that all workers in this direction have in view is, to supplement engraving. Engraving is a costly and a tedious process. The execution of one of the great engravings will occupy years of time, and cost thousands of pounds. In the Academy exhibition of any year, how many pictures are engraved? And in pictures that are engraved, has not the interest in them greatly ceased when

the engraving is issued? Surely here, then, there is room to supplement engraving with some means for issuing swiftly permanent and faithful reproductions of works of art contemporaneously with their exhibition. I venture to think that English artists have a lesson to learn in this respect from the French, who find their account in publishing photographs of their work in such a manner.

For book illustration, the heliotype process is especially valuable. The rate of production is rapid and certain, the cost is moderate, and the necessity for mounting is done away with.

For scientific record it is equally valuable. It retains the literal faithfulness of the photograph, and is, moreover, permanent, and far cheaper.

We are not slow to recognise in every direction the value of the photographic art, with its many drawbacks. The heliotype process, in a word, is an attempt to put this art into the printing press.

(To be continued.)

CONVENIENT DRY PROCESS.

BY PROF. J. TOWLER, M.D.*

The following dry process is one which I have used during the past summer for taking views at no great distance from any resting-place I might select for residence, and then walking or riding out with camera and changing-box for a mere excursion. It works well.

The plates are first well washed and coated with a thin film of albumen (one ounce of albumen to ten or twelve ounces of water, and one drachm of ammonia).

When dry, the plates are coated with collodion, and sensitized in the usual way until the film has assumed a creamy appearance. It is always better to prepare the dry plates in the evening by candlelight, and then place them in the drying-cupboard, so as to be ready by the next morning for the excursion. As soon as each plate is properly sensitized, it is placed, film downwards, in a large wash-basin full of rain-water until the next plate is ready; it is then taken out and washed thoroughly at the tap with rain-water, and floated with the following preservative:—

THE PRESERVATIVE SOLUTION.

Albumen ...	...	...	...	4 drachms
Water ...	...	...	...	5½ ounces
Gum arabic ...	...	...	...	15 grains
Acetate of morphia ...	...	...	...	5 "
Acetic acid ...	...	...	...	2 drachms

Mix these ingredients intimately together, and keep in stock for use. Previous to application, filter the amount required.

Each plate is flowed or coated with just enough of this solution so as to cover it thoroughly. The solution is flowed backwards and forwards over the plate for about a minute, and then the excess is allowed to drain off, after which the plate is put away in the drying-cupboard or box to dry.

EXPOSURE.

Expose the plate three or four times longer than you would an ordinary wet plate—sometimes even longer than this. It is well to dry one of each batch before you start off on the excursion, in order to be able to form some judgment as to the exact exposure that will be about right.

DEVELOPMENT.

First moisten the plate in a dish of rain-water; afterwards flow over it a drachm or two of the ordinary nitro-gelatine developer. This developer is then returned to a small beaker glass, and about two drops of nitrate of silver solution are added, and intimately mixed with it. This is the developer proper, which is again poured upon the plate.

* Philadelphia Photographer.

The picture now soon appears, and may be strengthened to any amount by adding more silver solution. There is no fogging in the picture thus produced, and the detail is all that can be desired.

I do not know how long such plates will keep, and I must confess that the keeping property is of minor importance to me, from the fact that I have ceased to run any risk with dry plates by using them, except on the day after their preparation at the longest. In this way there is a possibility of getting good, even superior, work with considerable convenience and certainty.

Correspondence.

THE GRAPHOGENIC APPARATUS.

DEAR SIR,—Will you allow me space for a few words in reply to your correspondents, and in answer to numerous enquiries respecting the use of my new apparatus for out-door photography. In the first place, with regard to the sensitizing bath, some fears have been expressed as to the suitability of the materials employed in its construction. In this respect there is more fear than danger; it has been proved by several years' experience that wood properly varnished with shellac is an efficient substitute for glass or porcelain when used as a receptacle for the nitrate of silver solution. The same remarks will apply to the india-rubber lining. I wish it, however, to be understood that I do not confine myself to the use of the latter substance, and have described in my patent several other methods of transferring the sensitive plate to the dark slide by which the india-rubber is entirely dispensed with; an arrangement which would probably be found necessary in extreme climates; but for general convenience and economy I think the india-rubber is preferable.

The mode of development in a dish is very similar to that described recently by Mr. England in your pages; this method has been for many years extensively used on the continent.

As regards keeping the plates moist after development, where they have to be kept only a short time, the acetic acid solution will be found all that is necessary; but in cases where the negatives are required to be kept for a long time previous to fixing and intensifying, it will be advisable to give a second coating with the golden syrup preservative recommended by Mr. Robinson, by means of which the negatives may be kept for weeks or even months in an ordinary plate box without injury; but care must be taken to apply the golden syrup *after* removing the plate from the developing tray; the slightest trace of such a powerful restrainer in the dish would be fatal to the development of the next picture.

In coating plates with collodion in the open air it is a good plan to dilute the collodion with a little absolute alcohol or a mixture of alcohol and ether; with this precaution no difficulty will be experienced in this part of the process.

Trusting I have not trespassed too much on your space,—I am, dear sir, yours very truly,

B. J. EDWARDS.

Hackney, May 15th, 1871.

COPYRIGHT IN PORTRAITS.

STR,—Since my last letter to you, two cases of prosecution for infringement of copyright have been decided; one at the Mansion House, the other at Worship Street.

In the former, Mrs. T. Conroy was convicted, and ordered to pay penalties amounting to £35; or, in default, to suffer nine months' imprisonment. As this matter is under the consideration of her solicitor, with a view to remove the conviction into the Court of Queen's Bench, I will make no remarks upon it at present.

In the latter case, Mr. Knight, of Tabernacle Walk, was convicted of selling an illegal copy of a photograph representing the Oxford crew, and fined £5. The circumstances, as detailed in evidence, are shortly as follows:—

The proprietor of the copyright (Mr. Taunt) visited Mr. Knight's shop, and purchased from him one copy of his photograph of the crew, and asked Mr. Knight to procure him six more. Mr. Taunt gave a feigned name, and an address to which they were to be sent. Mr. Knight, not feeling certain about the copyright, did not execute the order. On receiving

the summons, Mr. Knight determined to defend himself instead of employing a solicitor, as the matter was not of much importance. I attended the hearing to hear the argument, and assist Mr. Knight, if necessary, in his defence. Mr. G. Lewis appeared for the complainant; and, at the conclusion of his case, Mr. Knight made his statement, from which it appeared he had purchased the copy for which he was summoned from Thomas Conroy, a boy about twelve years of age, son of Mrs. Conroy, of whom he enquired whether there was any copyright. The boy replied there was not. This copy Mr. Knight placed in his window, and afterwards sold to the plaintiff; that was the only copy he had. I then suggested to Mr. Knight to make certain objections to the registration and copyright.

Mr. Knight first objected that the description of the nature and subject of the work was insufficient. Mr. Lewis here rose, and, addressing the magistrate, said there was a gentleman present, Mr. Cunningham, who was at the bottom of all these defences, and who was now advising the defendant. He was not a solicitor, and had no right to interfere, particularly as, on a former occasion, when the defendant was summoned to this court, Mr. Cunningham's conduct was the cause of some very severe remarks being made by the magistrate who heard the case. Upon Mr. Bushby replying, "I don't see that, Mr. Lewis," the learned gentleman subsided, and the case proceeded. Mr. Knight's objection to the sufficiency of the description was overruled.

Mr. Knight next objected that the copyright (if any) was vested in the sitters, and not in the photographer; and that there had been no assignment of their rights to the complainant. As Mr. Knight did not put this objection very clearly, the magistrate did not quite understand it.

Mr. Lewis then rose to explain it by reading the first section of the Act. Commenting upon the words, he said: "When a photographer takes a portrait of a sitter for a good or valuable consideration, doubtless the copyright vests in the sitter; but, in this instance, there was no valuable consideration; nothing was paid by the sitters, *therefore the copyright vests in my client,*" a non-sequitur which, to my surprise, the magistrate accepted. It does not follow that because the copyright is not in the sitter that it is in the photographer.

We have now a magisterial decision upon a very important point: the proposition is established, so far as such a decision can establish it, that in all cases where photographers take negatives without receiving payment, the copyrights thereof vest in the photographers. What will the Society of Arts and Mr. Le Neve Foster say to that? By the common law an individual has a right to his own face and all pertaining to it, and no power save that of an Act of Parliament can deprive him of that right.

Let us suppose a case as an illustration. Mr. Blank, being desirous of having his portrait taken, calls upon Mr. Cyanide, and agrees with him to have a negative taken, and so many copies printed, for a price. Mr. Cyanide takes two negatives, from which Mr. Blank chooses one. The proofs are printed, and, with the negative, are delivered to Mr. Blank, who thus becomes the owner of the copyright. A few days afterwards, Mr. Blank, passing Mr. Cyanide's establishment, to his surprise sees his portrait "gibbeted upon the advertising door-post." Feeling annoyed thereat, he accuses Mr. Cyanide of infringement of copyright. "Oh! dear no," says that gentleman; "the portrait you see has been printed from the other negative, and for which you did not pay; therefore, by a decision of Mr. Bushby, at Worship Street, the copyright thereof is vested in me during my lifetime, and for seven years after my death in my representative, and I have registered it at Stationers' Hall." Mr. Blank then consults his solicitor, and by him is, probably, informed that he has two remedies, Mr. Bushby notwithstanding: he may apply to a court of equity, and obtain an injunction, or he may apply to a court of law, or a judge, for a rule or summons requiring Mr. Cyanide to show cause why the entry at Stationers' Hall should not be expunged.

In the case of "Colonel" Burke, the Secretary of State ordered a photograph to be taken of him at the House of Detention, which was done, and the photographer registered the photograph. The taking of the photograph being an invasion of Burke's common law right, his representative took steps to suppress the photograph by summoning the photographer before Mr. Justice Willes, who made an order to expunge the entry at Stationers' Hall, condemned the photographer in the costs, and ordered him to give up the negative and all copies in his possession.

Suppose some disagreement were to arise between the Oxford crew and Mr. Taunt respecting the photograph; the crew would have the power to prevent the further publication of it, their verbal consent to its publication not being an assignment of their rights.

As to what constitutes a good or valuable consideration may be doubtful. In the case of a Royal Duke, Mr. Commissioner Kerr held that the sitting of His Royal Highness to the photographer was a valuable consideration.

At Waudsworth, in the matter of John Bright's portrait, Mr. Merriman argued that Mr. Bright's sitting was a valuable consideration, sufficient to vest the copyright in Mr. Bright, and Mr. Dayman appeared to accept the validity of that argument, and I believe that if the prosecution had not been abandoned, he would have so held. When eminent persons sit to photographers, doubtless they believe that they can at any time order the publication thereof to cease if they think fit, in the same way as they might if they themselves had published them. It is not likely that when the Oxford crew sat to Mr. Taunt they contemplated investing him with such a power as would enable him to cause a poor woman having a family of ten children to be sent to gaol for nine months for selling eleven copies of their portraits to Mr. Taunt. The opinion of Mr. Bright upon this kind of prosecution has already appeared in your columns.

The term "copyright," by the interpretation clause of the Act, is defined to be "the sole and exclusive right of reproduction;" it therefore follows that unless an individual have that sole and exclusive right, he has not copyright.

I think I have said enough to show that no photographer has the "sole and exclusive right" in any portrait without an assignment of right from the sitter, and there was no assignment in this case. Mr. Bushby having over-ruled the objection that there was no copyright vested in the complainant, gave judgment; he said he was called upon to convict the defendant of having sold a copy of a photograph knowing it to have been illegally made; the defendant excused himself by saying he did not know the photograph was copyright; if that excuse is to prevail, then nobody would be punished. The Act provided that a register of copyrights should be kept at Stationers' Hall, and it was the duty of the defendant to have gone there and ascertained whether the photograph were copyright. Now, with all deference to the magistrate, the defendant's going there would have been useless. The first question the clerk there would have put to him would have been, "What is the name of the author, and the name of the proprietor, and what is the title of the work?" Just what the applicant wanted to discover. The photographer who made the copy might have had a clue, because the name of the author may have been upon the mount; but that even might be misleading, for I have seen mounted upon cards bearing the names of two eminent firms, and marked "copyright," photographs of certain ladies whose attire might be said to resemble nearly that of a French actress performing the part of Eve, and which was described as consisting of nothing in particular beyond a belt and a buckle. I should certainly not have felt justified in concluding that these photographs were really produced and published by the firms whose names were upon the mounts. The magistrate ordered Mr. Knight to pay to the complainant the sum of £5, which, I suppose, he considered to be about the amount of damage sustained by the complainant through the act of Mr. Knight, or, in default, to be imprisoned for the period of two months, under the "Small Penalties Act."

Sancho Panza invoked blessings upon the man who invented sleep, and surely publishers should do the same upon him who discovered that the "Small Penalties Act" was applicable to the punishment of the civil offence of infringement of copyright. Some one has said, "Law is the perfection of reason." He either used the words ironically, or he must have been ignorant of the mode in which (what is called) justice is administered by magistrates; for what can be more unreasonable than to send a man to prison for the invasion of a private privilege, under the provisions of an Act of Parliament passed as a supplement to the "Wine Licenses and Refreshment Act," and for the purpose of restraining magistrates from inflicting upon drunken and riotous persons a longer term of imprisonment than the justice of the case might require? I would recommend magistrates to read the encomiums made upon them by Lords Redesdale and DeMaui (who opposed the Bill) respecting the great care and discretion exercised by them in apportioning fines to the circumstances of the defendant, and then

consider how far they deserve them when they send a poor woman to prison for nine months—a proceeding entirely at variance with the spirit of the Act, which was passed to abridge the power of the magistrate, and not to increase it.

I shall, in another communication, give you an account of the origin and purpose of the "Small Penalties Act," which has been made a means of cruelly punishing persons who were not in a position to protect themselves from magisterial vindictiveness.—I remain, sir, your obedient servant,

J. CUNNINGTON.

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held in the City of London College on the evening of Thursday, May 11th, the Rev. F. F. STATHAM, M.A., in the chair.

The minutes of a former meeting having been read and confirmed,

The CHAIRMAN remarked that, in accordance with a previous announcement, the evening would be devoted to an examination of such photographs as members had brought for exhibition, and conversation thereon.

The contributions to the interest of the exhibition meeting were less numerous than on some former occasions, but many fine photographs were placed before members. Mr. Price exhibited a number of his fine landscapes by the collodio-albumen process. Mr. Dunmore showed excellent landscapes and studies. Mr. Hunter exhibited a fine selection of prize pictures of the Amateur Photographic Society. Mr. Croughton showed some fine coloured photographic miniatures, and works showing the aid photography affords to art. Mr. Johnson showed some very magnificent carbon reproductions about 4 feet by 3 feet, and gave some details of their production at the establishment of the Autotype Company. Mr. Henderson showed some of his fine enamels. Mr. Wharton Simpson exhibited some fine American portraits of a clever little *genre* picture by Rejlander. A general conversation on the pictures was maintained, after which the proceedings terminated.

Talk in the Studio.

POSTAGE STAMPS FOR SMALL REMITTANCES.—Our attention has been called to the possible inconvenience to photographers of the proposed arrangement of the Postmaster-General, prohibiting postmasters to purchase postage stamps of the public, in order to check the use of stamps for small remittances. As the matter stands, the Postmaster-General has announced that after June 30th postmasters will be prohibited from cashing postage stamps, and that money orders for small sums at a cheap rate will be issued. The use of stamps for transmitting small amounts is, doubtless, very convenient, and to photographers and photographic dealers, as to many tradesmen it has, doubtless, been of considerable service. To no class will the withdrawal of this facility prove more inconvenient than to newspaper proprietors and their customers, between whom stamps had become common currency for small sums. The matter has already been brought before the attention of the Postmaster-General, and it is probable the decision may be reconsidered. A deputation from the Provincial Newspaper Society waited recently upon the Postmaster, and called attention to the inconvenience of the new regulation. He explained that the real object of the regulation respecting the sale of postage stamps was to check the robberies of post letters; but on that point, as well as on others which had been brought under his notice, he would, if possible, meet the views of the newspaper proprietors. The abuse of the system, in making payments beyond two or three shillings, has doubtless contributed to bring about its threatened prohibition.

COMED MEDALLIONS AND VIGNETTES.—Mr. A. D. Lewis, of Newcastle-on-Tyne, has favoured us with some exceedingly fine examples of cameo portraits, card, and whole-plate size, which he has been producing with success for twelve months past. The photography is excellent, and the surface is enamelled with gelatine and collodion, which, in the cameo style, gives a greatly improved effect. He remarks that the style has been "a great success with me, and considerably stimulated my business during last summer, and all through the winter months. I produce them in any desired

tints, just to suit the taste of the public. I never get less than thirty shillings a dozen for such as the enclosed, and for half-a-dozen of such, and half dozen full-length, twenty-one shillings. Even for the plain cameos I get at least a third more than the ordinary price, and out of every twelve sitters, eight or nine prefer the 'cameo vignettes' which shows that the profession ought to take advantage of this beautiful style of portrait as an impetus to business. I produce various tones, but my customers prefer the warm purple brown tones. I will send you a few coloured enamelled ones by-and-bye." The whole-plate example has, we understand, been exposed in a show case for twelve months, and retains its convex shape perfectly.

SIR JOHN HERSCHEL.—The place chosen for the internment of the late Sir John Herschel in Westminster Abbey to-day, Friday, is close to the grave of Sir Isaac Newton, at the extreme east end of the nave, near the organ screen.

TINTED PAPERS.—Mr. A. Rivot has sent us some examples of portraiture and landscape on tinted paper he is preparing. As we have before remarked, tinted paper is often very effective when judiciously selected, and these tints are very good. A delicate warm pink, tending to buff, is very pleasing for portraiture. Mr. Rivot also mentions that he undertakes for photographers who have not facilities for the work, the ombossing into form of cameo vignettes. This facility may prove useful to those desirous of trying the new style without risking at the commencement the cost of the press and other aids required.

PHOTOGRAPHY AND THE COLUMN VENDOME.—Just before the fall of the Column Vendome in Paris, photographers were very active in their operations on the square, taking the portraits of patriots grouped on a portable barricade. Another was at a window of one of the houses on the east side of the square, taking a last view of the Column. There was also an artist there, engaged in sketching the scene; and behind him were two more photographers—a man and a woman—exerting themselves in the same direction. Thus it is, by the invaluable aid of photography, the public are enabled to obtain pictures of these notorious places.

To Correspondents.

CAPTAIN.—You would be liable to proceedings for copying and selling the engravings of the *Illustrated London News*, *Graphic*, and similar papers, without permission from the owners.

A. CLARKE.—You will find our opinion on another page. Your rule is a good one; but it would be safe to extend it to gentlemen as well as ladies. Thanks for the instructive and interesting prints.

CAPTAIN TURTON.—The plan of printing through a medium consists in interposing a thin plate of glass or other transparent body between the negative and the sensitive paper, and printing in direct sunlight, for the purpose of securing a print with softened definition. It has been repeatedly described in the *News*. You will find a fully descriptive article on page 243 of our thirteenth volume, and another on page 73 of our fourteenth volume. 2. Prints should be very slightly damp when ironed; but with some samples of highly albumenized paper ironing always causes the prints to curl. It is better always to iron the back of the print. 3. The sulphocyanide bath given in the *Year-Book* is one we have often used with success. The prints may be immersed without washing, or after slight rinsing. The sulphocyanide bath often works somewhat slowly; but we have not found it reduced the prints. It can be made to work more rapidly by the addition of a few drops of a concentrated solution of chloride of gold. 4. We do not know of any one who undertakes printing in carbon from the negatives supplied by photographers.

WILLIAMS.—We should decidedly recommend No. 3. So far as our information and experience goes, No. 1 is somewhat uncertain; never superior to, and rarely equal to, No. 3. We should recommend you to look out for a second-hand one of No. 3, which will be quite as good as new, and cheaper. Read the advertisements of that kind in the *News*, or advertise for what you want. The advertisement will cost you 3s., but you will probably get what you require without difficulty, and save as many pounds. We approve of your resolution, and are glad to hear of your progress.

VIGNETTE.—The studio of Col. Stuart Wortley was described and figured in the *Year-Book* of 1864, where several other studios are described, and diagrams given.

ARTHUR THOMPSON.—Streaks in the direction of the dip may proceed from various causes. Sometimes they are the result of a bath charged with organic matter; sometimes they arise from the collodion. They may generally be avoided by keeping the plate in motion, especially lateral motion, all the time the plate is in the bath.

FRED. WRIGLEY.—The copying of old oil paintings is always a difficult task, the more so if the work is heavily impasted and the varnish cracked. In the first place, you must have the picture well lighted, and with a light directly in front of it; a light coming from a source across the surface will bring out all the inequalities of texture in a disastrous manner. You will get it lighted best in the open air: some prefer direct sunlight. To get rid of the dullness of surface which often renders it difficult to get detail, sponge the surface with water immediately before exposure. To avoid reflections, try two or three positions, and take care that the camera is quite parallel with the picture; a fully bromized and ripe collodion, very full exposure, and ordinary iron developer. It is, as you observe, a branch of the art little practised, and one in which experience and varied resource are very necessary.

A BEGINNER.—There is certainly some slight risk to the bath in immersing a plate in it the edges of which have been varnished; but we should not recommend you to try the process you mention, as it is one of very uncertain success.

F. D.—There was no print enclosed in your letter, but, from the description you give of the defect, it seems probable that it arises from a repellent collodion. You may modify this tendency in a variety of ways, but it is at times difficult to cure. The addition of a drop or two of distilled water to each ounce of collodion will sometimes improve matters. Immersing the plate as soon as possible after the collodion is set will improve matters. Keeping the plate in motion in the bath, and giving a time in the bath, will improve matters. Sometimes nothing but age, or mixing it with a more powdery collodion, will improve it. 2. The use of a ripe collodion of good body, of an iron developer containing a little gelatine or acetate of iron, so as to secure a clean intense image in the first place; then, after fixing, apply a ten-grain solution of bichloride of mercury until the film is of a uniform grey, wash, and apply a one-grain solution of iodide of potassium. This will give an intense but delicate image, without much piling up. 3. It is always difficult to clean perfectly plates which have been used, and there is generally some risk in using the plates; but we do not think that the case is worse with negatives which have been intensified with mercury than with other plates. The preliminary coating of albumen removes much risk.

S. W. BARNES.—The minute spots of which you send samples are very difficult to trace home. Sometimes they are due to minute air-bubbles forming on the print during fixation, but not always. A skillful experimentalist, who has been giving some attention to the subject, traced them to some kind of decomposition in the paper, arising from age. A sample of paper which gave him spotless results in the course of time began to spot, and, after keeping six months, was covered with such spots; whilst a new sample, used under the same conditions, was perfectly free.

J. C. MOORE.—The acetate bath answers well for producing warm tones. To make an acetate bath take—

Chloride of gold	1 grain
Acetate of soda	30 grains
Water	5 ounces

and use not less than forty-eight hours after mixture. This may be used over and over again until the gold is exhausted.

C. A. M. W.—The plan you propose will doubtless answer. The acid, although it stops development, will not, we apprehend, prevent the slight additional intensification effected by light. If once the film has been suffered to dry, we should prefer to fix it, and intensify after fixing. With Tunicare or albumen preliminary coating, varnishing the edge will scarcely be necessary (see Mr. Edwards's letter in the present number).

JOHN TERRAS.—We are glad the pictures pleased you. We doubt whether cards or cabinets by the gentleman you mention can be readily obtained, as he does not publish, and photographers rarely sell private portraits. His speciality is, moreover, for larger pictures. Your best plan will be to write to him direct.

ENQUIRER.—In a ridge-roof studio of good proportions, with a principal north light, glass is not necessary. Sometimes, especially in small studios, it is desirable to have a little. There should be no glass at either end. The following are good proportions:—26 ft. long; 12 ft. wide; height to eaves, 8 or 9 ft.; to ridge, 14 ft.; opaque at both ends and south side; opaque for 5 or 6 ft. at each end of north side and roof; all the rest glass, except 18 in. at bottom of north side.

A. DEBENHAM.—We will look for the pictures you mention, and give them attention in our notice.

A. START.—Much depends upon whether you want a thin or thick varnish. We should say about 40 grains per ounce. Methylated chloroform will serve perfectly. 2. Bates' black varnish will answer for the lens tube; but an absolutely dead black is better.

R. LAMBERT.—If you wish to take the four portraits of the diamond cameo portraits on one negative, you require a repeating back for the purpose; but you can take them in succession, and mount them separately, if you wish. 2. For the cameo vignettes now in vogue no registration cards are necessary. 3. We believe that the Autotype Company supply the manual under some conditions gratuitously.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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STRONG AND WEAK IRON DEVELOPERS.— STOCK SOLUTIONS.

THE importance of a perfect understanding of the effect of every modification in the developer, and its use gives a perennial interest to the subject, and renders every hint which can extend the range of the photographer's power over his materials worthy of attention. On another page a correspondent asks a series of questions on the subject which suggest a few general observations, as well as definite answers to his questions.

The first question arises out of a discrepancy, probably more apparent than real, between the views of Mr. Carey Lea and Mr. Elbert Anderson, as to the use of strong or weak iron developers for subjects containing strong contrasts. Mr. Lea suggests that in landscapes containing much contrast in the shape of deep shadows or portions badly lighted, in conjunction with other parts strongly illuminated, the use of a highly bromized collodion, full exposure, and very weak iron developer, will best secure detail in the shadows and vigour in high lights. Mr. Anderson informs his pupil that if a sitter presents strong contrasts—such as those found in the lady, presumably fair, named Aurora, and her black velvet dress—he would give full exposure, and use a strong developer, reserving the weak developer for the same lady when she appeared dressed in white drapery and lace. It is probable that Mr. Lea would do the same; and that, when writing, he had in his mind's eye some especial landscape, with masses of well illuminated detail, and small portions of imperfectly lighted shadow. The latter he hoped to bring out by the combined effect of full exposure and prolonged development, during which the masses of well lighted detail would be saved from becoming flat by the weak developer. Full exposure, and prolonged application of a strong iron solution, would inevitably produce flatness in masses of well lighted landscape, whilst the same conditions with a weak developer would secure brilliancy. Special cases require special treatment, which can only be devised in definite relation to the circumstances as they arise; but it is important to remember the rule that, other things being equal, strong developers tend to produce equality or evenness in the deposit of silver, and so tend to harmonize strong contrasts; whilst weak developers facilitate an aggregation of deposit on the lights, and so increase contrasts. If the lighting and combination of colours in the subject present little contrast of light and dark, a weak developer will produce the most brilliant result, because it will pick out the high lights, and give them a decided distinction from the half lights; whilst the shadows or darks, which in the subject are wanting in force, receiving less silver in proportion than their share, will acquire relative depth. The same subject developed

with a strong iron developer would become flat or weak; the silver, being deposited in equal ratio over lights and shadows, does not aid in producing contrast, and a poor, spiritless picture is the result. If the lighting and combination of colours in the subject tend to produce strong pictorial contrast, a strong developer will check the tendency; the silver will be thrown down fairly on the darks and imperfectly illuminated portions, and hence cannot accumulate on the lights and give them increased intensity, harmony, rather than excessive contrast, being the result. A weak developer in such a case would be apt to give chalky high lights without the delicate demitints which give tenderness and black shadows, without detail or transparency. As a rule, the longer the development necessary to bring out the image, the greater will be the contrast and intensity, as the free nitrate on the plate is precipitated by the reducing agent most readily upon the portions where light has acted most energetically, and continues to aggregate there so long as the process is prolonged and any free nitrate remains on the surface. When, either through length of exposure or strength in the developer, the whole image rapidly flashes out, there is a tolerably even deposit of silver; and, other things being equal, the picture is harmonious. When, through imperfect illumination, short exposure, or weak developer, the image comes out tardily, there is always risk of excess of contrast and hardness.

Our correspondent further asks what constitutes a strong developer in contradistinction to an "ordinary" developer. The latter term, it must be confessed, is somewhat indefinite, and admits of a wide definition. In our own practice we should speak of a fifteen or twenty-grain developer as one of ordinary strength, and one of twenty five grains or upwards we should regard as strong. With a fifty grain developer containing about twenty minims of acetic acid to each ounce of solution, it is possible to very materially reduce the exposure where the nature of the subject does not seriously suffer from such forcing. With portraits of babies and animals, for instance, very good results may be produced.

The use of a saturated stock solution of iron presents many advantages, and has no especial defects to counterbalance the gain. Properly made and kept, the solution will keep perfectly without deterioration; many operators, indeed, allege that the solution acquires special virtues not to be secured by other means. The only disadvantage likely to arise is the peroxidation of a portion of the iron salt, and this not only robs the solution of active reducing power, but introduces a positive retarding agent, more active than acetic acid. This duly allowed for in preparing the solution is not a serious defect; but it is important that full allowance should be made, or the effect of under-exposure will be inevitable. If a saturated

solution of protosulphate of iron be made with water containing carbonate of lime, and the water be warm, a portion of carbonate of iron is formed, and if acetic acid be added, the formation of acetate of iron follows. Indeed, if acetic acid be added under any circumstances to a solution of sulphate of iron intended for keeping, a portion of acetate of iron is generally formed. In reference to the question often asked, how many grains per ounce does a saturated solution of protosulphate of iron contain? it must be borne in mind that when the point of saturation is obtained, a slight variation of temperature changes the strength. A saturated solution made in the heat of summer will throw down crystals of the salt it cannot hold in solution in winter. A perfectly saturated solution contains at a temperature of 60° Fah. rather more than forty-one parts of the salt in one hundred parts of water, or nearly two hundred grains of the salt in each ounce of solution.

To make a saturated solution, take five drachms and a half—or, in order to have a little excess, say six drachms—of protosulphate of iron for each ounce of water. Thus, one pound of the iron salt will be required for each pint of water. To facilitate solution the salt should be powdered, the water should be used cold, and no acetic acid need be added. The bottle should be well corked, and kept in the dark, resting on its side, or with the cork inclined downwards. If a brown deposit be formed, it should be filtered out before adding acetic acid, unless the operator desire to form a portion of acetate of iron in his developer.

The use of such a solution is very simple. An ounce and a-half of such a solution, added to eighteen ounces of water and five drachms of acetic acid, will give a pint of the ordinary fifteen-grain iron developer. Without any trouble beyond measurement, a developer of any degree of strength is thus secured at a moment's notice. A child has moved, for instance, and the operator was compelled to remove the plate with, perhaps, half the exposure desirable; half an ounce of the saturated solution, an ounce and a-half of water, and about a drachm of acetic acid supply at once a couple of ounces of a fifty-grain developer to meet the short exposure; and so with any varying condition of light, exposure, or subject, the facility for modifying the developer without delay or trouble will often prove invaluable in rendering work pleasant and results excellent.

The addition of sulphate of copper, frequently recommended as valuable in the iron developer, is found useful by Mr. B. J. Edwards, who uses a concentrated solution in preventing the stock solution from oxydizing. The precise action of sulphate of copper and sulphate of zinc in the iron developer has not been clearly made out; but that they exercise a restraining effect in development, rendering the reducing action of the iron salt less violent, has been made tolerably certain in general practice, and Mr. Edwards states, from observation, that the action of the copper salt prevents the oxidation of the iron solution is beyond a question.

NOVEL METHOD OF ENGRAVING FROM PHOTOGRAPHS.

A SINGULAR and altogether novel method of obtaining engraved surfaces from photographs is announced in a recent number of the *Journal of the Franklin Institute*. It is based on a discovery by Mr. B. C. Tilghman, of Philadelphia, of a new method of cutting, grinding, and engraving metal, stone, glass, and similar hard substances. The method consists in driving a jet of fine sand against the substance to be cut. Mr. Coleman Sellers, in describing the process, says:—

"A jet of quartz sand thrown against a block of solid corundum will bore a hole through it $1\frac{1}{2}$ inches in diameter, $1\frac{1}{2}$ deep, in twenty-five minutes, and this with a

velocity obtainable, by the use of steam as the propelling power, at a pressure of 300 pounds per square inch—a remarkable result, when we consider that corundum is next to and but little inferior to the diamond in hardness."

He proceeds further to mention that glass can be ground or depolished in this way more easily than by any other method, and that "by covering parts of the glass surface by a stencil or pattern of any tough or elastic material, such as paper, lace, caoutchouc, or oil paint, designs of any kind may be engraved.

"There is a kind of coloured glass made by having a thin stratum of coloured glass melted or 'flashed' on one side of an ordinary sheet of clear glass. If a stencil of sufficient toughness is placed on the coloured side, and exposed to the sand blast, the pattern can be cut through the coloured stratum in from about four to twenty minutes, according to its thickness.

"If a current of air of less velocity is used—say about one inch of water—very delicate materials, such as the green leaves of the fern, will resist a stream of fine sand long enough to allow their outlines to be engraved on glass. By graduating the time of exposure with sufficient nicety, so as to allow the thin parts of the leaves to be partly cut through by the sand, while the thicker central ribs and their branches still resist, the effect of a shaded engraving may be produced.

"The grinding of such a hard substance as glass by an agent which is resisted by such a fragile material as a green leaf seems at first rather singular. The probable explanation is, that each grain of sand which strikes with its sharp angle on the glass pulverizes an infinitesimal portion which is blown away as dust, while the grains which strike the leaf rebound from its soft elastic surface.

"The film of bichromatized gelatine, used as a photographic negative, may be sufficiently thick to allow a picture to be engraved on glass by fine sand driven by a gentle blast of air."

A subsequent number of the *Journal* adds the following:—

"In the interesting description of 'Tilghman's process of cutting hard substances,' by Mr. Coleman Sellers, in our last issue, the fact that printing from the bichromatized film could be accomplished in this surprising manner was mentioned. Since the article has appeared, Mr. Tilghman has devoted his time and attention to the development of this branch of his fruitful discovery, and with great success. We have been favoured at his establishment with the opportunity of examining several specimens of his new art, which were sharp and beautiful reproductions from the negative."

To what perfection this method may be brought, and how far it may have specially useful applications, we cannot at present even conjecture; but it is certainly one of the most novel modes of engraving a photograph yet brought before the public.

VICISSITUDES OF A PHOTOGRAPHIC PORTRAIT.

NOTWITHSTANDING that photographic portraiture is always regarded a fair game for the ready sneer in literature, in court, and in the senate, the trustworthiness of its record, and the tender associations necessarily belonging to its absolute identity and relation to the sitter, constantly receive almost unconscious testimony. We have recently received from Mr. James Brown, of Otago, a couple of New Zealand papers, a photograph, and some details in a letter of a singular narrative, to which reference is made in the papers. The details will interest our readers:—

Mr. West, one of the survey party engaged in laying off the Maori reserves at Stewart's Island, gives details of the finding of the skeletons of two human beings. "One

was lying stretched out under an ironwood tree, the bones a little disturbed, a heap of shells at the feet. Close by there were two pairs of Wellington boots, and a pair of low shoes, much worn and cut: the clothes quite rotten. The other lay at a distance of about ten feet in the open, the head down hill, the legs stretched out as if it had rolled away from its fellow. Upon this one were found a Spanish half-dollar piece, a copper coin, and the photograph of a young man smoking a cigar. It is very plain, considering the time that it is supposed to have been exposed to the action of the weather. There must have been other photographs, as there were five small square pieces of glass, and some decaying portions of the frames. There was also an old razor, a bit of red stained glass, and a tooth-brush. Poor fellows, they were not half-a-mile from the Maori settlement! The remains are believed to be those of two men who ran away from an American whaler (name unknown) at Pegasus about nine years ago. A shipmate of theirs, who deserted at the same time, is said by the Maoris to have reached the village in a very exhausted state, with but little clothing left on his person, the rest having been torn off in struggling through the scrub. He stated that he had been forty days coming from Pegasus, during which time he had been living on shell fish, and carrying lighted fern all day, for the purpose of making fires at night."

Some additional confirmatory particulars were subsequently ascertained. The photograph in question was a glass positive, was sent to our correspondent, Mr. Brown, to copy, and copies were, we understand, sent to English illustrated papers, in the hope that they would engrave the portrait and publish the details, and so possibly afford to anxious survivors the mournful satisfaction of knowing the sad fate of the runaways. Speaking of the portrait, Mr. Brown says it was "preserved, and pretty distinct, although it was exposed to the weather for nine years, and the metal preserve was rusted away, only the mat left, and five other glasses, showing that other photographs had been in the possession of the unfortunates, and, owing to some cause or other, were incapable of standing the weather. This photograph which stood so well was unvarnished with either clear or black varnish, simply the collodion film, and this may account for its permanence, for I know of no clear varnish that will stand water for any length of time, and it is well known that black varnish is liable also to crack and fall away, taking the film with it.

"I have read many interesting articles on permanence of photographs, but I am convinced that there could be scarcely anything more permanent than a glass positive photograph unvarnished in any way, and a collodion film alone holding the picture. How would an oil painting itself have stood such a test? The clothes of the unfortunates were all gone, nothing but a few buttons, the skeletons, and a few glasses, and one among them containing a film of collodion with a photograph: the others finished, perhaps, more carefully, varnished, no doubt, and this extra care led to their destruction.

"I have sent photographs and newspapers to the various illustrated papers, and if it is any clue to the identification of the unfortunates, some good will result from my labour of love."

The photograph which, as our correspondent so justly remarks, has proved very satisfactorily permanent, is so little injured that the portraiture would easily be recognized by any one having known the original. It represents a good looking young fellow of apparently from twenty to twenty-five years of age, either clean shaven or beardless, with oval and regular features: the eyes full and well defined; a dark, broad-rimmed felt hat, set slightly on one side, and the style of dress, convey the idea that the wearer was an American. It is a touching souvenir of a sad fate.

Foreign Miscellanea.

M. ALBERT, of Munich, the inventor of Albert type, and Royal Photographer to the Court of Batavia, has just been invested with the Prussian Order of the Crown, of the fourth class, in acknowledgment of the value of his invention.

The members of the Berlin Photographic Society propose to establish a kind of lottery, or, rather, raffle on a large scale, to raise funds for the relief of those who have suffered by the recent war, and invite the co-operation of their brethren. All the more celebrated photographers of Berlin have taken up the matter.

The Photographic Society of Vienna celebrated its tenth anniversary in March last.

M. Brann, of Dornach, has again got his establishment into working order, and although it is believed the change of nationality is somewhat distasteful to the celebrated photographer, no material difference will be made in the working of the establishment. Two sons of M. Brann were in arms during the war, but they have fortunately escaped injury, and are now back again in Alsace.

Some discussion as to the best means of counteracting cyanide of potassium poisoning occurred at a recent meeting of the Berlin Society for the Advancement of Photography. M. Junghans recommended a dilute ammoniac solution, which is either applied to a wound that has been touched with cyanide, or swallowed in cases where the poison has been taken internally; an acidified iron solution, such as is used for developing, is also a good remedy. Dr. Schultz-Sillac thought that a strong dose of alcohol would be a good antidote, as the patient suffers from relaxation of the nerves, and this treatment would have the effect of bracing them up. An incident was mentioned of a man who was wont to use cyanide of potassium for stopping hæmorrhage, and who never felt any subsequent effects of cyanide poisoning from such a course.

M. Ohm, of Hamburg, is said to have invented a new description of sensitive albumenized paper, which will keep good for months. From the fact that fuming with ammonia is necessary before the sheets are placed in the printing frame, the material would appear to be similar to the washed and fumed paper that has recently been brought forward. No practical experience of its qualities has, seemingly, yet been acquired.

M. Kruger has explained the action of the ammonia fuming upon weakly silvered paper to be that of dissolving the albumenate of silver which exists in all albumenized papers, and thus bringing this compound into use in the printing process.

The gold toning salt prepared by M. Pietschmann has been lately reported on, and appears to have given satisfactory results, especially in cold weather, as the solution tones well at a temperature of 10° Cent. Whether its cost is, on the whole, less than that of ordinary gold preparations is a moot point.

A method of purifying—or, rather, improving—old samples of collodion has been proposed by M. Kruger, who suggests the mixing of egg shells, carefully freed from the skin, in any acid samples of the compound. This form of carbonate of lime, which is one of the purest obtainable, has the effect of neutralizing any large amount of acid that may exist, without prejudicing to any degree the particular qualities of the collodion.

M. Grasshoff uses a plate of green glass when reproducing or enlarging negatives, this medium being placed between the original image and the sensitive plate. The green glass is said to soften the glare generated from the transparent portions of the original, and thus allows time for the half tones to be properly developed without over-exposure of the high lights.

Mounting-cards and albums for the Victoria card are being advertised by many of the German houses.

Fritz Luckhardt has lately been giving some attention to the production of cabinet vignette pictures similar to those which have made the name of Reutlinger so famous. The latter gentleman, it is believed, has not yet definitely decided upon his future place of residence.

Adam-Salomon has returned to Paris, but has, of course, been unable as yet to resume work. It is feared that his house—near the Porte Maillot, which escaped the Prussians—has been injured by the recent civil war.

The cameo-vignette portrait is rapidly becoming general in Germany.

A clever specimen of photo-lithography, in the form of a reproduction of a piece of point lace, appears in the *Photographisches Correspondenz* for last month. It is produced by a process of M. J. Schopf, who has enjoyed some experience of methods of this nature.

M. de Constant's article on dry-plate processes, recently published in the *PHOTOGRAPHIC NEWS*, is to appear at full length in some of the German journals.

Dr. August Vogel, one of the professors at the University of Munich, writes a lengthy article upon technical applications of light, in the *Photographisches Archiv*. He enumerates the various artificial lights, and explains the value of spectrum analysis in the examination of luminous rays.

A modification of Lichtdruck has been devised which is adapted to the production of photographs upon porcelain. No practical experience of the process seems yet to have been made known.

The Berlin photographers propose to establish a Mutual Protection Society for the purpose of guarding themselves against the public, who but too frequently obtain specimens and proof-prints without payment. One proposal is to establish an album of defaulters (a species of Black Book), containing portraits of such well known characters as are in the habit of defrauding the photographer. A set of rules has also been drawn up by the Berlin Society, upon which the members are requested to frame their business arrangements.

HYDRATE OF CHLORAL.

A CORRESPONDENT writes as follows:—

PHOTOGRAPHIC NEWS, page 231. Let me notice the proposal, that "a nervous photographer may get a good night's rest by taking a dose of 20 to 50 grains." I have taken this invaluable medicine occasionally for eighteen months; but 10 grains is a sufficient dose, and I have generally found 5 to be enough. If too much is taken, swallow the albumen of an egg. The doses I have known given fill me with astonishment. The best preparation of it, and the pleasantest form of taking it, is "Ferris's syrup of hydro-chloral." As a cough mixture nothing is better than this:—

Oxymel scillæ...	...	...	3 drachms
Paregoric (tinct. camph. compos.)	...	...	1 drachm
Vin. ipecacuanha	...	...	1 "
Potassæ nitr.	...	...	30 grains
Acid. citric	...	...	10 "
Ferris's hydro-chloral syrup	...	10 "	(one drachm of syrup)
Syrup	...	...	1 ounce

A teaspoonful of this three or four times a day, taken as a liquid lozoge, and not gulped. T. F.

MY PORTRAIT.

BY H. R. P.

I HAVE just had my portrait taken. It is the first time in my life that I have submitted to such an operation under professional hands, if I may except two feeble attempts that were made upon me some fifteen years ago, before, therefore, paper positives had become common, and

cartes-de-visite had received the significance they now bear. Of these two pictures, the more striking was executed in a locality still noted for its portraiture—the New Road; and I can yet remember very acutely the flood of bright and vivid light with which I was enveloped and transfixed, while the camera glared at me through its cold glassy eye.

Since then I have never been placed at the mercy of the professional portraitist; and although I have of late gathered some knowledge of photographic matters, and, indeed, pride myself upon being well posted in the more novel methods and manipulations of the art, I have never, all these years, been exposed to the rays of the sun with my head screwed into a rest, or my body in a frame, except within the precincts of my own hot-house. Although portraiture is a particular branch of the art which I have not extensively studied or practised, still the rules and experiences, more perhaps of a theoretical than practical nature, with which I am acquainted have given me considerable confidence as to my capabilities in this direction, had I wished at any time to give vent to my talents. The hints, dodges, and wrinkles that have been placed upon record in the journals during the past few years have not been lost upon me, but have, for the most part, been carefully gathered up in my mind, and incorporated among those well known methodical regulations that govern the conduct of every properly disposed photographer, and from which it is considered by many flat heresy to depart. It is by reason, then, of the somewhat peculiar position in which I find myself that I have determined to give my experiences of a visit that I paid last week to a studio in the vicinity of the Royal Academy.

The photographer to whom I sat has lately achieved some reputation by producing portraits of considerable dimensions, which have been vastly admired for their pictorial effect, and which I will not deny have a certain—well, I can hardly define it; but, at any rate, a certain something which other photographers have not.

Possessed with the idea that *my friends* would be delighted with a large portrait of myself, such as I could hang up in a conspicuous position in my rooms, where they could have no difficulty in seeing it, I determined to pay a visit to my good friend the photographer, from whom, by the way, I hoped that, while I could impart to him, doubtless, some of my superfluous knowledge, I might be able to appropriate quietly a few of the secret dodges by means of which his boasted style of portraiture (which, to tell the truth, is certainly of a totally distinct character to what I sometimes execute) was, no doubt, simply due. As the sequel will show, however, the plan I had contrived was somewhat devoid of success.

As soon as permission was given me to enter the glass room, I repaired up stairs without delay, and found my friend in a corner of his dark closet stealthily engaged with his silver bath. He had begun his tricks already, so I hastily advanced to take note of the proceedings. He tilted the bath slightly with one hand, and with the other drew a piece of paper slowly over the surface of the liquid. By way of explanation he said, "Skim your bath every morning, *if you like*."

I said nothing, but carefully watched his next proceeding. It was to take a large glass plate from the hands of an assistant, and, without scarcely looking at it, much more breathing thereon, to prove its cleanness proceeded to coat it with collodion. I let him go on without hinting a word about his having forgotten to assure himself in this manner of the plate being recently polished; but when, by reason of a want of collodion upon the plate, from careless pouring in the first instance, he proceeded to apply a further quantity from the bottle, I at once pointed out the fatality of such a proceeding. He did not, however, deign to reply, but only poured back the now superfluous liquid into the stock bottle, of which he had a series of three or four to be used in succession.

Finding him somewhat independent on this score, I questioned him about his lenses. I mentioned that Mr. Triplet, the eminent optician, had informed me a lens was being used for these large pictures that it was a positive shame and cruelty to employ, as the field to be covered was far too great for its capacity. "Perhaps," I continued "you stop down well."

"I would not use a lens at all that required a stop." broke in the photographer vehemently. I saw at once it was no good wasting time in discussing a question so obviously indisputable as this, and so gave it up.

As to posing, upon which many people have assured me the main power of this particular photographer rests, I can here, at any rate, make a positive assertion, for, instead of devoting some time and trouble to arranging my body and limbs so as to give me an imposing and dignified appearance, he allowed me to sit pretty well how I chose; and before I could assume that sternness of purpose which I had previously studied, he told me to think through, or go over in my mind, some poem or speech with which I might be acquainted, and forthwith exposed the lens. Nor was this all that was calculated to disturb a well regulated photographic mind, like my own. I observed no less than three gross transgressions of those well-known laws upon which we photographers are wont to base our reputation, and against these I was powerless to protest, even had I possessed the will to do so, for I began to be thoroughly disgusted that a photographer who enjoys such reputation should play pitch and toss with all the valuable experience that the photographic world has taken so long to collect together, and which most of us hold to so dearly and religiously. "Touch the Commons, and down comes the country," says Mr. Spenslow in a beautiful oration, when solemnly summing up the ancient privileges and uses of Doctor's Commons; and so, in like manner, I would ask, what is to become of the prestige of the photographer if you trample upon all our cherished customs and observances?

The errors to which I have alluded may be thus enumerated: The slide was brought from the dark room without envelopment in a cloth, the curtain immediately over the camera being by no means black, although possibly somewhat light-proof; the lens was not capped, but a cloth thrown carelessly over the orifice; finally, just at the moment of exposure, a window admitting diagonal *top* light was opened wide, and the bright rays allowed to shower down over my body, not, however, in any uniform manner, as in the instance of the New Road artist of whom I have spoken, but only partially and in patches.

My patience began to leave me entirely, but I pulled myself together, determined to see the farce to the bitter end. Into the dark room I went, more, perhaps, in sorrow than in anger, for who could not but feel pity for so benighted a brother? Besides, thought I, perhaps the eccentricities are now over, and we shall proceed with more method and observance to rule. Rash hope! The plate was lifted from the slide, and the developer not quietly poured out and gently flowed backwards and forwards, but actually thrown on and off in one single twist, as it were, the plate being afterwards held in a diagonal manner, with scarcely a drop of developer left upon it.

Seeing me closely interested in the operation, my friend said:—

"Well, what do you say, shall I intensify or not?"

I mildly began to state that it certainly was a well known axiom among photographers that pictures, as a rule, stood in need of some intensification, but, from what I had seen, I thought it possible he would be obstinate and independent enough to dispense with the use of a solution altogether. Moreover, while, of course, there were special cases—— But before I had finished the well-merited rebuke, I found my friend had not only opened the door of the dark closet and passed into the

glass room, but, as I live to tell the tale, he actually opened one of the windows, and, leaning out, exposed the unfixed plate to the direct influence of a bright sunshiny morning.

"Now just observe how quickly the film changes colour," said he. I could not reply; my heart was in my mouth; I literally shuddered, and I would willingly have turned away from the horrible sight. It really was too much; the plate rapidly assumed a greenish tint, and if it had been submitted to the light much longer (I think the time was about fifteen seconds), there would, I am sure, have been nothing left of the image.

Dipping in a hyposulphite bath completed the proceedings, in which I should have mentioned my friend seemed to take the greatest delight throughout, as if, indeed, he rather enjoyed this apparently risky and independent mode of working.

By the time we had reached the end of the operation I had ceased to be surprised at anything. Of course, if a man chooses to disregard every well known method and manipulation, and to act in direct defiance to the laws upon which photographic faith is at present built, why we cannot be surprised if he goes rapidly to perdition. If he elects to waste his time and throw away his money in pretending to follow the calling of the orthodox photographer, no positive objection can naturally be made against such a proceeding. But the strangest thing of all is this: that the results he generally produces are (I give my word), on the whole, really exceedingly good in their way; and as not a few of the public are rather taken with the particular way, it follows, of course, that the style is just now a favourite one.

I went down those stairs again with very different notions about photography. As I quietly descended, I began to think that perhaps my friend's mode of working was hardly so absolutely erroneous and bad as one might at first suppose, for, after all, it must be admitted that whether he ought to do so or not, he does succeed to some extent. Whether it would not be better if some of us were just a little more independent in our habits and bolder in our enterprise are matters which would persist in obtruding themselves upon my mind, and I really mean, in future, to consider the matter over seriously. In the meantime, I thought others might not be averse to hearing my first experiences, at any rate for some years, of a professional portraitist, and for this reason I have written out these notes. I ought, perhaps, to mention the fact that the studio in question is situated in one of our largest thoroughfares—Piccadilly, in fact—and that it is at present in the occupation of a gentleman named Blanchard.

PORTRAITS AND PICTURES.

BY JOHANNES GRASSHOFF.*

WHEN in my last paper I expressed a preference for a plainly printed picture over one of a vignetted nature, I did not forget that in the former case a good production necessitates proper attention in matters of detail, such as the correct disposal of the background and properties. These latter are apt to suffer in the picture by reason of the unequal reproduction of the colours presented by the furniture and drapery of the originals. It is not every photographer (especially in the provinces) who can obtain furniture, carpets, and other requisites of the nature most desirable, for one is often greatly mistaken in photographic effect. Even when the purse-strings are sufficiently loosened, it is not easy to overcome a certain amount of prejudice that is apt to exist. In most small towns there is often no suitable workman to be found who is in a position to embody the ideas of the photographer, and it is even difficult to obtain so much as a background or object painted in a proper manner; many photographers

are skilful enough with their retouching brush in correcting defects or making modifications upon the plate, but it is seldom that one finds an operator capable of painting or colouring his own studio paraphernalia.

Another point I would here refer to. In the course of time I have received many communications from all parts of the world, requesting hints and information as regards the illumination of the studio and disposal of the light. There are in existence glass boxes fitted with glass of every variety—white, blue, matt, clear, &c.—so that in some of these hot houses there must be a perfect rainbow of colours; it has struck me with bewonderment very frequently that the production of mediocre pictures even is possible in such localities. In order to reply, to some extent, to these questions, I propose to publish some illustrations of a means of illuminating the model which has in my hands proved the most successful, and believe the method indicated will be found, at any rate to some degree, correct. Of course, when particular effects require to be produced in lighting up the model, the general rules I shall give will not apply to such cases.

One more point connected with the illumination of the studio may be mentioned. If many of the curtains in the glass room are drawn, and the sitter placed close against the window, the contrasts of light and shade are very marked, and are, indeed, frequently of a too glaring nature. If, however, the curtains furthest from the model are partially opened, the gradations from dark to light are softer, and the half tones altogether more delicate, and the Rembrandt effects have not the sharp effect of solar protuberances.

Without reflecting screens it is difficult to work, and, moreover, a shade or cover over the lens is necessary to prevent the action of false light; it is well not to place the camera in invariably the same position and at the same distance, as in many studios it is unfortunately the case, where certain landmarks show the position of the camera. On the contrary, it is better, if the model has taken up a favourable pose, to allow the same to continue, and then, adjusting the inevitable head-rest, to move the apparatus to the spot whence the most successful view is obtained, and to work away from that point. The best pictures which I have produced, or at any rate those which have pleased the most, have nearly all been taken in this manner, at times when I have been compelled to protect my lens with my own body, so that this or that open window should not throw any injurious rays into the lens. Unfortunately, it is very difficult to produce effects of light in pictures of large size, and for this reason we must generally remain contented with photographs of smaller dimensions, such as the cabinet, carte-de visite, or more recent Victoria forms of portrait.

Finally, I would make one or two general remarks upon the subject of "portraits and pictures." This is, indeed, a theme similar to the expression, "genius and talent," for where the one begins there the other leaves off. With the public, as a rule, it is unwise to discuss theories of this kind, for it is often equivalent to saying to the ill-favoured sitter that he only succeeds in imparting ugliness to the apparatus: and this will not, of course, by any means do, as the money question represented by faces of this kind is, as a rule, much more deserving of study than that of those beauties which help so much to dissipate the photographer's gold and silver, but which, nevertheless, must be depicted to supply show cards, to serve as allurements to the public. I, therefore, close this article with the hearty wish that some chemist or other investigator may speedily improve our negative process to such an extent that the colours and tints in nature may be more correctly reproduced, and that one model may not appear of a green and yellow hue, while another is red and brown, for the contrast rendered in our monotone photographs often exceeds that presented by sun freckles or bright brown hair.

THE ALBUMEN PROCESS ON GLASS.

BY M. NOTON.*

In this paper I am supposing you are going to try the albumen process for the first time as a change from some other one you have been working at, and that you have a pretty good idea about apparatus, chemicals, manipulation, exposures, development, and so on. Now the first difference you will find between this and the other one will be that you will probably have to prepare the albumen yourself, as it must be fresh. You can select the source from which you will obtain the raw material; all the other requisites may be bought as usual.

There are three sources from which albumen may be obtained, viz., the eggs of hens, ducks, and turkeys; all are good when fresh. But there are many circumstances affecting the quality of the albumen, independent of time, and to enable anyone to make a thorough scientific inquiry into these circumstances, a well-stocked poultry yard at a farm in the country is needed. Good hen eggs do very well; they should be chosen of a full size, of a regular shape, and not of a fancy breed. Duck albumen is very good; it is of a lighter blue colour than hens', which has a yellow tinge. The few turkey eggs I have used yielded a large quantity of albumen, similar in colour to the hen; it was also very good, but the eggs are not to be obtained so readily as hens' or ducks' eggs are. In Watt's *Dictionary of Chemistry*, at page 65, you will find it stated that "white of egg consists of transparent walled cellulose enclosing an alkaline solution of albuminate of sodium;" and "albumen is insoluble in alcohol and ether."

The albumen must be thoroughly beaten up to a stiff froth. This may be done most effectually by a beater revolving at a great speed. To every fluid ounce of albumen add seven grains of iodide and one and a-half grain of bromide of ammonium, dissolved in one and a-half or two drachms of water, before beating up. Either a few drops of liquor ammonia, or a lump of camphor, or an open bottle with some carbolic acid in it, may be enclosed amongst the froth; then afterwards covered up and put aside in a cool place to settle down again into a liquid, arranging so that it may have at least twelve hours to do so.

For printing transparencies the bromide may be left out of the albumen, as you have only one colour in the negative to consider. The bromide may be of use for landscape photography.

Early in the last month I made the following experiment:—Ten grains of bromide of ammonium were dissolved in one ounce of albumen. A plate was coated, dried, dipped in the aceto-nitrate bath, washed, covered with solution of hypo, washed, and dried, the result being that a stranger would take the plate to be ground glass, very fine on one side, but there is this difference—when held up to a small bright light there is a circle of prismatic colours; also, in using it in the camera as a focussing surface (for which it does very well), you see the colours, so that there is a suspicion that the bromide may interfere a little with the sharpness of albumen transparencies. In former times bromide was not used in the original process.

When the albumen is about to be used, it should be filtered through fine calico, two hours or so beforehand, into a distributor.

The next item we come to is the nitrate of silver bath. The strength of the nitrate of silver solution for sensitizing the albumenized plates had better be started with as low as possible—say fifty or sixty grains to the ounce of water. Saturate one third or fourth part of the bulk with iodide of silver; settle and decant, or filter into the other two-thirds or three-fourths; make the solution slightly acid with glacial acetic acid. There is no necessity for using such large quantities of acid as were prescribed in times past.

Do not use a bath soon after it is made or considerably strengthened, but let it stand a day or so. Filter just before use.

One very important element is pure water for making the various solutions required, and giving a final wash. You should be able to condense the water yourself, making a sufficient quantity to last some months, stored up in glass bottles.

It will save you much trouble and annoyance if you have good glass plates. For negatives intended to be used for printing transparencies by contact, patent plate should be used. Large negatives, intended to be reduced in the camera, may be of other good glass. Grind the edges on a flat stone; then clean them all over. If the glasses are not patent plate, try each surface with a knife to find the worst side; having satisfied yourself on this point, mark that side with a diamond at one corner. You see, patent plate needs no examination with a knife, and both sides are usable, consequently it is the best in the end, and may be more readily and perfectly coated with albumen. When plates are too large to be grasped by the hand a little more inconvenience arises, but it is soon got over.

The actual preparation of an albumen plate is really a very easy thing to do when you have all the requisite tackle and material ready and in proper condition, and a suitable place to work in. I say when you have all things right, &c., for on this hang all the troubles and difficulties of the process, especially in reference to the liability to have bubbles or fibres in the film.

Microscopically-fine bubbles of air will be diffused through the albumen, after filtration sometimes, if you do not mind, and this is the way they are produced:—Occasionally the settled-down albumen is thinner, and passes through the cloth filter into the distributor quicker, drawing down air by the side of the filter-point along with it to the end of the glass funnel. This is a bothering circumstance, but I do not think it is a worse one than when the albumen is so thick that it will scarcely go through the filter at all. The only remedy for this state of things is to keep drawing off portions of the albumen and returning them into the filter above, till the cloth gets partly silted up, and the liquid goes through slower; then, when all has passed through, let it stand quietly for two or three hours, so that any bubbles present may rise to the surface. It is rather remarkable that the act of beating up the albumen into a stiff froth saturates it with millions of bubbles, and these leave the liquid so free in time that it may, with care, be put on to a glass plate, as was originally given, without filtration. I have myself frequently decanted the albumen into the distributor direct when I have wanted to try a plate hastily. Filtration is an insurance against any solid bits of material suspended accidentally in the liquid.

There are two ways of coating a glass plate with albumen. The first is—After pouring off the excess, putting the plate away somewhere, quite level, till it dries. The other way is by whirling after pouring off, and drying at once on a level hot-water plate. In putting the albumen upon the plate you have here another risk of bubbles, which may undo all at the last step.

Albumen differs from collodion considerably in being a watery liquid, and, as like takes to like, the surface of the glass plate must be chemically damp, which will cause the albumen to flow quite as readily as collodion does on a dry plate, and attach itself to the surface without rolling over and enclosing small bubbles of air, the principal cause of the black spots I have frequently heard complained of. Do not put the poured-off albumen into the filtering funnel, but into the beating-up jar or jug. Always have a good stock in the distributor to begin with. As regards fibres and dust, they mean a dry atmosphere, which you had better avoid.

When the film is dry, and the glass still slightly warm, it is to be immersed in the nitrate of silver bath for about forty to sixty seconds with motion, taken out, drained,

dipped in a bath of water, taken out, and put into a second one, or tray, so that it can be rocked, then into a tray of a weak (say ten to fifteen grains) solution of muriate of ammonia, taken out, swilled with water from a jug, and whirled. It is now ready to receive a second coat of albumen. This being applied, the excess poured off, whirled, and dried, the plate may be stored away ready for sensitizing afterwards as wanted, which must, after the above, be done in the dark room. If the plates are for early use, the bath of muriate of ammonia may be left out, using a little more water.

Before sensitizing for the second time the plate must be slightly warmed as before. Let it go through the first and second water baths, whirl, then cover the surface with solution of gallic acid, pour off, and whirl rapidly; put away to complete the drying without heat. The plate should have not less than twelve hours' rest before exposure.

Albumen plates have a character for being slow. They are considered slow because it takes a long time to develop the picture; this will depend upon the means used to do it. The imperviousness of the coagulated film of albumen has to be considered.

If you put a plate into simple water with the intention of softening the film, so that you can clean it off, you will find it resist for a considerable time; but if you use a strong solution of soda, the removal may be much quicker done, as the alkali softens the film, causing it to be more penetrable. Now, this has only to be done in moderation in development, and the time will be reduced. It is a practice with me to use gallic acid with a trace of nitrate of silver.

Using pure water in the solutions, you may let the development go on all night in the dark, covered up, when generally the picture is ready for completion in the morning; or you may cover the plate with gallic acid without silver, and afterwards go on with strengthening the details at your leisure. Alkaline development may be employed to bring out the picture. The first simple step is to use gallic acid with a drop or two of carbonate of soda or ammonia; gallic acid and acetate of lead; pyrogallic acid, plain or alkaline, may be used.

There are several formulæ and instructions on development in the journals and almanacs, to which I must refer you; only reminding you that you had better destroy the alkalinity of the developed picture before fixing, or blisters and mination will be the result. Solution of hyposulphite of soda, made slightly milky with acid, to be used for fixing. Wash, whirl, and dry.

TO TINT PHOTOGRAPHS SLIGHTLY.

The following easy method for tinting photographs is well adapted for persons who have little leisure for the other and more artistic manner.

Having prepared the photograph in the usual way, take a little pink madder or carmine, and lay it on the cheek with a clean pencil. Soften it carefully all round the edges, blending the tint into the face. Repeat the process once and again, until you have obtained nearly as much colour as necessary; I say nearly as much, because you have to pass the general flesh wash over it, which has the effect of darkening it considerably. For the purpose of softening, it will be as well to have two pencils on one holder. It might appear that putting on the colour of the cheek at once, and softening it, would suffice; but you will get it far softer by doing it with a very pale tint two or three times, than you possibly can by making it at once as powerful as necessary; besides, it is impossible to soften a strong colour so well as a pale tint. When the colour is quite dry, go over the whole of the face with the flesh tint, then put in the hair, eyes, eyebrows, and lips; round off the forehead with grey, and apply the same to those parts of the face where you observe it to be in nature. If your photograph be a very dark one, you will not require so much grey in it as if it were a light

impression. Next wash in the background, and proceed with the draperies, &c.

Return now to the face: strengthen the carnations, greys, and shadows, by hatching delicate tints over them; put the light in the eyes, and the spirited touches about it, and the eyebrows, mouth, &c., and bluish off the hair. In dark photographs, you will require to lay the lights on the hair with body colour, as it is generally much darker than it appears in nature. Make out the linen with a grey, deepening it in the darkest parts, and lay on the high lights with constant or Chinese white. Proceed next to shadow the drapery, and when you have obtained the required depth, scumble in the high lights, using a bare pencil and a very gentle hand, as before directed. Give the background another wash, if requisite, and your photograph is finished; or make up a tint of orange vermilion and white, according to the complexion, and lay it smoothly over the face and hands; then put on the carnations with rose madder, and shadow up the face with orange tint, and proceed as above to finish. If the backgrounds and draperies appear dead, you may take a piece of very soft washing silk and rub them up a little, which will have the same effect as if they had been hot pressed. Whenever body colour has been used, the rubbing will be ineffective. Neither rubbing nor hot pressing will give a shine to any but transparent tints. If there be metal buttons, chains or epulettes, they must be laid over the dress with body colours; a very good ground for them is red chrome and gamboge shadowed with burnt umber, and heightened on the lights with lemon chrome and Chinese white. By the foregoing methods it will be unnecessary to hatch or stipple a great deal; for you will find that the face will come out very soft and round without it, but the effect is far inferior to that produced by the other process.—*Photographer's Friend.*

ON PHOTOGRAPHY IN THE PRINTING PRESS: BEING A DESCRIPTION OF THE WORKING OF THE HELIOTYPE PROCESS.

BY ERNEST EDWARDS, ESQ., B.A. (CANTAB).*

DISCUSSION.

Mr. GEORGE WALLIS said he must congratulate Mr. Edwards not only on the character of his invention, but also on that of his paper, in which he had given so lucid an explanation of the process of which he was the inventor. It often happened that when papers were read, in which, as in his own case, appeared great promise for the future, subsequent events showed that the inventor had calculated on the public help more than he had a right to do; and he could therefore heartily sympathise with the lecturer when he said that this was a process in which new materials, new methods, and new skill had to be employed. It was on account of these things that many new and useful processes hung fire, and were not carried out. He had generally found that those he employed to carry out any particular part of a process knew much better than he did what he wanted. The result was, that you always had a great deal to get out of people's heads before you could get what you wanted into them. There were three points in this invention which appeared to him of great importance: First, the ingenious method of using a mask for the purpose of keeping a clean margin to the paper, thus avoiding the expense and trouble of mounting, which was a matter of great importance in book illustrations, for those who had bought books illustrated with mounted photographs generally found that a trouble arose from the curling of the film on which the subject was printed. The second point was, the ingenious and artistic process of employing two or three gradations of ink, that of a stiff character in the first instance, and thinner ink afterwards, by which the picture was built up, and produced in a manner which no single ink could ever obtain. Finally—and this was of immense importance in the economy of the invention—the film itself, after having been used for as many copies as were required at the time, could be put aside and brought out again, whenever necessary. In the case of lithography, if you wished to produce a second edition

of impressions, it was necessary either to pay for re-drawing on the stone, or to pay a rental for keeping the original picture upon the stone; but in this case the gelatine was, by the process itself, really converted into leather, and, therefore, being equally durable, there was no reason why the printing surface should not be kept as long as was required.

Dr. RYLEY said no process was perfect at first, and from what he had seen of the beautiful one before them—for up to the present time nothing had been produced at all equal to it—it appeared to him that there was a kind of water-mark on the paper, which he had particularly noticed in one print called "The Kind Sister." He should like to know, having paid particular attention to photography, what was the cause of these faults, for faults they undoubtedly were. It occurred to him they might be caused by the whole of the water not being squeezed out in the course of printing.

Mr. SADDLER asked how long the film took to dry.

Mr. EDWARDS said from twenty-four to thirty-six hours, at a temperature of 90°.

Mr. SADDLER said he had noticed in all the impressions more or less evidence of that which he supposed attached to the gelatine process of drying. This was one of the fatal objections to the Pletsch and Dallas processes, which required forty-eight hours to dry the film. When it afterwards came to be moulded in gutta-percha, every particle of dust was moulded also, and in the transfer to the copper-plate this was again repeated in little specula of copper, which stood up, and had to be scraped off the lines afterwards brought out by a graver.

Mr. SPILLER, as a photographer of long standing, desired to offer his congratulations on the very beautiful process which Mr. Edwards had succeeded in perfecting. He had watched the various methods which had been brought out for mechanical printing, but certainly, until the last year or eighteen months, with the exception of the Woodburytype, which Mr. Edwards had referred to, there seemed no prospect of substantial success, until the appearance of the Albert-type, by which most glorious specimens of art were certainly produced; and every one must have admired the magnificent specimens sent to this country. At the present moment, however, the public were in ignorance of the precise details of that process, and he believed Mr. Edwards was the first to give a connected account of the operation. With regard to the water-marks which had been spoken of, he must say that, although he had noticed this on some of the early carbon prints, there was, in the specimens of Mr. Edwards's printing which he had seen, great whiteness and brilliancy in the high lights. With regard to the dust attaching to the film in the process of drying, that could easily be got over by employing a desiccating process, by which the gelatine might be dried without contact with the external air. He should like to ask what was the minimum of copies required in order to enable the process to successfully compete with the ordinary method of silver printing. For instance, in the event of 250 copies being required, would it be found more economical?

Mr. SUAREZ inquired what would be the absolute cost of printing 500 copies. He had recently had to pay £12 for such a number of photographic prints, including mounting, and he certainly should have preferred the present process, one great advantage in it being that all the copies were absolutely alike, which was never the case in photographs, which varied greatly; and in the second place the curling and crinkling, which had been already referred to, was entirely avoided.

Mr. YAPP said some months ago he had the pleasure of exhibiting a few specimens of this process to two gentlemen in Paris—M. Lemercier and M. Rosa—who were very much pleased with them. M. Rosa afterwards took him into his press-room, and said: "I have brought this gentleman to introduce him to you; he has brought to France specimens of a process which is about to ruin us all. We are only able to work with a lithographic press, but he is going to put it on the steam press." That was going a little beyond what he had stated, but he did not despair of the time coming when Mr. Edwards would be able to fulfil these words. He was quite certain that when poor, unfortunate Paris was again in a position to do anything in the way of art, this process, or something analogous to it, would find great favour.

Mr. BEDFORD asked whether the paper was damped, as in ordinary lithographic and letter-press printing. He said it seemed an admirable process for reproducing fac-simile works of art, such as those in Turner's "Liber Studiorum."

* Continued from p. 237.

Mr. BAILEY asked if this process had ever been applied to glass or china, by using oxides instead of ink.

Mr. EDWARDS said they had produced prints on paper with a suitable ink, mixed up with oxides, specially for the transfer to pottery, but they had not yet had time to carry it further.

Mr. BAILEY said something similar had been attempted a few years ago by Mr. Jubert, but there were so many failures that it had to be abandoned.

Mr. FITZCOCK said this process would undoubtedly be a very great boon to artists, because they could get every touch of their work reproduced in a manner which no other process could imitate. Photolithography has lately been creeping much into use, and this process would no doubt be of great assistance in giving a transfer, which might be placed upon stone and afterwards printed by steam, which was not possible by any other way.

Mr. TICKNELL asked whether the process was adapted to transferring to glass, so as to produce transparent pictures for ornamental windows in galleries, staircases, &c.

Mr. EDWARDS, in reply to the observations which had been made, said the dust on the surface of the films had been, to a great extent, disposed of by Mr. Spiller. He suggested that it was owing to its being a new process, working with new appliances and new hands, which occasioned the water-marks. Really, a great difficulty to contend with was in getting a suitable kind of paper. Messrs. De La Rue had recently made some admirable paper for the purpose, but they had not elsewhere been able to obtain any on which they could rely, one sample being very good, but a second quantity proving quite the reverse. He was now referring to papers with a slight surface upon them, because such papers better produced the effect of photographic printing; when he found it impossible to get a reliable paper of that character, he fell back on ordinary plate paper, which, for many subjects, gave quite as good results—indeed, in some respects, far better; it did not, however, answer so well when it was required to imitate the effect of photography, one difficulty being that the pressure had to be kept on the plate for some little time, and if the printer was not careful to damp the plate properly, the continued pressure made the plate go into lumps, which occasioned the water-marks. This, however, was a technical difficulty, which was disappearing day by day. The dust could, of course, be completely got rid of, as indicated by Mr. Spiller, but he did not think the appearance spoken of was due entirely to that cause. The dust did not act in the same way as in the copper-plate that had been referred to, for dust was practically transparent, so that the light acted through it. If, however, spots did arise from such a cause, there was another remedy, viz., to use the under surface of the film, where there could be no dust, to print from. The cost, as compared with silver printing, was a difficult matter to enter upon, but he might say that, for one or two impressions only, it would not be worth while to prepare and make ready, as it was termed, the printing surface. For large-sized pictures, however, they could compete with the silver process, even for six impressions. In such cases the cost would be about 1s. per foot. Book illustrations, of size, could be supplied ready for the binder at 1½d. each; smaller sizes would cost more comparatively speaking, because the labour would be almost as great; but larger sizes less, in proportion. They were at present a long way from steam printing, but he believed that time would come, for the inking of the plates was so purely a mechanical operation that he saw no insuperable difficulty in the way. The plate seemed to discriminate for itself how much ink was required, and when the proper quantity was supplied, no additional amount of rolling would add to it. He was, at the present time, engaged in experiments with a view to putting these films into a lithographic machine. This was the first step towards steam printing, and he anticipated no difficulty with regard to the inking part of the process. The paper was used dry, just as it was supplied. Turner's "Liber Studiorum" was a magnificent subject for the process, and it was in contemplation to publish a complete facsimile edition of the whole series, under the auspices of a very distinguished author. As to transferring the impressions to glass, pottery, &c., he might remark that it was quite different from any photo-enamelling process, in which the colour was printed directly on the surface of the glass or china. The impression was printed on this tissue paper in the proper colours, the paper being then handed to the manufacturer to be used in the ordinary way. In fact, a picture was produced in the same material as in the methods ordinarily used, but by photographic means. The

transfer to stone was similar. He had specimens printed from the stone which had been produced from impressions taken in transfer ink and then laid down in the ordinary way; but this was only suitable to drawings in which the effect was produced by lines and dots.

The CHAIRMAN said Mr. Edwards had been justly congratulated on the particularly clear and lucid manner in which he had treated his subject, and on the openness with which he had described the whole process, and the steps which had successively led up to it; and he thought they must all feel very much indebted to an inventor who thus threw away the usual and often unnecessary reserve, and took them so thoroughly into his confidence. He was also much to be congratulated on having, in so short a time, made a new process so successful, for it often happened that an invention involving two or three, or even one mechanical process, was very difficult to deal with; you might get excellent results in laboratory experiments, and yet it would sometimes appear impossible to carry them out commercially, all sorts of unforeseen obstacles presenting themselves in the practical carrying out of the invention. He had no doubt that this process, like others, had met with a fair share of these practical difficulties, but what had been exhibited that evening was sufficient to show that they had been successfully overcome, and the process had been actually at work in several directions: amongst others, in that for which he ventured to think it was specially adapted—book illustration. There was, for instance, a periodical, the illustrations of which had been, in many respects, remarkable, and highly artistic, which had been published for some months, and the illustrations in *Art* would convey some idea of the way in which it might be hoped that the works of great artists and the works of nature might be made fairly accessible to the readers and buyers of books. He had himself experienced the difficulty which there was in efficiently illustrating works of art without going to a very great expense; and one difficulty was this, that almost all the processes which could be applied with anything like cheapness, such as lithography, zincography, or wood-engraving, involved the translation of the artists' works through another pair of eyes and hands. If you wanted a large number of copies of any work of art, almost beyond an architectural elevation or perspective drawing, for the purpose of illustrating a book or periodical, it was necessary to have it re-drawn and engraved, or drawn and engraved by one process, as in lithography. But in either case a fresh hand was introduced, and in nine cases out of ten the whole spirit of the artist's work was lost. The field open to such a process as had now been described was immense, and it certainly seemed to possess advantages which could not be claimed for any of its predecessors. Mr. Edwards had not only been enabled in explaining his own process, but had also generally recognised the services of others, and he was, therefore, more than ordinarily entitled to the vote of thanks which he begged to propose to him.

The vote of thanks was carried unanimously.

Correspondence.

QUERIES ON THE IRON DEVELOPER.

SIR,—Will you oblige an old subscriber with answers to two or three questions arising out of recent articles on development which have appeared in the News?

Mr. Albert Anderson recommends for subjects with little contrast, such as a fair lady with a light dress, full exposure and the use of a weak developer; and for subjects with much contrast, such as the same lady in black velvet, the same exposure, but a strong developer. Mr. Carey Lea recommends for landscapes with strong contrasts full exposure and weak developer. Which is right?

What is an "ordinary developer"? I find the term often used; but when I find Mr. Carey Lea speak of "an iron developer of ordinary strength, say from fifteen to twenty-five or thirty grains of protosulphate to the ounce," I fear that my own ideas are wrong, as I have always regarded anything over twenty grains a strong developer.

Does a saturated solution of iron deteriorate by keeping?

How many grains of protosulphate of iron per ounce constitute a saturated solution?

What is the use of sulphate of copper in the iron developer

recommended by Mr. Edwards and others?—Very truly yours,
 QUERIST.

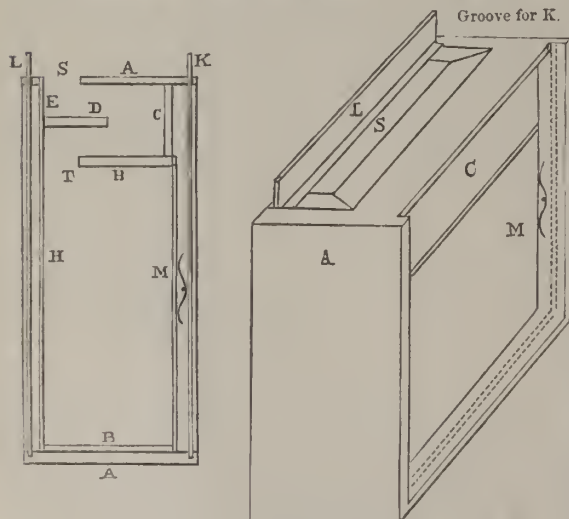
[Our correspondent will find some remarks in answer to his queries on another page.—E.D.]

WET PROCESS WITHOUT DARK ROOM.

SIR,—Although from time to time some more than usually successful amateur has vaunted in your columns the superiority of dry plates to wet in every respect for landscape purposes, averring that results as certain and as delicate as by the more troublesome process could be obtained with them, I believe the more general experience agrees with my own, that dry plates yield, when successful, inferior results, and not unfrequently, by failure, undiscovered until the subject is left far behind, cause grave and vexatious disappointment. In the hope of enabling some would-be dry plate workers to avoid the annoyance they would fain risk rather than mar the pleasure of their summer ramble by the fatigues and difficulties of transporting large or weighty apparatus, I beg to offer a description of the contrivance I have myself used to operate by the wet process without carrying a more troublesome burden than the use of the rival method would impose.

I give a diagram and a rough perspective view which will I think, enable anyone with the following explanation to get it constructed.

A, an ebonite frame, about two inches deep; B, a smaller frame,



of same width outside as A, is inside fixed into A; slips C D E close the space between the frames, so that no light can enter through the openings S T; H is a glass window closing the back of inner frame B; L a sliding shutter of orange glass.

The front of the frame B is ground true, and set so that when A is pushed into the place of the camera back, it may be square to the axis of the lens, and is coated with cautchouc; K is another orange glass shutter; it is used thus:—

A glass plate, cleaned, is coated in the open air, and quickly set against the face of B B (as at M), and secured by two springs, of which the pins drop into the outer frame A. Both shutters being down, the ordinary silver bath is poured through S. After the lapse of about five minutes it is poured out, A pushed into its place, and the shutter L raised for exposure, and replaced. The cell is then rinsed (not the plate, which need not be sluiced, since the water flows by T against H) with water, and the developer poured through S so as not to touch the plate. By tilting, it is then sent in an even wave over it, and the development watched through the orange shutters. When completed, the cell is rinsed with several changes of water, so as to thoroughly wash the plate, which may then be transferred in a shady place without injury into the plate-box, to be fixed on the return home.

The apparatus which now lies before me for taking stereos on two plates at two operations measures $5\frac{1}{2}$ by $5\frac{1}{2}$ by 4; this includes a box for two dozen single plates, and everything except the chemicals, the water, and the camera stand.

I am aware that other inventions have been proposed for the same end as that I have here described, although I have never seen any of them; and I put mine forward, not as the best thing of the kind, but as one which has been found on trial to answer its purpose, and which is very much at the service of any of your readers who please to adopt it.—I am, sir, yours faithfully,
 SIDNEY B. KINCAID.

Trinity College, Cambridge, May 29th, 1871.

PS.—Where the negative is to be enlarged, it is better to use it (as, indeed, I generally have done) with the shutter K next the lens; of course in this case a second negative must be taken to reverse the picture; but trouble from the solution crystallizing on the window H, unless exposure follow quickly on sensitizing, is thereby avoided.

TONING BATH.—CLEANING PLATES.

SIR,—In your last you gave to a correspondent (J. C. Moore) the formula for an acetate of soda toning bath, with the hint not to use it until forty-eight hours after mixture. I enclose formula for one that can be used forty-eight seconds after with as good results, and enclose a print which has been toned in one made up and used at once. I have made up all baths for seven or eight years this way with universal success. It is simply as follows:—

Place one ounce of acetate of soda in a half gallon jug; pour on it three drops of chloride of gold (or drachms); then put one quart of boiling water; let it stand five minutes or so, and add another quart of cold; it can be used at once, and will continue to work well to the last drop by adding gold to it before using each time.

For cleaning plates, either new or old varnished ones, there is nothing so clean or cheap as washing crystal. You can get two packets, enough to clean 500 plates, for three halfpence. I have used it for many years, and never had a dirty plate.—
 Yours, &c., J. R. GRIFFITHS.

15, Wind Street, Swansea, May 22nd, 1871.

[The proportion of gold as stated by our correspondent is surely wrong. About fifteen grains would be the right proportion.—Ed.]

COPYRIGHT LAW.

SIR,—It may, perhaps, be in your remembrance that at the May sessions, 1869, held at the Central Criminal Court, three persons, named Lawrence, Coleman, and Hooper, were indicted for conspiring to defeat the copyright in certain works of art, the property of Henry Graves. For several weeks previous to their arrest they were watched by detectives, and, at the preliminary examinations, it was proved that Lawrence supplied photographs, alleged to have been illegally made, to Coleman, who sold them openly in certain parts of the City. Hooper, who carried on the trade of a mount-cutter, was employed to mount them. At the trial, no evidence was offered against Hooper, the court not considering mounting photographs to be a criminal offence. The counsel for Lawrence argued that conspiracy could not be charged. The Recorder thought differently, and refused to reserve the point. A verdict of guilty was returned. Lawrence was sentenced to twelve months' imprisonment, and Coleman was liberated upon entering into recognizances to come up for judgment when called upon.

The trial of Boulton and Park furnishes an instructive commentary upon this case, and we cannot escape the conclusion that either the law of England is very uncertain, or that considerable ignorance of it exists among the learned gentlemen appointed to administer it. The remarks of the Chief Justice with reference to charges of conspiracy are weighty, and worthy to be had in remembrance, particularly as, in the present day, it has become a fashion to prefer such charges, although they commonly result in failure. In his summing up his Lordship says:—"The case is certainly one which requires the utmost discretion and care, not only with regard to the interests of public justice and to the parties who now stand accused, but also on account of the form in which the case is presented to you. We are trying the defendants for conspiring to commit an offence which, by the law of England, is a felony. I must say it is not a course which commends itself to me as fair to you. I am clearly of opinion that where the

proof intended to be submitted to the jury is direct proof of the act itself, it is not a proper course to admit to charge the parties with conspiring to do the act; and my reason for saying so is, that it manifestly operates unjustly and oppressively against the parties concerned, because, by a proceeding like this, you are enabled to combine, in one indictment and in one charge, a variety of offences which, if tried individually, as they ought to be tried, would exclude evidence being given against one to the prejudice of another, and which takes from them the invaluable advantage of being able to call as witnesses the persons who are thus combined with them in one indictment. I do not say this merely on my own authority, but that of one of the ablest judges of our own time, the late Lord Cranworth. I adopted his view in a case where parties were similarly indicted, and I must say, that in this case it would have been far better if the parties who are now before you in one common indictment for offences essentially distinct and separate in their character had been put on their defence in respect of acts for which they are alone personally and properly liable." "The case was, to his mind, an illustration of the necessity of some authority to control public prosecutions of this nature."

Now, assuming his Lordship to have been correct in his view of the law, it follows that the charge of conspiracy against Lawrence, Coleman, and Hooper, was one which ought not to have been made, particularly as the offence itself is not a criminal offence punishable with imprisonment, but only a civil offence against an individual, involving the forfeiture of a sum of money which the Copyright Act directs shall be recovered by an action of debt, or by summary proceedings before magistrates.

With reference to your answer to "Captain," in last week's issue, I will say a few words to further elucidate the subject. It might not be safe to copy the engravings in the illustrated papers, even by permission of the owners, for they may be copies of copyright pictures, and copying the engravings would be an offence against the owner of the picture copyright. The proprietor of an illustrated periodical had lent to him by the late Mr. Ingram, proprietor of the *Illustrated London News*, a block representing the design of a certain copyright engraving, impressions from which had appeared by consent in the *News*. The publisher of the engraving threatened proceedings against the proprietor of the periodical if he made use of the block, because his permission for its use did not extend beyond the *Illustrated News*. There is no copyright under the Engraving Act in illustrations printed with the letter-press, because the conditions of the Act are not complied with; they have the same copyright as the letter-press which they illustrate, and that must be under Talfourd's Act. There has been but one case of this nature decided, in which it was held that the book copyright protected the illustrations; but that case is considered of doubtful authority, because it renders nugatory the provisions of another Act of Parliament. Supposing there to be no copyright in the design of an engraving or woodcut, it may be copied in certain ways. It may be copied by hand, because the mischief contemplated by the statute is the copying by some means whereby copies may be indefinitely multiplied, as by engraving or photographing. It may be copied if the size of the copy be greatly at variance with the size of the thing copied; a panorama may be made from it, or a micro-photograph.

I will now make a few remarks bearing upon your article "Copyright in Portraits." In photographic portraits as usually produced there is no copyright, not because there is no written agreement, but because the sitter does not contract for the production of an original work (*i.e.*, the negative), but only for copies, and in copies there can be no copyright. The original bill, as passed by the Commons, vested every copyright in the author. In the House of Lords, Lord Overstone pointed out the injustice of this provision, and the Lords amended it by providing that in the case of commissions the copyright should vest in the person for whom the work was executed. Had the original provision not have been altered, photographers would have had copyright in every original negative produced, and this inconvenience would have arisen, that the common law rights of sitters would have been overruled when there was no intention on their part that such a result should ensue. If you will read the first section again, you will see that in the conclusion of the last sentence the words, "the person for or on whose behalf," &c., &c., are omitted. The conclusion refers only to the vendee or assignee

of a work of art purchased in the ordinary way, and not to commissions. In my next letter I will touch upon the necessity for registration, and as to what constitutes a good or a valuable consideration. — I am, sir, your obedient servant,

London, May 23rd.

J. CUNNINGTON.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE last monthly meeting of this Society prior to the summer vacation was held at the Memorial Hall on Thursday, the 11th inst., THOMAS HAYWOOD, Esq., V.P., in the chair.

The minutes were read and passed.

Mr. HERBERT exhibited a little contrivance for registering his plates during washing, so as to ensure uniformity and correct rotation. It was simply a three or four-sided block of wood, with a number on each face, placed in a small box open at one side, and capable of revolution by means of a button on the top. He also showed a portable barrow on which he could trundle his camera and other traps.

Mr. NOTON then read a paper on "The Albumen Process on Glass" (see p. 246), and prepared a plate in the presence of the meeting. The whole affair was, as Mr. Noton said, very simple.

Mr. NOTON attaches his plate to a holder that contains an air-pump, and whirls it at a moderate speed—probably sixty or eighty revolutions a minute—so as to equalize the albumen film. He handed round several negatives and transparencies, and remarked that the colour was very suitable for lantern purposes.

Mr. HAYWOOD repeated the substance of a conversation in council, requesting each member to bring the result of his holiday work to the September meeting.

The meeting closed with the customary complimentary votes.

C. ADIN, Hon. Sec.

Talk in the Studio.

PHOTO-MECHANICAL PRINTING IN CANADA.—The illustrated press in Canada makes much more extensive use of photography than is done by any of the pictorial papers in this country. The *Canadian Illustrated News*, which, in many respects, is like its London prototype, is illustrated entirely by means of a photo-mechanical process, and the whole paper is printed from stone at a steam lithographic press. Copies of drawings or engravings are produced by a process we have before described, called the "Leggotype" process. If the subject be a portrait from life, a negative is taken in the usual way, and all the fine lines shown in a woodcut are etched upon the negative by a skilled draughtsman. The print is then made by the Leggotype process, transferred to the stone, and then printed as all other lithographs are printed.

PHOTOGRAPHS AFTER PICTURES.—We have been favoured by Mr. A. Nichols, of Cambridge, with an interesting cabinet group, and a similar card group, containing the portraits of three youthful choristers of local celebrity, grouped after the well-known picture entitled "We praise thee, O Lord!" The effect is pleasing, and successfully managed. The study and occasional imitation of good pictures may often produce pleasing effects. As study, it will be beneficial; but it will be well to treat subjects after the manner of a great master with such modification as subjects and circumstances demand, rather than always aim at simple imitation. Here the aim is, of course, a specific and allowable one; it is simply and distinctly embodying the idea in a well-known picture, and so successfully as to give great interest to the copy.

PHOTOGRAPHIC APPARATUS AT INTERNATIONAL EXHIBITIONS.—The series of international exhibitions of which that now open is the first, will, as our readers know, be continued annually for at least ten years. Works of fine art, amongst which photographs are classed, will be exhibited every year; but no photographic apparatus will be exhibited until 1876, when the class of industrial arts to which these appliances belong, come into the category for exhibition.

REDUCING SILVER FROM OLD BATHS BY MEANS OF OXALATE OF SODA.—The silver solution should be nearly neutral. The oxalic acid is dissolved in distilled water, and carbonate of soda is added until the mixture retains only a slightly acid reaction.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 665.—June 2, 1871.

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PRESERVATION OF SENSITIVE PAPER.

THERE are few subjects more interesting to the photographer at the approach of hot weather than the means of preserving sensitive paper a few days without discolouration. The professional photographer can rarely estimate the number of prints which can be obtained in any day so precisely that no excited paper shall be left over from day to day, and it often happens that in hot weather the paper is woefully discoloured if kept even to the second day. To the amateur photographer the means of keeping paper ready prepared for a few days or more often makes all the difference between the printing operations being a pleasure or a plague. The system of washing and fuming, which has, in most cases, proved successful, is not quite satisfactory in all, and in professional establishments involves trouble which it is desirable to avoid. To meet such cases Mr. Bovey offers, on another page, the result of recent experiences which have been crowned with success. The plan he recommends consists in carrying out, with slight modification, a method which he recommended some time ago, and which was then found advantageous. A forty grain nitrate bath containing nitrate of soda, sugar, and free nitric acid, he finds yields sensitive paper which may be kept for a few days without injurious discolouration. This will be found a boon of great value to professional photographers.

To meet the case of those who wish to keep paper sensitive for months instead of days, we have to describe a method which gives greater permanency than simple washing. At a recent meeting of the photographic section of the American Institute, Mr. O. G. Mason exhibited some fine prints with pure whites and rich blacks, which had been produced on paper sensitized thirteen months previously. Keeping qualities for a period exceeding twelve months, involving every possible change of temperature and season, are, we think, sufficient to satisfy every possible requirement. The New York correspondent of our Philadelphia contemporary, with an early proof of which we are favoured, thus describes the mode of preparation:—

“The paper (albumen) was floated, as usual, on a 45-grain bath, and dried; then floated for two or three minutes upon water; after which upon an acid solution of water as follows:—

Water	...	...	...	...	1 gallon
Hydrochloric acid...	...	...	...	...	1 ounce

When dry, put away into a drawer which was light-tight. Of such paper, prepared thirteen months since, some of the exhibited prints were this day (May 2nd) printed.

“Mr. Mason was of the opinion that less acid would answer—probably one-quarter of above proportions, or just enough to produce an acid condition of the chloride

of silver upon the paper. He stated that such paper would also keep well for a week after printing and before toning.

“Before printing, fume well, longer than for the ordinary silvered paper; also fume the pads placed in printing frames behind sensitized paper. Carbonate of ammonia he prefers to liquor ammonia. The paper, simply washed in water, he had found to keep reasonably well for about thirty days.

“Mr. Newton exhibited some prints upon paper very highly glazed—that is to say, the paper is prepared with a surface as glassy and smooth as a mirror; upon this surface the albumen is floated after the usual plan, and treated regularly.

“If it be desired to have a surface of the kind named, then this process is just the thing. It presents all the gloss of the mica paper, without any of its faults in cracking or splitting.”

THE STRENGTH OF TONING BATHS.

ON another page we print a letter from a correspondent referring to the strength of gold toning baths, in which he alludes to a comment we made in our last on some indefinitely stated formulæ. “Kent” mentions his experience as satisfying him that the strength of the bath—that is, the proportion of gold present in a given quantity of water—is a matter of no importance. There are two or three reasons, however, why indefiniteness and uncertainty should be avoided in such matters. In the first place, the precise tint produced by the precipitation of a metal is influenced by the size of the particles in which it is precipitated, and the size of the particles is affected by the rapidity or slowness of the precipitation. Gold, which in its most ultimate state of subdivision is of a ruby tint, is of a purple tint when less finely comminuted, and yellow when in still larger particles. The slower the precipitation the smaller the particles, and the more rich and roseate the purple produced. Very rapid precipitation from a very strong solution will yield the well known metallic golden yellow. There is little danger, perhaps, of such a result in toning prints, but we have met with an approximation to such an effect.

Again, the strength of the solution affecting the rapidity of toning, it is important to know, at least approximately, the condition of the bath in order to superintend the toning with some idea of the time the operation of toning will require, to avoid over-toned or under-toned prints. The use of an exceedingly strong bath is undesirable, as rendering control in toning less complete, as at times causing a tendency to bleach the print, and as risking the greater waste in case of a bath getting spoiled.

For a still further reason, some approximation to exactness in the proportion of gold is necessary when a fixed proportion of another salt is added. In the acetate bath, for instance, it is important to remember the purpose of adding acetate of soda in order to realize the necessity of employing it in definite proportion to the gold salt. Acetate of soda, although it is not an alkaline salt, is used to neutralize acid in the chloride of gold. Crystallized chloride of gold is usually an acid salt, containing hydrochloric acid in excess, and its presence acts injuriously in toning in two ways: in the first place, it renders the gold less easy to precipitate; and, in the next place, it is apt to bleach the print. In the addition of an alkali to neutralize this acid, it is very difficult to hit the *juste milieu*, the excess of the alkali being commonly added. This excess decomposes the chloride of gold, as well as neutralizes the acid, and the result is first seen in bleaching produced by the liberated chlorine, and next, in the inert condition of the bath. When acetate of soda is added, a slow decomposition takes place, not of the chloride of gold, but of the acetate of soda. The free hydrochloric acid present in the chloride of gold, having more affinity for the soda than the acetic acid has, gradually decomposes just so much acetate of soda as serves to neutralize the free hydrochloric acid, leaving the gold salt quite neutral. Beyond effecting this, the acetate of soda appears to be comparatively neutral in the toning bath; but it is obvious that in a solution of a salt so easily decomposed as chloride of gold, any large excess of another body with any affinity for the component parts of the gold salt is undesirable. It is probable that a much smaller proportion of acetate of soda than that usually employed—*i. e.*, thirty grains of the soda salt to one of the gold salt—would serve every purpose; but as that proportion has been found to work well, the practical photographer, not bent on experimental operations, will save himself risks by adhering with moderate exactness to tried proportions and recognized safe working formulæ.

KEEPING BATHS IN ORDER.

Mr. ELBERT ANDERSON, the accomplished operator at Mr. Kurtz's studio in New York, in one of his recent dialogue lessons, speaks of having used the same bath for four years past, and from it produced negatives which have taken prizes at all the fairs of the American Institute during those years. He explains, however, that it is a large bath, containing three or four gallons of solution, and that, like the old sacred wheelbarrow in Milan Cathedral—which, being successively renewed in every part, never wears out—the bath in question owes its longevity to constant replenishment.

The lesson involved in attention to these facts is a very important one, not so highly appreciated as it ought to be. The two secrets of constancy in the nitrate bath consist in the use of a large quantity of solution, and its constant renewal and maintenance as a large quantity. It is one of the worst pieces of economy we know to use a small quantity of solution for ordinary professional work. For experimental purposes we at times recommend small quantities, merely to avoid risk to large quantities; but, for the regular business of the studio, a large quantity of solution is a comfort and advantage every way. It is not so readily supersaturated with iodide, or charged with ether and alcohol; it is not so liable to sudden changes from variation of temperature, nor is it so rapidly affected by the exhaustion of silver by the immersion of coated plates. In short, every argument of convenience is in its favour, and hence it is the best economy. An important element in keeping the large bath in condition consists in renewing it daily with fresh neutralized nitrate solution, so that quantity, strength, and ratio of saturation with iodide are maintained in a tolerably even condition.

When recently in Mr. Blanchard's studio, we incidentally asked how often the silver solution needed renewal or remedial treatment, and we were informed that the bath had not been even filtered since last June. It consisted of about a gallon and a-half, made originally of a strength of thirty-five grains to the ounce, and duly iodized. The only treatment it received afterwards was replenishment every evening with a fresh forty-grain solution, to maintain the original quantity. The working quality had continued during the three-quarters of a year perfectly satisfactory. The use of a large quantity of solution, the use of two or three or more baths, so as to give each in turn rest, and the practice of constant replenishment with fresh solution, would save photographers much trouble and need for bath-doctoring.

SUGAR IN THE IRON DEVELOPER.

We referred a short time ago to some experiments by Dr. Stolze, in relation to the action of organic substances in the iron developer, in which, whilst condemning the use of the majority of such substances, as rendering longer exposure necessary, he spoke favourably of sugar, precise details of his results being promised at a future date. In a recent number of *Licht* he says:—

"Having ascertained that freshly prepared iron developer to which cane sugar has been added acts the most favourably, it next became necessary to ascertain in what quantity the addition of sugar should be made in order to secure the best effect. With the maximum addition, four times as much sugar as iron, Dr. Stolze obtained a very curious result. On pouring the developer on the plate, a thick, white, cheese-like precipitate would form, which stopped the development completely, and the origin of which is not easily explained, if it is not a complicated combination of iron and silver with cane sugar. The precipitate decreased by diminishing the quantity of sugar in proportion to the iron. Finally, it was ascertained that a very small quantity of sugar is sufficient. It is best to put a few drops of a sugar solution (strength 1 : 4) into the developing-glass, and to pour the developer in afterwards; the two liquids will become more thoroughly mixed than when we proceed in the reverse order. Although, generally speaking, the plain iron developer works as rapidly as the one with sugar added, still the latter offers great advantages under certain circumstances.

In cloudy weather, and with short exposure, it is necessary to continue the development for a long time in order to bring out all the details; this produces veiled or fogged shadows very often, which make the negative look weak, and make a subsequent strengthening difficult. With the sugar developer, the plates remain perfectly clear in the shadows in spite of a long-continued development.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

COPYRIGHT IN PORTRAITS—REGISTRATION—ROYAL RECOGNITION OF PHOTOGRAPHIC MERIT—HOLYOAKE CARD MOUNTS—CONFUSION OF PHOTOGRAPHS IN THE INTERNATIONAL EXHIBITION—THE TITCHBOURNE CASE AND PHOTOGRAPHY FOR IDENTIFICATION.

PHOTOGRAPHIC portraitists may be congratulated on the first steps having been taken towards obtaining decision on some most points in relation to copyright in photographic portraiture. Decisions in police courts are not very conclusive at any time, and are rarely very precise in their relation to law. The rule granted in the Court of Queen's Bench, with a final view to getting quashed the conviction of Mrs. Coaroy for infringement of Mr. Taunt's copyright in the photograph he had taken of an Oxford boat crew, will, it is to be hoped, lead to a full argument on the ownership of copyright in photographic

portraits. As the matter stands, I am disposed to believe that photographers are altogether at sea on the subject. A very common opinion seems to prevail amongst many of them that they possess a copyright in every portrait they take, which, in relation to ordinary commissioned portraits, is, I think there can be no doubt, an error. I suppose it is very presumptuous for non-legal readers of the Act to form an opinion about its obscure meaning; but to me it seems clear that in photographic portraits taken in the ordinary way of trade, in which no written agreement is made, no copyright accrues to either photographer or sitter. It also appears equally certain to me that when a photographer employs or induces, by any kind of consideration, any one to sit to him, the copyright would, of course, belong to him. It is his own work, produced for his own purposes. The sitter is simply his model, and whether the model receive payment at the rate of eighteen pence an hour, or sit out of sheer good nature for nothing, or for the publicity to follow, the photographer unquestionably acquires the copyright, and retains it until by some act of his own he parts with it.

One of the points of copyright law about which considerable uncertainty prevails, and upon which an authoritative statement or explanation seems necessary, is: At what time is registration necessary? Many photographers believe it is imperative to register before they can with safety sell a copy, registration being, in their estimate, necessary to the acquisition of copyright; whilst, according to the Act, it would seem that registration is merely a necessary preliminary to taking legal proceedings in case of infringement. Whether a photographer can obtain any remedy against any one for the copying of a photograph before it is registered is an interesting point which has not, I think, been anywhere definitely stated or decided.

I noticed in your "Foreign Miscellanea" that Herr Albert has received a specific mark of royal favour in the shape of a Prussian order for his valuable discovery in photo-mechanical printing. I wonder when Mr. Swan, or Mr. Woodbury, or Mr. Johnson, in this country, will receive such royal recognition of service to science and art of a similar kind!

A few years ago you described a very clever little invention which Mr. Holyoake had introduced into his own business, and which he liberally enabled his brethren in the art to apply as well as himself. With the peculiar supineness which seems to characterize English photographers, the suggestion was suffered to pass by unnoticed, and, so far as I know, it has not been adopted in a single instance in this country. I am reminded of this invention by the illustrations which appear in your excellent Philadelphia contemporary, the *Photographic World*. There are two capital Victoria card portraits, in the mounting of which Mr. Holyoake's idea is adopted and extended. The pictures are vignettes, and one is mounted on a card upon which has been printed in black ink an oval matt, which, showing through the white margin of the print, gives a delicate greenish-grey tint. The white, which shows through the oval aperture, and the lights of the picture generally, seem purer and warmer by the contrast, and the blacks also acquire richness from contrast with the delicate green. The other picture is on a similar mount, with this difference, that the printed matt is in red ink instead of black, and shows through the white paper of the print which covers it as a buff tint or a delicate salmon colour. Both are very effective; indeed, few things I have ever seen give such a satisfactory result with such a slight expenditure of means. I understand that these mounts have been extensively adopted in the United States, whilst in the country in which it was originated I doubt if it has extended beyond the studio of the inventor. Of course, the cards need cost very little extra, as the tint might be

printed with the same stone as that employed to print the name of the photographer. Until some enterprising house thinks it worth while to make a feature of such cards, I imagine they will not be introduced here.

Has any one been able yet to track the photographs in the International Exhibition? I have made several attempts, but, as yet, without success. I was told at first that they would be placed altogether in the gallery of the Albert Hall, and that the aim in this Exhibition was to carry out the project of the late Prince Consort, which was to display contributions in classes, rather than in nationalities, so that all the productions of one kind of the world should be seen together. The arrangement of the photographs appears to have been begun on that principle, for I found English and Continental pictures all hung, and well hung, together in five bays. Rambling further round the gallery I found another collection, chiefly Austrian, but amongst them the works of a clever English amateur. Turning to my catalogue, purchased on the opening day, I find a most imperfect and incomplete record of the photographs, and turning to the photographs I found many of them without numbers. On making some enquiry I am informed that some of the photographs arrived too late for insertion in the first edition of the catalogue, but that the next edition, to be ready in a few days, would put the matter right. A fortnight afterwards I purchased another catalogue, and rushed to the gallery to get a clear idea of the works and their authorship. Everything remained in the same admired disorder; no correction or alteration whatever had been made. Many of the photographs were still without numbers, and without any record in the catalogue. To make confusion still more confounded, I am told that some of the finest photographic contributions are not in the gallery devoted to them at all, but in a corridor near the refreshment gallery at the opposite end of the Exhibition buildings. A month ago, writing under the conviction that the photographs in the photographic department constituted the whole collection, I spoke in terms of praise of the admirable arrangements and hanging, which I had been informed were chiefly due to Dr. Diamond. It is scarcely possible that the confusion made by scattering other contributions about, and neglecting to catalogue them, could be due to the same management. Is the committee still supposed to be in existence or in office, or have recent contributions been distributed at random by some new authorities, in accordance with the laws of meddle and muddle only too often prevailing in matters of this kind? When will the official report on photography be issued, and will it clear up the confusion a little?

Poor photography! With what persistent iteration it is brought forward in court, to be flouted generally with great contempt. In the Titchborne case, for instance, how constantly the various photographs of the claimant are placed in the hands of witnesses for the comparison of identity, and how frequently the difference apparently manifest is, as a matter of course, attributed, not to variations in circumstances or imperfection in the individual pictures in hand, but to the general untrustworthiness of photography! One witness "never can see likeness in photographs;" another "has so often been deceived by photographs," or "has no belief in photographs." How far any of the photographs were at any time good in themselves, or good as likenesses, or whether they were ever really portraits of the person they are alleged to represent, does not seem to obtain consideration. It has often occurred to me, that in any case where photography is used as a means of identification in matters of moment, stereoscopic views should be obtained, for whilst the imperfection or peculiarity of a single picture may leave room for doubt, the stereoscopic projection is generally so absolutely accurate as to render uncertainty impossible.

AMERICAN CORRESPONDENCE.

BLACK'S ACID NITRATE BATH — SAVING AND REDUCING WASTES.

Black's Acid Nitrate Bath—Referring to Mr. Black's negative bath with excess of nitric acid, I make the following extracts from a letter he has written me accompanied by some prints which show his negatives to be fully up in every good chemical quality to any work I have ever seen him make. He writes as follows:—

"We have been rather orthodox in our thoughts in the matter of the nitrate bath, and now I am going to broach a little heresy.

"Take one pound of nitrate of silver, and all water enough to make the solution the strength of fifteen grains to the ounce. Add C. P. nitric acid, seven ounces—nothing else—no iodizing, but simply filter for use. If it works hard and intense, add more acid. Collodion about as usual, but use no bromides. Excite with iodide of ammonium, and, say, half a grain of any soluble chloride to the ounce. I use as much alcohol as I can in making the collodion, and gum-cotton enough to give it a good body. Use the developer quite weak, so that the picture will be almost a minute in developing. It works quite smooth and clean if you time the negative right. I rarely have to redevelop. Now, if you know any one who beats me on acid, I would like to know him, as I am not too old to learn."

Mr. Black's theory is certainly substantiated by his work, and I am curious to know how others find it to work in practice.

Saving and Reducing Wastes.—Mr. H. L. Bingham, one of our growing photographers, has communicated his process to me for saving and reducing the precious metals from his wastes, and it may be interesting to your readers, inasmuch as it is the method adopted in the United States Mint. Mr. Bingham says:—

"I have seen several processes published, but do not think the one I communicate has ever been, at least in any photographic journal. The saving and reducing of silver wastes of every description, to the photographer, is of considerable importance; and when compassed within the means of every photographer to do so, with but little expense, it strikes me that his interest will be much advanced in the method I describe.

"I burn my paper wastes to a fine ash; then digest with nitric acid, with a slight portion of water. After the silver has well dissolved (which will require several hours, with occasional stirring with a glass rod), then add water, and let settle well; then decant or draw off with syphon into a large bottle with a quite strong solution of salt water. To convert into chloride of silver, add more water to silver, and decant again, as before, and repeat as often as necessary to wash out all soluble silver, each time using caution to see the silver is all converted into chloride. The chloride can be allowed to settle, and the water decanted, and by repeating the salt and water with silver, a large quantity of chloride can be precipitated in one bottle. It is well to repeat the nitric acid on the residue of the ash, to be sure to get all the silver dissolved. After getting all your silver wastes converted into chloride, and well washed through several waters, to free it from fine salt, then put the mass into a large porcelain evaporating dish, and drain; after well settling all the water off possible, then cut up strips of zinc, and set up edgewise, and let stand for a day or or two to convert the chloride into metallic silver: there should be pieces of zinc about every half inch apart throughout the chloride; after the chloride has been well converted into metallic silver, take out what zinc remains, then digest with sulphuric acid, to dissolve the zinc, which can easily be told by adding a small quantity of acid after effervescing has ceased, and should there be no more indication of zinc, you can be sure all is dissolved.

Now wash the remaining precipitate well with soft water (a dozen or fifteen waters will be none too much) to thoroughly get rid of the zinc; all that remains is to dissolve the silver with nitric acid, and draw off into, or filter into, a bottle, then add more water, and decant, &c., until you wash out all the silver. I usually add more nitric acid after well washing, to be sure and dissolve all the metallic silver, and treat as before, &c.

"I wish to say here the first treatment of the chloride with zinc may not convert the whole into metallic silver, and just so in each treatment. Repeat the operation until you accomplish the purpose intended.

"Then evaporate the acid and water from the silver you have in solution, and fuse; then add water, and leave in solution, and set in the sun. The process is much more simple than I have been able to describe it; and the result is the purest silver I have ever used, and the expense is trifling. A short time since I reduced my wastes, and got nearly two pounds of silver at the expense of about three dollars."

EDWARD L. WILSON.

A GOOD NEGATIVE PROCESS FOR DRY PLATES.

BY WILLIAM BLAIR.

FROM the multitude of dry-plate processes that have been published and recommended, and from all or most of which good results have been obtained, there appears hardly room for the introduction of anything new. And yet, judging from the remarks that one occasionally meets with in the journals, it would seem that there is still a large class of photographers that have no confidence in dry-plate work, but think it still necessary, when they take the field, to cumber themselves with all the *impedimenta* necessary for the *wet process*. Mr. Edwards and others have been laudably endeavouring to lighten the labour of wet plate work in the field, and thus to meet a want that is still felt by a great many of their photographic brethren. But simplify the wet process as you may, there can be no doubt that an easy dry plate process that could be depended on for equally good results, and with nearly equal sensitiveness, would supersede it with those who do not absolutely require to see the result of their work upon the spot. Even in such cases, it would be safer in many circumstances to provide merely for the means of developing a few plates upon the ground, or in the near neighbourhood, than to carry and use the necessary apparatus for sensitizing and working the whole process. These considerations also will carry more weight in proportion to the size of the plates required to be used. As you increase the size of the plates, you increase the difficulties of the wet process immensely for field work.

Again, some of the dry-plate processes which have been recommended upon high authority—such as the collodio-bromide, and bromo-tannic processes of Major Russell, Carey Lea, &c.—have not been very extensively tried, probably from want of ready access to the materials, &c.; and although these are now being provided, and may be had more conveniently than hitherto, an impression seems to exist, from the discussions to which they have given rise, that the successful working of these processes depends very much on an extremely nice balance of the chemical materials used, and that, in ordinary hands, the risks of failure are likely to exceed the chances of success. In the mean time, therefore, and until greater confidence in these processes is established, there appears some chance for another process, which offers equally good results, from the materials and manipulation more in common use finding acceptance.

These remarks are introductory to the mention of a dry plate negative process which I believe to be capable of producing results *superior to the ordinary wet process*, if the

extreme fineness of the deposit, and deep rich tone, and general brilliancy of the negative, are to be regarded as points of comparison; while the materials used are such as every photographer has at hand, or can readily procure. My negatives by this process generally present, while wet, a rosy yellow or saffron colour in the sky, a lighter yellow in the middle distances, and a colder tone in the weaker half-shades as seen by transmitted light, drying to a deep wine or purple hue in the skies, a lighter purple or soft mauve in the middle tones, and a colder grey in the weaker shades. By reflected light the general appearance is an olive green in the denser parts. These appearances, as explained by some of our scientific authorities, seem to indicate the existence of an exceedingly minute deposit, far surpassing the fineness of an iron developed image.

I am not to claim novelty for the process—that would only raise up other claimants—but I call attention to it as a very excellent process, and will merely say that, taking it in all its parts and as a whole, it was new to me, and was fallen upon, perhaps, more by accident than by following out any systematic theory or course of experiments. Perhaps the fairest plan will be (for there is another party concerned in the matter), to give a short account of how I came across it, and this will, at the same time, bring out the particulars of the process itself.

In the early part of the present spring, from some of those capricious changes that one's chemicals are liable to, but which was, perhaps, partly due to the cold weather and bad light, I was rather unsuccessful with my dry plates—my usual processes being tannin, or albumen, or both, according to the quality of my collodion, with alkaline developer. In these circumstances, having shortly before had occasion to admire some very pretty specimens of Mr. P. H. Adams' work, being small views in London, which were prefixed to some of his letters to me, and having at the time been kindly offered the particulars of his process by which he had been so successful, even with plates which had been kept by him in a sensitized state for two and three years, I wrote him reminding him of his promise, and he soon furnished me with particulars. Here, perhaps, I cannot do better than make a few quotations from his letter to me, as I have since received his sanction for doing so.

After some preliminary observations on other matters, Mr. Adams says:—"Now for the dry plates. I do so hope you will try them. I find them so extremely good; and I think you will agree with me, that the process involves a new principle. I believe the results are better than with wet plates. I must tell you that four years ago I set myself the task of making good dry plates. I tried nearly all the known processes, with more or less success, but came to the conclusion that they were all faulty, and, from observations made at that time, came to be of opinion that the only use of substances like tannin, gallic acid, coffee, &c., known as preservatives, was to keep open the pores of the collodion and *destroy* (or absorb) the nitrate of silver present in the film. I found that the whole secret of the collodio-albumen process depended on the amount of ammonia contained in the albumen, and from this circumstance I arrived at the conclusion that the ammonia-nitrate played an important part in dry collodion. I was dissatisfied with albumen, as it appeared too repellent (of the developer), and resorted to gum arabic. Even this I also deemed too repellent, and so introduced sugar into it, and with this I succeeded beyond my best hopes. I attribute the success of this process to the formation of ammonia-nitrate of silver, combined with the mechanical action of the gum and sugar. *Pure iodide of silver* thoroughly washed and coated with gum is scarcely acted on by light when dry; but if the film is coated with gum containing sufficient spirit of ammonia to render it *decidedly* alkaline to test-paper, it undergoes such a change as to become highly sensitive

to light, and instead of fogging, as one might suppose, it takes entirely an opposite course, and works extremely clean and bright."

I here pause to remark that I think these statements will have their value, as coming from a practical man of shrewd observation. I am not prepared to endorse them all, particularly the *non*-sensitizing character ascribed to some of the preservatives named, such as tannin and gallic acid, and I am not sure but that more recent experiments may have modified Mr. Adams' views on these points. But the important matter which he draws attention to is the effect of the ammonia in imparting sensitiveness to the dry plate, with complete immunity from fog. That such must be the case will be the more readily credited when we consider what surprising sensitiveness is communicated to washed and dried chloride of silver paper by fuming it with ammonia, now so often practised. Indeed, I have on some occasions given albumenized plates a wash with dilute ammonia, and again allowing them to dry before putting them into the camera, and got excellent results; and I see no reason why fuming might not serve the same purpose.

But to proceed, Mr. Adams gave me minute details for his process, which I shall endeavour to condense, as they are all applicable to the modification of that process, with which I intend to wind up these remarks.

I.—PRELIMINARY COATING.

After cleaning the glass, coat with either of the following solutions:—

Benzole	...	...	...	1 ounce
India-rubber	...	...	..	1 grain (less rubber for large plates)

(Or—

Albumen	...	...	...	1 ounce
Water	...	...	...	20 ounces

When dry, coat with any good bromo-iodized collodion, to which may be added 1 grain of bromide of ammonium to the ounce. Sensitize in a bath of 35 grains to the ounce. Place for some time in a dish of distilled or soft boiled water, and afterwards wash under a tap, and drain for a few minutes.

Now run over the plate (two or three times) the following solution:—

Gum arabic...	...	...	...	1 ounce
Sugar-candy	...	...	...	½ "
Spirits ammonia,	enough to make the mixture <i>decidedly</i> alkaline to test paper.			
Water	...	about	...	4 ounces

In regard to the above solution, with which Mr. Adams appears to have wrought very successfully for some years, he says it should be about as thick as the thinnest treacle (molasses); that the gum and sugar should be dissolved in *cold* water in a wide-mouthed bottle, shaking it frequently, but on no account to *force* the solution of those portions of the gum that may be difficult or very slow to melt, as these portions would be apt to cause trouble afterwards by not dissolving readily a second time, and so cause defects on the plate. Before the ammonia is added, this mixture will be found acid to test-paper, but it must be made quite alkaline by the addition of liquor-ammonia, after which it should be filtered through cotton-wool, and kept well corked. It will keep any length of time in the dark, and especially in a cool place, but it is better always to test it before using, as it has a tendency to turn acid, and in that case, a little more ammonia must be added. The he colour of this solution is about the tint of pale sherry.

(To be continued.)

WHERE TO GO WITH THE CAMERA.

In response to recent enquiries, two of our correspondents write suggestions. A "Practical Man" gives the following hints:—

"The Tors of Old Cornwall, the Rocky Land of strangers."

Any person who has visited the picturesque county of Cornwall must have been astonished on first seeing the magnificent views to be obtained from the tops of the different tors, or high hills, so peculiar to this county. Attempts are seldom made to overlook it, either by pen or pencil; and yet, by the judicious selection of a few favoured and notable points, extensive and commanding views may be obtained of every part of note or interest. Take, for instance, Ridge Hill, near Trebartha. From this spot may be obtained a complete view of the entire eastern boundary of the county, embracing the whole distance from Morwenstow to Maker. From this ridge, on a dark night, may be seen the lighthouses of Lundy and the Edlystone, those great and valuable *dare lucem* and *servare vitams* (or, givers of light and savers of life). From Hendra to the west of five lanes near Launceston, may be seen Brent Tor, some four miles from Tavistock, with the little church of St. Michael on the top, making it a most conspicuous object.

The three highest tors, or hills, are Brown Willey, Yestor, and Dunkerry Beacon. Brown Willey, in St. Breward, having the old borough town of Camelford to the north-west, is 1,369 feet above the level of the sea. Close to Brown Willey is Rough Tor, pronounced locally Ront her. It is only 72 feet lower than its neighbour Brown Willey, and commands a most extensive and sweeping view of the whole of the north coast. In clear weather the high hills behind Swansea, some 70 miles distant, have been observed. Stratton and Launceston may be seen from Warbstow Beacon; Callington, Liskeard, Saltash, and Plymouth Harbour from Kit-hill, a place of renown in the olden times, and where the tinners of Devon and Cornwall held their parliament.

It will thus be evident that from each and all of the above-named places and points an immense variety of most interesting camera subjects may be obtained, giving the tourist and operator at the same time plenty of fresh air, much pleasure, and possibly, in some instances, some profit.

To reach the tor and hill district the best point to steer for is the old, renowned, castle-capped town of Launceston, going direct from London to Exeter by the Bristol or Yeovil line of railway; and, after a look round at Exeter and its magnificent Cathedral, now in course of restoration, going on to Belston by rail, and from thence to Lanson by road or by bus. No better halting-place for those wishing to make acquaintance with tor, crumplech, hill, and moorland than the old borough town of Camelford. In this small but improving place good quarters may be obtained at the Inn Hotel or the Temperance House, and daily excursions made to the different places named. If the excursionist travel by the Bristol line he would do well to stop at the Tiverton Road Station, then go on to the quaint little town by the branch rail. At Tiverton the Grammar School, the Church, the Bridges, &c., are well worth attention. He can then proceed on to Barnstaple and Bideford, in Devon, going into Cornwall by way of Kilkhampton and Stratton, Bude and Boscastle. This will bring him into close proximity with the different tors and high grounds named, at the same time affording him a great choice of other subjects well worth collecting; or to kill, as it were, two birds with one stone, let him come into Cornwall by the Yeovil line, and return home by the way of Bristol.

In the next I shall point to the Liskeard district and the famed neighbourhood of the Carradons.

Mr. J. Martin writes as follows:—

Observing a short time since an invitation to the contributors of the News to point out to intending photographic tourists eligible routes for the approaching season, allow me to direct their attention to Devonshire. There are not many counties in the kingdom that can compare with, and certainly none surpass, it in variety and sublimity of scenery, interesting architectural remains, or historical reminiscences. What can be more sublime or picturesque than its wild moors, bold and rocky coasts, its smiling coombs, shady lanes, and quiet out-of-the-way nooks, which rail or telegraph have not yet reached, which, aided by the manners and customs of their primitive inhabitants, take back the mind to times long past? Its sea breezes, fresh from the broad Atlantic, laden with life-giving properties, and the mildness of its climate, point it out as a fit resort of the invalid and convalescent. These, in conjunction with its beautiful scenery, have caused its southern and northern divisions to be termed the Italy and Switzerland of Britain.

Beautiful to the eye of the general observer as these scenes may be, yet many are unfitted for pictures in the camera; therefore it is necessary to point out those localities where suitable subjects may be found. But, although thus constituting myself as somewhat of a photographic guide, still it will remain with the artist to choose from a multitude of interesting subjects those which his own taste and judgment may lead him to select, assuring him, from my knowledge of the places I shall mention, that should he determine to visit them, he will not have the regret of finding his time, labour, or expense thrown away.

As Exeter and Ilfracombe (most interesting in themselves) may be considered the centres from which all that is noteworthy and beautiful in the two divisions of the county may be reached, I should advise the photographic tourist, from whatever point of the compass he may start, to make direct for one of these places, as a *point d'appui* from which to make excursions. Every facility is offered by rail, coach, steamer, or private conveyance, for visiting the surrounding places of interest, and lodgings or hotel accommodation can be obtained suitable to every grade of expenditure. Moreover, should the weather prove at times un-photographic, an idle hour may be spent to advantage in various ways. In the city of Exeter will be found many objects of interest, and its suburbs will afford some charming river scenery. By rail, at small expense, may be reached the towns and villages of Star Cross, Powderham, Dawlish, Teignmouth, and Newton Abbott; by branch rail, Torquay, Bovey Tracey, Ashburton, and Moretonhampstead; in the neighbourhood of these two latter places some of the wild and savage scenery of Dartmoor will be found. On the other side of the Exo lie Topsham, Exmouth, Budleigh Salterton, East Budleigh, and so on to Sidmouth and Lyme Regis, all offering rural subjects or coast scenery in the greatest variety. Ilfracombe will, no doubt, be preferred by those who admire bold coast scenery, and certainly is preferable for those who may wish to see and do as much as possible in a limited time, steam packets running daily, and excursions taking place at favourable times to all points of interest.

Photographically, I can have but little advice to give; the questions of wet and dry processes have been so well ventilated, that I feel it would be a work of supererogation. But I should say, whatever the process to be used, let it be a quick one, as a passing boat does not look natural drawn out to the length of the *Great Britain*; a bank of clouds should not look like stony development; neither does the foliage of trees look more picturesque when shaken by the wind into the resemblance of flock wool. I think, also, that tripods are made too slight, and too high, thus causing vibration; and would suggest that an umbrella will be found very useful in defending both the lenses and the operator from the too fervid heat and light of the sun during exposures.

WORTHY OF ATTENTION.—"VOTED URGENT!"

BY W. T. BOVEY.

"TAKING time by the forelock," I have recently been experimenting with a view of discovering means whereby the rapid discolouration of sensitive paper during hot weather might be prevented. I have much pleasure in stating that my labours have met with an encouraging success. The following formula for a silvering bath I cannot too highly recommend:—

Silver nit.	40 grains
Soda nit. (pure)	20 "
Water (plain)	1 ounce
Sugar (white)	2 grains

The bath must be slightly acidulated, prior to use, with pure nitric acid. To strengthen and replenish waste, a solution 50 grains silver to each ounce should be used, remainder of formula as above.

A few words concerning a cause of discolouration. A paper coated with pure fresh albumen, and salted with an alkaline salt, such as chloride of ammonium, is in a condition which enables it to communicate its alkalinity to the silver solution on which it is floated; and an alkaline state being one which is peculiarly sensible to decomposing influences, *hvat*, always an energetic decomposer, acts on the surface silver, and quickly transforms virgin white into

a brownish yellow. By keeping the silver bath *slightly* acid, alkalinity is prevented, and heat is thus check-mated. I have kept a paper three days after sensitizing without any change that would affect the quality of the print. The same kind of paper when floated on an alkaline bath turned yellow in less than an hour subsequent to sensitizing. I might add that the addition of nitric acid does not interfere with toning operations.

TESTS FOR THE PURITY OF PHOTOGRAPHIC CHEMICALS.

BY PROFESSOR J. TOWLER, M.D.*

No. II.—TESTING COLLODION.

WHAT photographer is there that has not at one time or another desired to know the composition of a certain collodion, whether it contained a chloride, a bromide, or simply an iodide? We know that such a desire has frequently been entertained, and, furthermore, that photographers, as a class, are much more intelligent at the present day than they were some five or six years back, and are continually yearning for further advancement in their art, and more extensive educational development.

Collodion is the subject of our present discussion, and we propose to show how to deal with it, in order to ascertain its composition.

The first thing to be done is to precipitate the pyroxyline. This is effected by mixing with the collodion an equal volume of rain or distilled water, which, thus diluting the alcohol and ether, renders them incapable of holding the cotton in solution; that is, the latter is precipitated as a white, apparently fibrous substance, resembling the cotton originally used. Now, when inorganic substances are thrown down from their solutions, the precipitates are in many instances in a crystallized condition. Take, as an example, a solution of chloride of calcium, and mix with it a solution of oxalate of ammonia. The resulting precipitate is in the form of fine granular crystals, of an octahedral shape. The crystals have always this shape. The precipitated iodide of lead, when dissolved in hot water, is again precipitated, as the water cools, in beautiful golden spangles, which are quite characteristic of the substance; and thus we have in this department of chemistry a number of precipitates beautifully and definitely characterized by their crystalline shapes when examined with the microscope.

In like manner, seeing the fibrous precipitate which is produced when water is added to collodion, it was supposed that organic materials, when precipitated from their solutions, returned to their original forms; as, for instance, blood into fibrine and pyroxyline, held in solution by alcohol and ether, again into cotton, thus making a complete analogy between organic and inorganic materials. This would be a beautiful theory if it really existed, and we might expect to precipitate a cow from a few hundred pounds of milk, instead of only a lump of cheese. The theory, however, is only apparent; it is mere speculation.

The white, fibrous substance precipitated in the collodion is separated from the liquid part by filtration. As soon as all the liquid portion has passed through the filter, the precipitate on the filter is well washed with distilled water, which is simply poured upon it and caused to pass through the filter to the other liquid. The part that has thus been washed is the original pyroxyline, the soluble cotton. Its weight, when dry, ought to be equal to that employed in the preparation of the collodion; thus, if you are experimenting with two ounces of collodion, and have obtained by precipitation, washing, and drying, twelve grains of substance on the filter, you naturally conclude that the collodion in question contained originally six grains of cotton to the ounce.

We will now proceed with our analysis: The liquid portion (that is, the filtrate) is placed in a retort connected with

a receiver, and submitted to distillation at a very low temperature; that is, at about 120° F. This is effected by heating a large evaporating dish containing water over a flame or charcoal fire, taking care not to make the water boil. Into this hot water the globe of the retort is lowered a short distance, but not until it comes in contact with the bottom of the dish. The temperature may be regulated and kept down by lowering the dish of hot water, and thus exposing more of the retort to the cool air. The lower the temperature the better, as long as vapour is condensed; for vapour that passes at this low temperature is mostly that of ether. As soon as this ceases, cause the water in the dish to nearly boil, when it will be observed that vapour again passes over and is condensed. Collect this in a separate vessel, for this is, in a great measure, alcohol. Continue the distillation in this way, taking care not to allow the water in the dish to boil as long as vapour is condensed at this temperature. The quantities of fluid obtained by the two separate distillations will give a rough estimate of the amount of ether and alcohol in the collodion sufficiently accurate for the purposes, although far from being absolutely accurate for a critical analysis. There is a nicety in regulating the temperature by the method recommended, which can be learned only by practice: and on this nicety of manipulation depends the accuracy of the comparative quantities of the three fluids thus separated.

Finally, when no more fluid is obtained by distillation over the water bath, remove the latter, and apply heat directly to the bulb of the retort, either by a spirit flame or a charcoal fire; the latter is preferable. As the object in the present case is to evaporate the remaining fluid (water) to dryness, it is better to empty the contents of the retort into an evaporating dish, and then to place the latter over the fire, and to continue the evaporation in this way, at a gentle heat, until all the fluid has gradually disappeared. The residue, adhering to the sides of the dish, is removed by a bone spatula, collected, and weighed. The weight obtained is that of the combined salts used in preparing the collodion. These salts may be a mixture of an iodide and bromide, or of an oxide, bromide, and chloride; or the salt may be, as before stated, simply an iodide.

In the first place, however, it will be well to ascertain the base or bases of the salts.

Let us see, first of all, whether an ammoniacal salt is present. Take a small quantity of the powder collected from the dish, and mix it with a little caustic potassa, then rub the mixture together with a drop of water in a mortar; the smell of ammonia will be quite distinct if any salt of ammonia has been used.

Test next for the presence of cadmium. To do this we dissolve a little of the powder in distilled water, and to the solution add a drop or two of sulphide of ammonium; a beautiful yellow precipitate will indicate the presence of a cadmium, and the presence of this metal will be corroborated, if the yellow precipitate is insoluble in a large quantity of sulphide of ammonium.

In order to ascertain the presence of potassium, sodium, or lithium, we proceed as follows:—

Dissolve a portion of the powder in distilled water, and then add to the solution sulphide of ammonium until all the cadmium is precipitated a sulphide of cadmium; separate this by filtration, and concentrate the filtrate (that is, the solution), and add to it hydrochloric acid, which will decompose the iodides and bromides; evaporate to dryness, and then fuse the salt. We shall now have the chlorides of the bases that may be present.

Reduce the chlorides to a fine powder in a mortar, and then place the powder in an evaporating dish, and dry the powder again thoroughly; now add a mixture of equal parts of the strongest alcohol and ether to the dry powder, and set the vessel aside for a day or two to digest, stirring the mixture occasionally. By this means the chloride of lithium is dissolved, and will be found in the alcoholic solution. Evaporate this solution to dryness; the residue,

* Continued from p. 66.

if any, will be chloride of lithium. Moisten a piece of platinum, and then dip it into the powdered chloride of lithium, and heat the salt in the blow-pipe flame—a bright crimson-coloured flame shows the presence of lithium. By careful manipulation and continued digestion in the mixture of alcohol and ether, the whole of the lithium can thus be separated, weighed, and computed either as iodide or bromide.

If, however, we find no lithium salt in the alcoholic solution, we must proceed to the undissolved residue, and search for either potassa or soda, or both.

This residue is already in the form of chloride, having been reduced to this state by hydrochloric acid and heat. Dry the residue, and weigh it.

Our next step is to separate the potassium salt from the sodium salt, to do which proceed as follows:—

Dissolve the residue in a small quantity of distilled water, and then add to the solution an excess of a concentrated neutral solution of bicchloride of platinum, in distilled water, and concentrate the mixture still more by evaporation, nearly to dryness; afterwards digest the nearly dry substance in alcohol, sp. gr. 80° F. for a few hours, stirring frequently. In this way the potassium salt can be entirely separated by precipitation, as the double chloride of platinum and potassium, from which the amount of the potassium salt as iodide or bromide can be computed; the double salt of sodium and platinum will be found in the solution; therefore, evaporate the solution to dryness, weigh the residue, and compute the amount of iodide or bromide accordingly. If there is no residue, there had consequently no sodium salt been used in the preparation of the collodium.

Either of these two double salts can be decomposed by hydrosulphuric acid, which precipitates the platinum as sulphide of platinum, which is separated by filtration; the filtrate is then evaporated to dryness and heated to redness in a porcelain crucible; the residue, after ignition, is either caustic soda or potassa, as the ease may be.

We have now to proceed to the determination of the hydriodic, hydrobromic, and hydrochloric acids, which may be combined with the bases found.

Supposing that all these acids are present in combination in the residue obtained after the separation of the gun-cotton, the ether, and the alcohol, and the evaporation of the aqueous solution to dryness, dissolve this residue, and add to it a sufficient quantity of a solution of protochloride of palladium, which throws down a deep brown-black coloured precipitate of protochloride of palladium, if there is any iodine in the compound; from the weight of the carefully dried precipitate the amount of hydriodic acid is computed, as also that of the iodide, either of potassium, sodium, ammonium, or lithium, as the ease may be.

The liquid portion (that is, the filtrate) contains the bromides and the chlorides, if present at all.

Add to the solution nitrate of silver, which throws down the bromide and the chloride of silver. Wash the precipitate well in the dark or yellow room, dry it, fuse it, and weigh it. The next step is to place the fused mass in a small bulb in the middle of a glass tube; the tube and its contents are also carefully weighed. Dry chlorine gas is now passed for some time over the bromide and chloride in the bulb, which is heated to redness; the chlorine displaces the bromide, which latter is driven off by the heat. After this operation the bulb-tube and its contents are again weighed; the difference between the present weight and the first weight will be the difference that arises by converting the bromide into a chloride. Then, by comparing the equivalent of bromide and chloride of silver, and making a proportion with the difference thus found, we obtain the quantity of bromide of silver which has been converted into chloride of silver; if it turns out that the whole mass in the bulb has thus been converted into chloride, it shows that there is no chloride in the collodium.

If a chloride should happen to be present, then it is possible that magnesia may be found as one of the bases.

There is a certainty and beauty in all these reactions

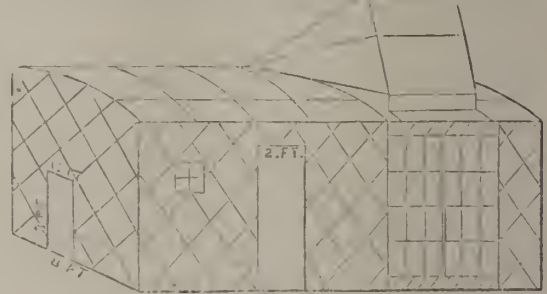
that render the practice of analytical chemistry quite enchanting; and since this practice is prosecuted with materials which make but little show, the expense is, comparatively speaking, small. The difference between flashy chemistry and practical chemistry: the one aims to astound with explosions and dazzle with brilliant colours, whilst the other aims to be useful by eliciting practical truths. The latter is that which the photographer must study and put into practice.

HOW TO BUILD A PHOTOGRAPHIC CAR.

BY C. N. STEVENS.*

Some time ago I saw an inquiry as to the best mode of building a photographic car. I have one which I think is just right, and I gladly send you a description of it.

I laid the sills, and bolted them: there are five. The two which are bolted at the bolsters are 2 by 6, the other three are 2 by 4. I then put in cross braces made of 1 inch boards ripped 2 inches wide, and then laid the floor. Next I put up a frame made of the same stuff, like the diagram. Where the strips cross they are halved, and a



screw put in. They are also screwed at the top and bottom. The roof is bowed with a pitch of 8 inches. The frame is then covered with felt paper, and half inch siding running up and down, and matched. Where the boards cross the frame there are two screws in each crossing. The car is smooth on the outside, which gives a better chance for fancy painting. The roof is covered with half inch stuff, then a layer of tarred felt paper, then a layer of half inch stuff on that again, and well painted with mineral paint, both between the joints and between the paper and outside covering, and then four coats of the same on the outside. There are two side windows north and south, and skylight facing north. The side windows are two common sash windows side by side. The glass is 8 by 14. The skylight is 5½ by 7 feet. The rear is raised, when in position, 4½ feet. There are two doors for entrance on each side; also a small door in the forward end, to accommodate the driver when moving. The truck wheels are 30 inches in diameter; the forward ones 2 feet from the end, the back ones 4½ feet from the rear end. The skylight is 3 feet from the rear end, and pitches to the side. I think this gives a better light, and the car is not so much in danger from the strong west winds. I had a car blown over and smashed last summer, and that put me somewhat on my guard. The side windows are 3½ feet from the rear end of the car, and 1 foot from the floor. It is 6 feet from the side-light to the door. The dark room is 3 by 4½ feet, and the work room 4½ by 5 feet. The car is 22 feet long, 8 feet wide, 7 feet high at the eaves. It took four thousand screws to fasten it together. The car is lined inside with quarter inch stuff, and papered with wall paper, ceiled overhead with the same, and painted drab.

THE ART OF LIGHT PRINTING.†

HOWEVER perfect and beautiful the photographs of to day may be, they all lack one vital quality—that of permanence.

* Philadelphia Photographer.

† Echo.

The portraits in our albums, the pictures in our portfolios, and the souvenirs of lake and mountain scenery that hang upon our walls, all bear evidence, only too patent, alas! of the fleeting character of sunlight paintings, and of the speedy destruction that awaits them. First of all the prints lose their freshness and brilliancy, then a pallor of a sickly yellow overspreads the whole surface, and gradually the finer details and shadows fade completely away. True it is, that some pictures more carefully prepared and protected than usual have resisted decay, and several photographers, indeed, maintain that silver prints may be made to endure, at any rate, for generations; but in any case, if we take account of the few specimens of ten-year-old photography to be met with, it cannot be disputed that their existence is one of very uncertain duration.

Most people are acquainted with the manner in which ordinary photographic prints are produced. A sheet of paper is simply coated with a white salt of silver, and this, on exposure to light, becomes blackened; hence if the paper, while in the sun, is covered up by a partially opaque body—as, for instance, by an image upon glass, termed a negative—some portions of its surface are necessarily browned or blackened, while others remain in their original white, forming a counter-image to that upon the glass. It is by reason of the black silver surface, or image, being of an unstable character, and liable to change in the same way pretty well as a silver spoon changes and becomes tarnished, that pictures suffer such destruction, and it is the proposition now made to abandon the use of silver that leads us to hope for durable photography in the future.

There are many kinds of permanent photographs just now before the public, but, although based upon one and the same principle, they may well be divided into two distinct classes, viz., chemical and mechanical prints. To the former belong the so-called carbon prints; to the latter, those produced by the Woodbury, Lichtdruck, Heliotype, and other similar methods. The principle in all is the same, and rests upon the sensitiveness to light of bichromate—of potash or ammonia—when mixed with some organic substance, such as gelatine, albumen, &c. The pictures produced by schoolboys of fern leaves and other objects are permanent photographs in every sense of the word, and the manner in which these are prepared will be remembered by many of us; a sheet of ordinary paper—which has been sized, and is covered, therefore, with a thin film of gelatine—is brushed over with a yellow solution of bichromate in water, and the surface thus made sensitive to light. A fern leaf is placed upon the paper, and the sun soon blackens, or rather browns, such parts of the sheet as are exposed to its rays, while, where sheltered, or covered by the leaf, the film remains in its original state, and when subsequently washed in water, is again dissolved off the paper. The brown surface, which has been rendered insoluble by the action of the sun, refuses to leave the paper when this is immersed in water, and thus a faithful image of the outline of the leaf is secured. If now, instead of painting over the paper with the bichromate alone, we apply both the gelatine and bichromate in one solution, colouring the liquid of a blue, brown, black, or other desirable tint, the reader will easily understand that after printing and washing as before, we shall obtain an image in blue, brown, or black, as the case may be, and we have what is usually termed a carbon photograph. If the colouring-matter fixed upon the paper is of a permanent character—it may be lamp-black, indian ink, or other carbon or mineral pigment—it follows as a matter of course that the image or picture also will be perfectly permanent.

It is this tendency, then, of a mixture of gelatine and bichromate to become insoluble on exposure to light that all recent printing processes are based upon. In the preparation of carbon photographs, as we have seen, it is necessary to have the aid of light for the creation of every single print, but in the mechanical methods this is not requisite. In the Woodbury invention, for instance, one of the most pro-

ducing plans before the public, a print is taken in the first place upon a thick film of gelatine and bichromate in precisely the same way as we have already explained; on washing the surface after exposure under a negative in the sun the soluble part is, we know, removed, while the insoluble portions—those acted upon by light—remain unaffected, and, therefore, the produced image is in relief. An impression of this relief is taken in soft metal, and in this way a kind of engraved plate is obtained, which, when placed in a printing press and suitably inked, is capable of yielding numberless copies of the original photograph. A more recent and also particularly promising printing method has just been brought forward by Mr. Edwards, under the name of Heliotype. A dry film of gelatine and bichromate is exposed to the action of light under a glass negative, as before, a small quantity of alum being, however, added in the first instance to the gelatine, to prevent, when the process of washing comes, the otherwise soluble parts of the surface being dissolved away, although they are still capable of absorbing water. We have in this case, therefore, when the print is washed over, not an image in relief, but a plain surface, of which some parts absorb water—but do not dissolve—while the others are capable of doing so. If now we pass an ink roller to and fro over the surface, the greasy ink is repelled in some parts and attracted in others—repelled, that is to say, where water has been absorbed, and attracted where the gelatine is dry and insoluble. Prints are then pulled off from this surface in exactly the same manner as from a lithographic stone, the image printed off upon paper being as permanent as any ordinary woodcut or engraving.

RENOVATING OLD BATHS.

BY GEORGE M. RICE.*

A GREAT deal has been said and written on this subject by different parties at various times, particularly on the same point as I am writing, viz., boiling down, "sunning," &c., some recommending a partial boiling down and bringing to proper strength, or ditting the bath with an equal bulk of water, to precipitate the iodide of silver with which an old bath is saturated, filtering, and then adding fresh crystals of nitrate of silver; or evaporating down the bath after filtering to bring it to the required strength, and then sunning it for one or two days, considering such treatment a sovereign remedy for all the ills that a bath is heir to. But knowing that it miserably fails at times to accomplish the desired end, I thought that some more reliable process would be prized by some, and so, for the benefit of such, I give them my method of working.

After the bath has reached a point at which it refuses to work to perfect satisfaction, I turn it out into an evaporating dish without filtering, and boil it down until quite reduced in bulk; I then find it advantageous to transfer the solution to a smaller dish, say eight inches across (as one of this size is more equally heated, and consequently less liable to crack), and then continue the boiling until the water has all evaporated, and the silver begins to fuse. Now watch it carefully, for the fusing is the most particular point in the whole process, for if too much heat is applied, not only do you run a great risk of cracking your dish, but you get, instead of a neutral nitrate, a nitrate that is strongly alkaline in its action. Therefore, if you have not the benefit of a gas-stove, use a sand-bath, by means of which the heat can be regulated, and use only as much heat as will suffice to keep the nitrate at the fusing-point.

Continue the fusing until the nitrate has ceased to bubble and smoke, and looks clear and transparent as oil, and if any of it clings to the sides of the dish, carefully push it down with a strip of glass, as the point is to have it all perfectly fused; then remove it from the heat, and when it begins to harden, break up the nitrate with a glass rod, and allow the dish and contents to get perfectly cool, for if a single drop of water is allowed to reach the evapo-

* *Photographic World.*

rating dish before it is cold, it will surely crack it. Now add distilled water—or water from which the organic matter has been precipitated by adding a few grains of nitrate of silver and setting in the sun until clear—to the fused nitrate, in sufficient quantity to make it of the proper strength, filter, and without adding any iodide of silver the bath is fit for use. If you are not in a hurry for the bath after fusing it, add common soft water to it, and set it in the sun and let it clear up, which it will do perfectly in two days.

It will be found that by means of this process you can get a new bath from one that was completely worn out, and one that will work quicker and cleaner than it did when first made, and with a beauty and delicacy of detail that will astonish those who are accustomed to set an old bath aside as worthless except for the refiner. If, in the first time trying, the fusing should be carried on at too strong a heat, and the bath works alkaline or foggy in consequence, a drop or two of pure nitric acid will set matters all right; but none need be added if the fusing is properly done, for the bath will work perfectly clear without it.

I have had no trouble in using the nitrate made from the silver recovered from paper ashes, sulphide, &c., if prepared as above, and if chemically pure nitric acid is used to dissolve the metallic silver.

It need hardly be added that the fusing must be carried on in a well-ventilated room, or under a funnel-shaped pipe leading into a chimney, to carry off the fumes of iodine, bromine, nitric acid, &c., if any be present in the bath while the fusing is going on.

The above process is perfectly reliable for renovating a printing-bath, by following the same conditions as is mentioned for the negative bath.

If ammonia is used in the printing-bath, a measured quantity will have to be added after the bath has been fused, as it will not re-dissolve clear after fusing.

Correspondence.

COPYRIGHT IN PORTRAITS.

SIR.—In continuation of my last letter, I will now consider the question of registration. Sir Roundell Palmer has said that registration is required to precede the acquisition of copyright. I do not go so far as Sir Roundell and yourself in maintaining that proposition. My opinion is this, that where an original work of art is commissioned, the copyright, by the mere operation of the Act, and without anything being done either by patron or artist, vests in the patron; and that while he has no intention to make any use of the copyright, no need exists for registration; and, further, that if he do not in any way publish the work, that he possesses the right at common law to prevent any person making copies therefrom. The law is convenient and equitable; it secures the copyright without trouble to anybody, and without the risk of losing it by omitting to do some act that otherwise might be necessary to be done. But should the owner of the copyright become desirous of making use of the copyright by publishing copies or by selling it, then registration becomes necessary; for the Act is very explicit; the words are, "No proprietor of any such copyright shall be entitled to the benefit of this Act until such registration." If Sir Roundell Palmer be right in saying that registration must precede the acquisition of copyright, then the words "proprietor of any such copyright" would be inaccurate, because, if the copyright did not exist before registration, there could be no proprietor.

When an artist sells an original picture in the usual way, and wishes to retain the copyright thereof, a written agreement is necessary between him and the purchaser, and registration is not actually necessary; but when he wishes to sell the copyright or publish copies, he must register; and it is advisable to do so in the first instance, because, until registration, he could not prevent the owner of the picture or other persons from making copies. When an artist sells an original picture with the copyright, then it is necessary that he register himself as the proprietor before the sale, otherwise he would be deriving a

benefit from the Act before registration, which the Act forbids. The Act does not meet the case where an artist wishes to retain the picture and sell the copyright, nor do I think that such a transaction could be brought within the Act.

I will now consider that portion of your article relating to what constitutes "a good or a valuable consideration." You say, "The author of any original painting, drawing, or photograph, produced, not as a commission, but by his own choice, acquires an exclusive property or copyright of the design therein, and he retains this until he sells it, and in the case of the photograph, he retains it until he for the first time sells the negative." This sentence is hardly correct, because an artist may sell his picture and retain the copyright as long as he pleases. The photographer may sell his negative without the copyright [The statement in our sentence is strictly correct; the artist may sell his picture, and the photographer may sell his negative, without the copyright; but until a sale is effected the copyright vests in the author of a work produced for his own purposes], although the purchase of it without the right to use it would be a senseless proceeding on the part of the vendee.

"The observation of Mr. Lewis was, therefore, no *non-sequitur*, but a bare statement of the fact." Mr. Lewis's argument, put into the form of a syllogism, would be stated as follows:—When photographic portraits are produced for payment, the copyrights vest in the sitters. These portraits were not produced for payment, therefore the copyrights vest in Mr. Taunt, which is a *non-sequitur*. To make the conclusion sound, the major premiss would require to be, when photographic portraits are not produced for payment, the copyrights vest in the photographers, which would be contrary to the law. [If Mr. Lewis had been speaking in syllogisms, our correspondent's statement of the case would have been necessary; but in this case the major premiss was clearly taken as implied and understood.]

The words "a good or valuable consideration" convey to ordinary minds the idea of payment in money or money's worth, but their legal signification is more extended. A good consideration may be something abstract and intangible; and where a photographic portrait is produced for a good consideration, the copyright thereof vests in the sitter. In this case I suppose Mr. Taunt suggested to the crew that they should sit to him for the purpose of having their portraits taken, he promising or undertaking to publish them. It is not likely that the crew sat to him solely to gratify him as an individual, and without any ulterior object, but that the condition was, that there should be publication. The contract, no doubt, was, on the one side, that the sittings should be given; and on the other, a promise that the resulting portraits should be published. The general rule as to the sufficiency of the consideration is, that it may arise either, 1st, by reason of a benefit resulting by the act of the promisee to the party undertaking or promising to do a certain thing; or, 2nd, by reason of the promisee sustaining any loss or inconvenience, or subjecting himself to any charge or obligation, however trifling the charge or inconvenience may be, provided such act be performed, or such inconvenience be incurred, with the consent, express or implied, of the promiser, or, in the language of pleading, at his request. Either of these reasons would prove a good consideration on the part of the crew sufficient to vest the copyright of the photograph in them. There was a benefit resulting to Mr. Taunt from the sitting of the crew, by reason of the money received or expected to be received from the sale of the photographs; and there was the loss of time and the inconvenience of sitting incurred by the crew at the request of Mr. Taunt. I have no hesitation in maintaining that in cases where persons sit to photographers for the purpose of producing photographs for publication, that the copyrights thereof vest in the sitters as a matter of course, unless there be an express contract in writing to the contrary. [It is somewhat inconvenient discussing a special case whilst it is *sub judice*. Our correspondent has to indulge in suppositions as to the nature of the arrangement between Mr. Taunt and the Oxford crew, in order to state his position, which, when stated, is, we think, altogether fallacious. Without entering into suppositions as to this special case, we repeat the general proposition, that when a photographer produces a negative for his own purposes, not as a commission from any one, the copyright vests in himself; the private motive of the sitter in consenting to sit amounts to nothing, unless it is made an expressed part of the bargain.]

"But if the sitter possessed the power, which Mr. Cunningham suggests that eminent persons fancy they have, of ordering

the sale of a portrait to cease at any time they think fit, they might do the photographer serious injustice, and cause him serious loss." On the other hand, the photographer might cause serious annoyance to the sitter by publishing a portrait of which he disapproved. Both parties have rights entitled to equal respect. If the photographer wishes to secure himself against possible loss on that account, he should require the sitter to make an assignment of copyright, which would place the matter entirely in his hands. Or, if the sitter retained the copyright, he might licence the photographer to publish, and, in the event of the sitter revoking the licence, the photographer would be entitled to compensation. [Our argument as to the meaning of the term "consideration" is not touched by our correspondent's reply. Our correspondent's argument is based throughout on the supposition that the copyright always vests in the sitter, which, in case the negative is taken by the photographer for his own purposes, and not as a commission, is made by the statute to vest in the producer or author.] Any person not being the proprietor of the copyright, or licensed by him, publishing a portrait, invades the common law right of the sitter, for which the law provides a remedy. It is seldom we hear of any complaint, for even the caricatures which adorn our comic papers are of such a harmless character that no one feels aggrieved. Should, however, such be the case, the remedy may be applied, for that which is "*contra bonos mores*" is by the common law prohibited.—I am, sir, your obedient servant,
J. CUNNINGTON.

STRENGTH OF TONING BATHS.

MY DEAR SIR,—In reference to the toning formula given by Mr. Griffiths in your last issue, my own experience would lead me to believe that he is right in regarding the proportion of chlorido of gold as an uncertain item. Some time ago, in dissolving a quantity of the salt, I lost my reckoning, and have ever since been working to a great extent at random in regard to the quantity put in my toning baths. My usual plan is to take care that I put sufficient, as near as I can reckon. If I am in doubt, I put a little more. But I do not think that I lose anything if I happen to put in too much. For one thing, I save time in toning when the gold is abundant; and if I take all the gold precipitated while the bath is being used, and when it is worked out and inert, and re-dissolve it in aqua regia, I have the idea that I am no loser whatever, as the prints will not take up more gold than they ought, simply because there may be in the toning bath, say, a large amount of the salt superfluous. Am I right or wrong in the idea?—I remain, yours very truly,
KENT.

[There is no loss when the precipitated gold is recovered and re-dissolved; but there are some inconveniences which are described on another page.—Ed.]

CONCENTRATED IRON DEVELOPER.

SIR,—I have been in the habit of preparing a stock solution of sulphate of iron, 160 grains to the ounce of water, a convenient strength for mixing, as one drachm of the solution contains twenty grains of the iron salt. In order to prevent the peroxide of iron, which will soon be formed, from settling, I add eighty minims of acetic acid, by which means the solution is kept clear and ready for use, as soon as the water and alcohol, and, if necessary, a further proportion of acetic acid, have been added.

I have always found this developer answer well, even after it had been made for some months; and, with a well lighted landscape, I generally obtain sufficient density with one application of the developer.

My object in writing is to ask for information about the action of peracetate of iron in the developer, which, as I infer from your remarks in the first leading article of May 26, you consider in some way objectionable.—I remain, sir, your obedient servant,
JOSEPH PAGET.

[The general tendency of acetate of iron is to produce intensity and to require a somewhat longer exposure than simple sulphate of iron in order to secure delicacy. There is no objection to its intentional presence in a developer; we only cautioned readers against the conditions in which it was likely to be formed, because many of them prefer to use sulphate of iron simply.—Ed.]

THE PHOTO-RELIEF PROCESS IN FRANCE.

DEAR SIR,—It may be interesting to you, and also, possibly,

to some of your readers, to hear that Messrs. Gouppil's premises at Asnieres are not destroyed. The premises altogether received eleven shells, one of which, entering by the roof of the works, and then exploding, did a fair amount of damage, particularly to the roof, which is principally of glass. One fragment only of this shell reached the negatives, smashing about a hundred; one printing press also received its quietus from another fragment. A curious effect was produced: the plate glass cemented on to the lid or upper plate of the press was crushed into an almost impalpable powder. Another shell burst in the laboratory and washing rooms (where the reliefs are washed), kicking up a serious rumpus among the troughs, doors, and windows.

Mr. Roussolon's house escaped wonderfully, or, rather, his furniture, for the house received three. His dining room, drawing room, bed room, and office were traversed. Two of the projectiles passed within an inch of several articles of furniture without touching them, and the last only broke two chairs. The others were in the outbuildings, terrace, &c., doing no material damage.

If you know Mr. Woodbury's address, or see him, please let him know I am well. I was blockaded at Asnieres during the first ten days' fighting. Since that time I have been living in the country.

We return to Asnieres to-morrow, and probably shall be at work again early next week.—Yours truly,
G. SMITH.
Bouival, May 24th, 1871.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE usual monthly meeting of this Association was held on Tuesday evening, the 30th ult., at the Free Public Library, William Brown Street, Mr. O. R. GREEN in the chair.

The minutes of the former meeting were read and passed.

A letter was read from the Secretary of the Philadelphia Photographic Society acknowledging the receipt of the prints sent for exchange, and notifying that the following resolution had been passed unanimously:—"That the Photographic Society of Philadelphia receive with great pleasure the very choice specimens of their work sent by the Liverpool Amateur Photographic Association, and hope for the future that the system of mutual exchanges will be continued."

The CHAIRMAN and other members expressed their satisfaction that the prints had met with such approval.

The SECRETARY exhibited a number of prints mounted on Messrs. Frewer and Evans's Victoria cards. The size of the cards was a great improvement on the old carte size, and it was thought that as soon as albums were made for them they would be more appreciated, as they were admirably suited for views as well as portraits.

The CHAIRMAN called the attention of the members to a number of coffee transparencies by Mr. E. Roberts. He (the Chairman) thought they were absolutely perfect in every respect, and he had no hesitation in saying that they were decidedly the best transparencies ever shown at the Society.

Mr. J. A. FORREST exhibited and explained Mr. Edwards's graphogenic apparatus, which was greatly admired for its ingenuity. Several members thought, however, that it might be made much lighter without lessening its durability.

Some discussion followed, the CHAIRMAN pointing out the advantages and disadvantages of both the wet and dry processes, after which a vote of thanks was passed to Mr. Forrest for his kindness in obtaining the apparatus for exhibition.

Mr. LEWIS HUGHES exhibited his new camera, by which he was able, by several very ingenious arrangements, to use for enlarging from microscopic objects, copying negatives, taking transparencies for the lantern and stereoscope, reducing, &c. Mr. Hughes explained the different arrangements by which he was able to do without a heliostat—pointing out a new and more convenient movement of the mirror, and showing the manner in which, by a very slight change in the camera, he was able to work at different subjects.

On the motion of Mr. W. H. WILSON, seconded by Mr. P. MAWDSLEY, a vote of thanks was passed to Mr. Hughes for his very interesting description of his camera.

The SECRETARY called attention to a curious quality possessed by collodion, noticed by M. Kleffel at a recent meeting of the Berlin Society, at which meeting M. Kleffel gave some details

of the process, which it was thought might possibly lead to some useful application:—"A glass plate is first coated with a somewhat thick collodion in the ordinary manner, and, after it has set, a printed sheet of paper is laid upon the surface and pressed lightly with the ball of the hand, when, after the removal of the paper, a sharp and distinct reproduction is found impressed upon the collodion, the type or design being somewhat sunken and bright, and the remaining portion of the film being somewhat dull and matt." The Secretary also exhibited a number of transparencies of woodcuts which were obtained by the foregoing process, but, owing, no doubt, to some peculiarity in the printing ink, an entirely different result was produced. He found that, instead of the type or print appearing bright and transparent, a portion of the ink had become attached to the film, producing a beautifully clear and sharp transparency, admirably suited for the lantern. From this an equally sharp negative had been taken, which gave excellent prints. Transparencies taken in this manner had also an exceedingly pretty effect.

Mr. J. A. FORREST thought that this process might be made useful. If the picture was printed in suitable colours it could then be transferred on to glass, which, when put into a furnace and heated, the colours would be burnt in, and the picture be fixed indelibly on the glass, the heat having evaporated the collodion film.

Mr. E. ROBERTS showed a few prints on Durand's sensitized paper. The paper had been sensitized over six months, and still gave good results.

The meeting was shortly afterwards adjourned.

Talk in the Studio.

DAVID DUNCAN.—We have to record with regret the death of Mr. David Duncan, an operator who has occasionally contributed to our pages, and whose contributions to the *Philadelphia Photographer*, since he emigrated to America two or three years ago, we have occasionally quoted. Mr. Duncan died in March in New York, far from friends and family, and, so far as we know, his friends in this country do not yet know of his death. A kindly letter from one whose friendship Mr. Duncan had gained has reached our hands through Mr. E. L. Wilson, the object being to ascertain the address of Mr. Duncan's friends, in order to make them acquainted with particulars of his death. If any of our correspondents know anything of Mr. Duncan's friends, we shall be happy to give them the address of the courteous friend in New York who will communicate with them on the subject.

ANOTHER DRY-PLATE PROCESS.—Mr. H. T. Anthony has used as a preservative gum tragacanth and sulphate of iron. He says:—"In using this gum as a preservative, I found that an impression could be obtained by a very short exposure, but that it was impossible to get any intensity in the development. By adding a very small quantity of protosulphate of iron to the gum solution, its whole action was changed, and it became possible to develop pictures of extraordinary intensity."

NADAR.—It is stated that M. Nadar, the famous photographer and aeronaut, has been arrested for his supposed sympathies with the Commune; and an old man of far more humble position, but also well known to the frequenters of the Boulevards—the tobacconist under Nadar's studio—has also been carried away for the same reason.

PHOTOGRAPHS OF LEONARDO DA VINCI.—It is intended, at Florence, to reproduce by photography the autograph manuscripts of Leonardo da Vinci. Unfortunately, eleven volumes of the twelve which contain these manuscripts, and which were presented to the Bibliotheca Ambrosiana, Milan, by Galeazzo Arconate, are now at Paris, and it will be difficult, under the present circumstances, to have them copied, if they escape destruction. The twelfth volume, however, which has remained at Milan, and which is the most interesting one, on account of the autograph drawings of Leonardo, can be commenced at once.—*Atheceum*.

To Correspondents.

M. F. L.—A quarter-plate lens will answer well for enlarging in the manner you wish.

HARDING.—In working with such a toning bath as you describe, the best plan is to keep for the purpose of replenishment a stock solution containing the same proportion of all the salts, but half the proportion of water, and add this from time to time as the solution begins to tone slowly.

SOUTH DEVON.—We use a similar pair of lenses on plates $7\frac{1}{2}$ by 5 inches. With the lenses stopped down they cover very well, and in all cases we cut out the largest stereoscopic sizes with good definition.

C. M. C. (Reigate).—The most probable cause for the defects which you describe is the dilution of the collodion with alcohol. Unless you obtain the alcohol from the maker of the collodion, dilution is often an unsafe process. The natural action of dilution is to produce weak, poor images. If you had enclosed us a print from the faulty negatives we could have judged with more certainty.

F. W. T.—There is not, we believe, any business firm in which the erection of studios receives special attention. There are, we believe, establishments devoted to the manufacture of portable greenhouses; but we do not know anything of them beyond having occasionally seen their advertisements in daily papers and horticultural journals. The studio you describe will, we think, answer well for most purposes. We believe that the "graphogenic" will answer well. It may be adapted to any camera. When you are in town it will not be difficult for you to call on Mr. Edwards and see its operation. We do not know anything of the studio you mention.

T. O.—In a question of law, a legal opinion ought to be acted upon; but as you ask our opinion, we have no hesitation in saying that, so far as we can judge from the facts stated in the documents, it is very doubtful indeed whether the plaintiff could establish his claim to copyright. We do not know the circumstances under which the portrait was taken in the first instance, and this is a material point to be proved. It is the opinion of some good authorities that the claim to copyright is violated if copies are issued before registration. It has been maintained by some, but we think erroneously, that the copyright always vests in the sitter unless it is duly assigned in writing by the sitter. In any case, if your statement be correct, you are only liable for the special damage resulting, which in this case must be trifling. We should have returned the documents at once; but you sent neither name nor address, and it is scarcely desirable to guess at such matters in sending valuable documents.

R. M. L.—We do not know whether the *Moniteur de la Photographie* has recommenced publication or not. We received a few days ago the *Bulletin*, the first time for many months.

M. L. R.—In obtaining cloud negatives, a ripe collodion and a weak developer will generally answer well. Select clouds with well marked light and shade. As a rule, very short exposure will be found sufficient. The moon may be obtained by an exposure little more than instantaneous. Under favourable circumstances, the edges of brilliantly illuminated clouds near the moon may also be obtained.

F. G.—Excess of nitric acid in a bath may easily be removed, whilst it is very difficult indeed to get rid of acetic acid. To remove nitric acid, add oxide of silver, by which nitrate of silver will be formed; or add carbonate of soda, by which nitrate of soda will be formed, which is innocuous in the bath. Any attempt to neutralize acetic acid produces acetate of silver, the presence of which is often troublesome. The only method of getting rid of acetic acid is to boil down the bath to dryness, and so evaporate the acid.

G. T.—If you have found the formula you have been using, we do not recommend you to change it; but there is wisdom in occasional experimental trial of new formula when you can afford time for such experiment. The value of the mixed developer of iron and pyro depends much on proportions, and on the circumstances in which it is used.

B. F.—You will probably find that the addition of some of the new uniodized collodion of the same maker will answer best for dilution. Ether and alcohol which have been kept some time in the light or in contact with the air should not be used. 2. Frequent change of water, and draining between each change, will be found more efficient than long soaking.

R. B.—The piece of untoned and unfixd print was so discoloured when it reached our hands that we could not form any opinion in relation to it; but if, as you state, one sample of paper is free from the defect which is always present in the other, discard the latter at any cost.

X. Z.—The brown discoloration of your toning bath, and its ceasing to tone, suggest that you had probably touched the solution with fingers which had been in contact with hypo. It is a very unsafe plan to fix until you are quite done with printing and toning. The stains on the back of the enclosed print are due to hypo; the print has evidently been touched with fingers smeared with hypo before it was fixed.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.



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EFFECT OF BACKGROUND ON INTENSITY OF NEGATIVES.

IN one of the recent dialogue lessons of Mr. Elbert Anderson, he refers to a subject with which most photographers are more or less familiar, but which, nevertheless, has received comparatively little specific attention or discussion. The fact that where a dark background is employed the lights of the figure appear more intensely brilliant is tolerably familiar. The common explanation of this fact which will, doubtless, be readily offered by many is, that the appearance of brilliancy is due to the effect of contrast, and the class of pictures produced by M. Adam-Salomon will be instanced as illustrating this. The dark background and preponderance of masses of shadow in the draperies will be pointed out as manifestly giving, by contrast, an unusually intense effect to the lights. This is, to a large extent, undoubtedly true; skilfully managed contrast is a very legitimate source of brilliancy, and the purity and intensity of a light can at any time be forced by placing it in juxtaposition with deep shadows or dark mass. But Mr. Anderson points out another cause, from which it will be seen that the lights in such a case not only seem to be more brilliant, but that they actually are more intense. He points out that when dark draperies and a dark background are employed, there is comparatively little demand upon the free nitrate on the plate during development, and that it is, therefore, liberally deposited on the lights, giving them an actually larger proportion of silver, and, hence, greater intensity than they could have had if a light background or light draperies had been present, demanding a large share of the silver deposited during development. The presence of a dark background is, in fact, equivalent, in its effects on the lights, to the addition of a little more silver solution to the developer. That the use of a light background detracts from the intensity of the lights in the figure, by distributing the silver generally, instead of leaving it for accumulation on the lights, is a fact the truth of which we established to our own satisfaction many years ago—so long ago, indeed, that the experiment had passed out of our memory until revived by Mr. Anderson's shrewd observations on the subject. We were at the time in question taking some collodion positive portraits, and were struck with the low tone and general greyness of the lights when a white background was used, compared with the lights of pictures with dark backgrounds produced with the same chemicals and under all the same circumstances, except the change of background. And we were also struck with the fact that the white sheet which on a Daguerreotype plate gave a white background, on the collodion positive gave a dull thin deposit, which was far from white. This satisfied us that it was not simply the effect of contrast, and after some

reflection and a few experiments we learnt that it was due to the even deposit of silver in development, and the insufficiency in the quantity of silver present to give a dense deposit where so much white occurred. The continuation of development and addition of a few drops of silver—a very rare circumstance in glass positive work—gave the lacking intensity to the whites in the picture with a white background, and established the theory of the cause to which Mr. Anderson has referred.

A correspondent of the *Philadelphia Photographer*, referring to this subject, and recognizing this theory, suggests another cause as possibly having some influence in the matter. He says:—"There is another theory, however, which would seem to account for this difference in intensity on different backgrounds. On a dark ground the sitter is illuminated by the direct rays only, which fall upon him from the skylight, the rays passing by and around him being absorbed by the background, giving a sharp contrast between the light and dark parts of the model. On the other hand, a light background reflects the light, throwing the rays back upon and around the sitter, giving a diffusion of light that softens the shadows and renders it easy to get a negative with much less exposure than on a dark ground."

That there should be a considerable amount of light reflected by a very light background is only natural, and that it will have some influence in producing a general effect of softness, rather than contrast, there can be little doubt; but this effect must, we imagine, be very slight; indeed, so far as the background reflects light on the figure, it is upon that portion turned away from the camera, and hence never seen by the lens. The chief mode in which, we imagine, a light background produces softness and reduces exposure by the amount of light it reflects, rather than by its influence in development, depends on the general reflection of light on the plate which it causes, acting in a manner similar to the general exposure of the plate for a moment to diffused light, which old Daguerreotypists are familiar with, and is analogous with the recently proposed methods of lining the camera with white, with a view to shorten exposures and secure harmony.

It is a fortunate circumstance that the class of pictures in which the use of light backgrounds is most imperative—vignettes—least requires intensity or contrast, but is most suitably rendered by softness, delicacy, and harmony. It is also fortunate that when the presence of much dark drapery and small portions of white or of a very light character occur in a subject, the operator has the matter somewhat under control. By using a strong developer he can lessen the tendency to aggregation of deposit on the lights. The strong developer will quickly do its work, leaving little time for aggregation, and will, at the same

time, throw down on the half-shadows their full share of deposit, and so help to harmonize the tendency, otherwise inevitable, to crudeness, from excess of contrast.

SPLITTING OF NEGATIVE FILMS.

IN the discussion at the Photographic Society two or three months ago, as to the cause of the rents and ruptures to which the negative film was subject, it will be remembered that one very specific condition was mentioned as generally preceding the hair-like cracks in which an actual division or rent occurred in the film. Mr. Blanchard stated, and his experience was confirmed by that of others, that these cracks never occurred where a powdery collodion had been employed, their occurrence being confined to those negatives produced by a horny contractile collodion. On another page we publish some observations by Mr. Carey Lea on the same subject, in which a curious corroboration of this view may be found, although the conclusion is arrived at by a different series of observations. Mr. Lea has arrived at the conviction that the cracking of the film is due to insufficient permeation of the film by the varnish, this insufficient permeation being attributed to the hasty pouring away of the varnish after it has flooded the film, instead of allowing it to remain until it has thoroughly permeated the collodion, so as to come into contact with the glass and thoroughly cease the film. It will be seen at once, assuming Mr. Lea's explanation to be correct, how it is corroborated by Mr. Blanchard's experience; and, assuming Mr. Blanchard's view to be correct, how it is confirmed by Mr. Lea's observation. The horny contractile film would naturally repel the varnish, so that if the permeation of the resinous protection were a necessary condition of immunity from the splitting of the film, the use of the horny contractile collodion would be, as well as appear, an element in producing the evil. The corroborative character of the two distinct forms of evidence tending to one conclusion is certainly striking, and worthy of attention; and whilst it may not always be convenient to the photographer to discard a good sample of collodion, giving fine negatives, simply because it is of a contractile character, it is at all times easy to adopt the simple remedy suggested by Mr. Lea, and allow the film to be well permeated by the varnish before returning it to the bottle. The remedy is simple, commends itself as not unnatural, and is worth trying if it in any degree tend to reduce the chances of this most irritating form of annoyance and loss.

APPRENTICES AND ASSISTANTS.

SOME months ago we called the attention of photographers to the importance of establishing a system of apprenticeship in place of the plan at present generally prevailing in the photographic business. In the majority of instances under existing arrangements a lad is engaged to run errands, clean plates, and make himself generally useful. He "picks up" a little knowledge of photographic operations, and in the course of a few years issues as a full-fledged operator. He has had no previous education to fit him for the work; possibly has no especial love for the art, or aptitude for its practice; but it opens to him a means of making a living less laborious and more remunerative than the majority of handicrafts open to him in his position in life. He is not to blame for availing himself of the opportunity; but many a vexed employer has much reason to blame the system under which he is constantly liable to engage operators so raised. It is the interest of every employer, and the interest of every qualified operator, to aid in the establishment of a system of apprenticeship in which the due service of a given time to the work, and the due tuition received, would be practically guaranteed by the indenture in the operator's possession. A correspondent, signing himself a "Scotch Thistle," has

some excellent remarks on the subject in our Philadelphia contemporary, which we reproduce. He says:—

"That the subject of assistants is of some importance will not be denied when it is considered that on assistants—masters expectant—the future of photography mainly depends; and it therefore behoves those who are at present not only employers, but lovers of photography, to consider how they may best further the art they profess.

"The method of engaging assistants at present in vogue is not at all satisfactory. So far as I am aware, it is very seldom a photographer apprentices or enters into any agreement with those he employs; consequently, as there is no indenture, it very often happens that after a boy has been some time in the employment of one photographer, and is just becoming useful, the offer of a slight increase of salary by a rival photographer—who thus hopes to get his possibly more successful neighbour's 'secrets'—induces him to leave, to the great annoyance and inconvenience of his master, and detriment to his own character.

"The remedy for this is obvious. A few weeks' trial, at most, will enable the employer to decide whether the boy is likely to prove suitable or not. If suitable, let the photographer engage or bind him for a specified period, say for five years—two in the printing and three in the operating-room. Should the lad during the preliminary trial prove unsuitable, it is unquestionably better for both that he be dismissed at once.

"I think it would tend materially to improve the status of photography if apprentices had either to pay a premium, or give their services for half the period of apprenticeship for nothing. This would effectually exclude those whom necessity, not choice, compels to take whatever sort of situation offers itself first, without any reference or regard to their inclinations or ability, and it would induce a better class of young men to turn their attention to the profession. I think that photography should, in this matter, not be behind professions of a kindred nature, all of which, I believe, make a premium or gratuitous service for a period a necessary part of the arrangement in case of apprenticeship.

"There is another thing which militates against the advancement of the art in so far as labour is concerned—that is, wages. The average salary of photographic operators does not exceed, if indeed it equals, the wages of an ordinary tradesman. If it be admitted that, in order to become a successful photographer, a certain amount of technical education is necessary, it is only reasonable that the return for the pecuniary outlay incurred in that education should be something more than at present.

"Of course those palmy days when photographers could acquire a handsome fortune in the course of a year or two are, alas! things of the past. Then employers could easily afford to pay large salaries; but if photography, as some people say, has seen its best days, let us hope it has seen its worst also. The profits in an ordinary business are such as admit of a handsome remuneration being allowed to assistants.

"The photographic busy season is of short duration, and it is a very difficult matter to provide work for assistants during the long, dull months of winter; but I think a great deal might be done in the production of transparencies of portraits. The photographer could easily find out those of his patrons who would be likely to purchase such productions.

"Then, again, the waste paper cuttings could be collected and burned, the print washings dried and reduced, negatives cleaned and rearranged; and thus the winter might be got over without an employer being obliged to dismiss any of his staff of workers.

"The breaking of negatives is ever a sore point between photographers and their assistants. How does it happen to be always the best and most valuable negative that

gets broken? I think it might be traced to the same reasoning that attributes a superlative degree of goodness to those children who have 'gone before.'

"In conclusion: I would take the liberty of recommending to my brother assistants to carefully collect and preserve all stray bits of sensitive paper, to remember to 'salt the washings,' and to handle carefully all the negatives—in short, to take an interest in their work—and their employers will not fail to take an interest in their employés, and all that relates to their advancement."

DEVELOPER OF COPPER AND PYROGALLIC ACID.

A CORRESPONDENT has been trying the pyro developer with copper added as used by Herr Lorenz, and described in *Licht*. He finds the exposure a little longer than with iron, but the negative is of very good quality. We repeat Herr Lorenz's formula and remarks:—

He asserts that it is capable of fulfilling all the conditions above mentioned, uniting, as it does, the advantages of both the iron and the pyrogallie acid developer, far surpassing the gelatine developer in intensifying power, whilst at the same time it produces a very soft picture, and is applicable to every sort of collodion and silver bath, and requires a shorter exposure. With this developer the deposition of silver is exceedingly fine, so that the negatives thus produced are adapted in a superior manner for the preparation of enlargements in the solar camera.

The following solutions are prepared in separate bottles:

a.—Distilled water	...	...	20 ounces (fluid)
Pyrogallie acid	...	...	70 grains
Formic acid	...	...	30 minims
Alcohol	...	...	1 ounce

b.—A concentrated solution of sulphate of copper in water (one part of the sulphate in two or three of water).

Immediately before proceeding to development, a mixture is made of three drachms of the solution *a* and of one drachm of the solution *b*; a portion of this is then poured upon the plate in the usual manner. If greater softness be required, more of the sulphate of copper solution is added; in the opposite case, more of the pyrogallie acid. This mixture will keep good at the longest for two hours, after which it turns black and is useless. In summer, if fogging should set in, more formic acid should be used; whilst in winter a less quantity will be found sufficient. The length of exposure is three fourths of that required by the iron developer. A further advantage of this developer is this: it produces no stains whatever, even when it should happen to be poured upon the plate quite unequally.

AMERICAN CORRESPONDENCE.

OUR NATIONAL EXHIBITION—A RAPID EXPOSING SHUTTER— PHOTOGRAPHING THE MAGNETIC SPECTRA—PHOTOGRAPHY ON WOOD.

Our National Exhibition.—We are all excitement now, pending the coming exhibition of our National Photographic Association. Not only are we looking forward to the pleasures and privileges of examining the best productions of our own home and foreign co-workers, with all the accruing advantages, but we expect to see here in our "city of brotherly love" at least one thousand photographers in a body. There is something grand in anticipating such an event, and I assure you it will be a grand affair.

To bring it about, as you will see by the circulars I send you, we have effected an arrangement for a reduction in fare with about thirty of our railroad and steamboat companies, and we have induced our leading hotels also to make special preparations for us, and reduce their

rates. When these photographers meet here, you can witness one of the most respectable looking and best behaved assemblages of men that you can get together from any other profession, except, perhaps, the clergy. I was particularly struck with this fact last year, and felt proud of my associates as a body. Photographers generally are considered as belonging to rather the lower class (then, according to Mr. Darwin, they would be ahead of their race generally) of beings, but I have seen congregations of lawyers, dentists, and so on, in conventions, and I will put in the appearance of our craft against any of them.

Well, when we get our fraternity here, in addition to the routine business of our Association, we are to have papers read by many of our most eminent artists, demonstrations in lighting and posing on the black board, actual models of skylights on a large scale, to be explained and worked by some of our most skilful posers, discussions on practical topics, lectures on light by Professor Henry Morton, lantern exhibitions, and so on, all to have a practical turn, in order to send home those who visit us full of information that will brace them up for another year's work and strife after elevation, improvement, and success.

I am glad to see that we are to have some English visitors, and they will be welcomed. I shall keep you fully posted on our proceedings.

A Rapid Exposing Shutter.—Among the many devices for securing an instantaneous exposure, the one I am about to describe may be new to you. It was contrived by Professor Fairman Rogers, of this city. I have not tried it, but have examined it, and it seems to be entirely practical. The principle is a very simple one, being similar to that of a Venetian shutter. The frame is made of brass, on which are placed four rotating slats, geared at one end by toothed wheels, so as to turn accurately together; on the opposite side is a cord wound around and fastened to the axis of the lower slat only, and extending to a spring at the upper part of the frame; at the lower edge is the trigger. A small piece of wood is cut to fit exactly the front of the lens, and the brass frame with the slats attached is screwed to it. The focussing is done by opening the slats and allowing the light to enter the camera. When a rapid exposure is required, draw down the cord, which will cause the spring to bend, and when the slats are entirely closed, the trigger will catch upon the lowest one, holding them all in position. The sensitive plate is placed in the camera, the dark-slide drawn, and, at the desired moment, the trigger is touched, the position of the slats changed, the light passes into the camera for an instant, and they close again, being held in position by the spring on the top, drawing the cord tight and preventing the slats falling back, and light again entering the camera.

Professor Rogers has made several experiments with this shutter, and has, so far, been pleased with its success. It might be supposed that during exposure lines would appear upon the plate corresponding to the four slats revolving before the lens, but such is not the case; the slats are made of very thin brass, turn with great rapidity, and are not in the focus of the lens. Professor Rogers, after some consideration, selected this form of shutter for the express purpose of photographing horses when in rapid motion.

Photographing the Magnetic Spectra.—Prof. Alfred M. Mayer, of the Lehigh University, Pennsylvania, has recently succeeded in photographing some admirable specimens of the magnetic spectra, and I send you some copies from his negatives. You will observe that they are exquisitely sharp, and show some very beautiful shapes. It required no amount of skill and ingenuity to study out a way of fixing these spectra, and, as Prof. Mayer has given me his method in detail, I take pleasure in forwarding it to you for the benefit of those who are experimenting in that direction.*

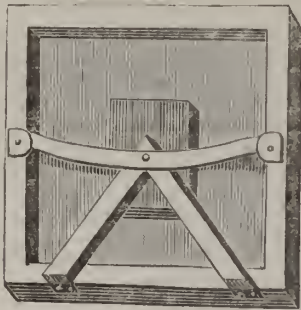
* We publish the details on another page.

Prof. Mayer is making some further very interesting experiments in this direction, of the result of which I will duly apprise you.

Photography on Wood.—I send you a formula for printing on wood, which seems very simple, and the results are much finer than anything that I have tried, which comes to me from a correspondent, Mr. Charles Homan, New Haven. He says:—

"The process may be old, but I have never seen it published. It is new with me, and thinking it may be of use to some of your readers, I send it to you. Beat the white of one egg with an equal amount of water, making about two ounces; add ten grains of chloride of ammonium, and filter. Moisten the block with water; whiten it with flake white, rubbed up with water, or the enamel from a card will do; brush it smooth as it dries; when dry, flow on the salted albumen; spread it over the block with a piece of glass, drain, and dry; make a little wall around the block with a roll of wax. Now pour on the silver solution, and spread with a glass (silver the same as for paper), drain, dry, and fume it; after which it will be ready for printing. Print the same as a porcelain; tone with weak gold; fix with hypo.

"I use a home-made printing frame; I find it very handy for porcelain printing, and many other things. I take an ordinary 8 by 10 frame, and fasten a glass at the bottom. I fasten the glass in the printing frame with two little wedges of wood at the end of the glass. They hold it very



firm, and are easily taken out when you wish to use the frame for other kinds of printing. On the top I fix a triangular-shaped piece of wood with hinges, making the point come at the middle of the frame, screwing a strip of brass across the joint for a spring. I fasten the block underneath with wax, so it can be taken off. When you wish to print a block of wood, stick the negative on the plain glass with wax at the corners. For printing on wood it is often necessary to use a reversed negative, which I get by first making a ferrotype, and whiten it with mercury, then make a negative from it." EDWARD L. WILSON.

A GOOD NEGATIVE PROCESS FOR DRY PLATES.

BY WILLIAM BLAIR.*

II.—EXPOSURE.

AFTER the plate is coated with the gum and sugar solution already mentioned, and dried, Mr. Adams gives the following directions for the exposure of these plates:—Expose in a good light about twice the time for wet collodion with a six-inch stereoscopic lens, and three times that of wet collodion (or thereby) with larger lenses; and with badly lighted subjects, or where dark greens, &c., form part of the prospect, the exposure should be increased in proportion.

It will be seen from this that Mr. Adams does not hold that there is a uniform ratio of sensitiveness between wet and dry plates, independent of the amount or quality of

the light, but that this ratio varies with the same plates very much according to the nature of the light; and he believes that many blunders are committed through want of sufficient attention to this.

III.—DEVELOPMENT.

We now come to the stage of *development*. From his instructions to me, Mr. Adams evidently pays careful attention to the minutiae of manipulation at all stages, and this is, perhaps, the *grand secret* of most of our successful operators. I have curtailed some of his directions, but without omitting, to the best of my judgment, anything essential. I will now, however, give his method of development very nearly in his own words.

The plate having been exposed, it is now *plunged* into a dish of clean water. He prefers this to running water over it, because it is important that it should be evenly wetted, otherwise, like dipping a collodion plate unstepped into a nitrate bath, it is apt to be marked.

Mix and have ready the following solutions:—

No. 1.			
Water	...	...	2 ounces
Liquor ammonia	...	...	10 drops
No. 2.			
Pyrogallic acid	...	...	1 drachm
Acetic acid...	...	...	1 ounce
Water	...	...	20 ounces

Take the plate which has been steeped, and wash gently under a tap or jug, then pour over it the following:—

Pyrogallic acid	...	...	1 grain
Water	...	...	1 ounce
Mixture No. 1	...	...	2 drops

For this solution Mr. Adams prefers to keep the pyro in the dry state, and mix only for the occasion. He adds the pyro to the water and stirs, then adds the ammonia and stirs again, just before pouring it over the plate. A little more or less pyro makes no material difference. The image should appear in about one minute, and is a faint one. When the details are out he washes off, and takes the mixture No. 2, to which he adds one drop of silver solution 30 grains to the ounce, and pour this on and off the plate for a short time. The image soon appears stronger, and if it looks in any degree over-exposed, he adds a drop or two more of the silver, but if under-exposed, more of the pyro. These plates take some time to strengthen to the requisite density, but are thoroughly under control. Lastly, he fixes with hypo.

Notwithstanding the time it takes to mention these details, the whole manipulation is quite simple, and Mr. Adams assures me that the results in his hands are so like those of wet plates, that several professional gentlemen to whom he had shown them would scarcely believe that they were the product of a dry process. He also informs me that some of his friends have succeeded as well with this process as he has done himself, and have tested it with the Liverpool dry plates to the disadvantage of the latter; all which I can well believe from some of his plates which I have myself developed. But of this more anon.

Mr. Adams does not always adhere rigidly to the above details of development, but sometimes prefers to bring out the details with *plain pyro*, and this he rather seems to recommend as the safest course; but I confess I felt it rather trying to my patience.

Mr. Adams ascribes the extraordinary keeping properties of these plates to the thick layer of gum, &c., with which they are coated, acting as a protecting varnish; but I rather think that in order to enjoy this advantage they must be kept in a dry place.

Having given all these particulars of Mr. Adams' process, I must now give my own experience in the matter; and here I may begin by stating that my first attempts with the process were very unaccountable failures. My collodion was, probably, more charged with bromide than Mr. Adams', and my bath a little stronger; but these could

* Continued from p. 257.

scarcely account for my inability to get even a trace of an image. I can only now conjecture that I may have made my preservative too alkaline, or, perhaps more probably, failed in sufficiently softening or washing off my gum coating previous to development. Having acquainted Mr. Adams of my dilemma, he promised to send me some of his own plates for trial, which he did, and I succeeded with these perfectly, only spoiling the first two with pin-holes, from not carefully brushing the dust off them, which I ought to have attended to after they had undergone such a long journey. My principal difficulty at first arose from the weakness of the image brought up by the alkaline developer. I had a tendency to push the image too far at this stage, from want of knowledge of the character of the plate; but I succeeded better with each plate as I went on. I found, however, though the result when well managed was excellent, that the development was slow, and the paleness of the first image created some little difficulty in examining it in the dark room. But these were comparatively small difficulties, and easily got over by greater familiarity with the process, which is undoubtedly a very fine one.

I come now, however, to mention an improvement upon it, inasmuch as the sensitiveness is increased, the development proceeds with much greater rapidity, the alkaline image brought up is strongly marked and distinctly visible, needing very little strengthening, and the resulting negative is of that sparkling character that its beauty as a negative, if managed with ordinary care, cannot be surpassed, in my humble opinion, by any known process.

Having failed in my first attempts, as already stated, with Mr. Adams' preservative as prepared by myself, and not caring to persevere farther in that direction till his own plates came to hand, it occurred to me, as I had a small quantity of tannic acid solution lying past, which I had previously been using (strength about 10 grains to the ounce), and which was about equal in quantity to the alkaline gum solution which I had on hand, that I should mix these together, and operate, as is often done, with tannin alone, and always with albumen, viz., by pouring off and on for some time, and then washing off the solution altogether. I argued that if the gum should thus be entirely washed away, the tannin would still leave its effect, and I would thus secure a picture of some kind. I mixed the tannin and alkaline gum solutions accordingly. Both were previously of a pale sherry colour, but on mixing they at once assumed a deep brown colour, resembling porter or strong coffee, showing that some chemical change had taken place. With this I operated as I have indicated, and the result pleasingly surprised me. I had to shorten my exposures very much; and yet, under the alkaline developer, the image flashed up very fast, the whole details were distinctly visible as they came out, and a few sweeps with acid pyro and a little silver was all that was required for intensification. The finished negatives presented the rich blooming tones which I have already described.

Having, of course, communicated these results to Mr. Adams, he repeated my experiments, and tested the plates against his own more particularly than I had done, and his report was highly favourable. He says, "This being a wet day, I stayed at home, and prepared plates, some my old way, and some yours. They were all made in the same bath, and with the same collodion." The weather having soon cleared up, he then goes on to say, "I exposed two plates (stereos); the first half of each plate had twenty-five seconds, the last forty seconds. They were all developed with *alkaline pyro*. The first half of my old process plate was under-exposed. Perhaps, with care, I could have forced it up, but it would have taken more time than I cared to devote to it. The second half was a very good negative. The first half of yours was fully exposed, and an exceedingly clean and perfect negative. The second half was so much over-exposed that it was useless. Therefore I have come to the conclusion that the tannin

makes the plate more sensitive. I cannot tell you how much I like the process. It is a grand thing to have the surface gum washed off, as the film dries with such a beautiful glossy surface. If these plates will keep—and I see no reason why they should not—I shall use no other."

I have still a later report from Mr. Adams, confirming the above, and stating that he has some large orders for negatives this season which he has resolved to execute by this process. On my own first trials of this process, I was somewhat annoyed by blisters getting up on the film, especially after fixing with the hypo, and sometimes before; but I got quit of these by slightly diluting my collodion. Mr. Adams tells me that one day he had the same trouble, but found he had omitted the sugar in his preservative, on adding which everything went right. He also mentions, in a still more recent note to me, that on making up his present mixture of alkaline gum and tannin, it assumed a dark bluish green tint, but that it works well notwithstanding.

Having now given the main particulars of the process, there are one or two other matters which it may be useful to mention before concluding.

I am strongly of opinion that none of the materials mentioned in the above preservative can be dispensed with without affecting the quality of the plate, and the one must not be allowed too far to overpower the other. I tried a considerable increase of the sugar, and got the negatives spotted. I have also tried alkaline tannin without the gum and sugar, and found it much inferior in sensitiveness. I am satisfied that even after a good washing a considerable trace of the gum as well as the tannin remains in the film, and that these, together with the effects of the ammonia on the sensitive salts, all contribute to the general good result. The film swells with great force and becomes exceedingly porous under the power of this preservative, so much so that it must be held to the glass by a preliminary coating of albumen or some other substance, to produce a satisfactory picture. I tried one plate with a mere edging of albumen, and found on the application and washing off of the preservative that the wet film rose from the plate, the water gathered in large quantities and run in waves from side to side under it, and had to be let out at a corner. This was before the plate had ever been dried. When I came to develop this plate after exposure, I expected the film to spring up again as before, in which case the developer would have got between it and the glass; but it did not do so. Evidently sufficient gum had been washed *through* the film to enable it to retain its hold. There were some under markings, however, which I could only account for by the imprisonment of some of the first washing water and chemicals being retained on the surface of the glass, whereby the negative was somewhat deteriorated.

The preliminary coating of albumen should be very thin, and the collodion also had as well be as much diluted as it will bear consistently with having sufficient body to get depth of tone in the negative. If either of these are laid on too thick, the chances are that blisters will spring up on washing off the preservative, and also again during development, or in the last washing after fixation. If, in the preparation of the plate, none of these blisters show themselves in the course of washing away the preservative, there is not much danger of their arising at any future stage, at least, if the development is carried through with a moderate degree of speed. Tedious developments are generally hazardous at any rate, and should, as far as possible, be avoided.

For some time, notwithstanding the many instructions that have been given, I found it an irksome business to give large plates the necessary preliminary coating with albumen. With small plates I managed this easily enough by breathing heavily on them, and coating them immediately, but in hot weather the breath evaporates so quickly that even this is not easily managed. I now fill a

broad flat dish with very hot water, and hold the cleaned plate horizontally over it for a few seconds; the under surface quickly becomes covered with a "sweat" from the vapour. The plate is then turned up, and the albumen immediately poured upon it. It flows at once from end to end like collodion, and is run off at a corner, and the plate set up on blotting-paper to drain and dry. A dozen large or small plates can thus be easily albumenized in a few minutes. The drying should not be hastened artificially, but time should be given to dry spontaneously, when the plates will be found to have a very perfect surface, and free from markings if the blotting-paper has been clean.

STOCK SOLUTION FOR IRON DEVELOPERS.

BY R. TUDOR WILLIAMS.

MUCH has been written of late on developers, which induces me to offer the following formula, although I am quite of opinion that excellent results may be obtained with any of the many formulas now recommended; but I think all who will give this modification of Mr. S. Fry's and that of Mr. Carl Meinerth's formula a trial, will agree with me that it is one of the most invaluable developers any photographer can use who is called upon to work any or every class of subject at a moment's notice; indeed, I have used it on all classes of subjects, under all conditions of light, with great success, for years, and it has rarely happened that I have required to alter this form except to dilute to suit light, subject, &c. After careful comparative trials of other formulas, I find no others work with such certainty and give the same exquisite bloom to the negative as this. The colour somewhat resembles some of those fine old negatives that so delighted the earliest workers of wet collodion in the days of pyro development. The following are stock solutions:—

In bottle No. 1 make a saturated solution of proto-sulphate of iron in hot water.

In bottle No. 2 make a saturated solution of ammonia sulphate of iron in hot water.

Both the solutions must be allowed to get quite cold before they are used. The deposited crystals will, of course, be used at the next time of making these stock solutions.

In bottle No. 3 make a solution of—

Gelatine (Nelson's)	60	grains
Glacial acetic acid	1	ounce
Water	6	ounces

To make the developer, pour from—

Bottle No. 1, saturated solution of sulphate of iron	1½	ounces
Bottle No. 2, saturated solution of ammonia sulphate of iron	1½	"
Water	16	"
Glacial acetic acid (in winter)	1	ounce
" (in summer)	2	ounces
Bottle No. 3, gelatine solution	2	drachms

This developer generally flows evenly over the plate, but, if necessary, alcohol may be added.

If the negative requires intensity, I generally do it before fixing with acid, pyro, and silver.

THE BETTINI DEVELOPER.*

The qualities of this developer may be summed as follows:—It imparts extreme softness and delicacy to the negative; it acts gently, and does not too rapidly precipitate metallic silver upon those parts of the plate which have been impressed by light; it does not, therefore, give abrupt contrasts, and its action is very much under the actual control of the operator, so that a result

* *Bulletin Belg.*

suitable to his taste, and to the character of the object reproduced, may be secured.

The manner of preparing this developer is to mix according to the following recipe, viz:—

Sulphate of iron	5	grammes
Sulphate of copper	2	"
Sugar	1	gramme
Glacial acetic acid	1	cup. cent.
Rain water	100	cup. cents.

When the salts have been properly dissolved, and the remaining compounds added, the solution should be carefully filtered. If, after development of the plate, the application of an intensifier is considered desirable, the solution following may be used; but in this case the negative should not previously be washed, but the developer merely drained off, and the intensifier afterwards substituted in its place.

The intensifier is made up of—

Nitrate of silver	4	grammes
Alcohol	1	cup. cent.
Distilled water	100	cup. cents.

Filter the solution of silver before the alcohol is added. After applying the intensifier to the plate two or three times, return again to the developer, and continue to operate in this manner until the requisite amount of vigour has been attained.

SPLITTING OF THE FILM.

BY M. CAREY LEA.*

THERE has been much discussion lately on the subject of the honeycomb cracking of negatives. The use of bad varnish has been one of the recognized causes, but then the question arises: why, out of a series of negatives made at the same time, varnished all together with one and the same varnish, and exposed subsequently to identical influences, do some crack and some resist?

I think I can, perhaps, offer a solution to this vexed question. Of course it is neither the collodion, nor the character of the varnish, nor the casual production of acetic ether, otherwise all the negatives ought to split alike.

In varnishing, it is the commonest of all faults to leave the varnish for too short a time upon the film. Varnish does not instantly soak through a dry hard collodion stratum, and if the negative is to be effectually protected, we need a perfect permeation; we want the entire surface of the glass itself to be wetted by the varnish, so that the film may be perfectly encased by it, and so that the adhesion of the varnish to the glass may be perfect.

If, then, the varnish is left for an insufficient time upon the plate, and then all is poured off that will flow away, the collodion has not been properly soaked, and continues its absorbent action after the pouring off operation. If, in this absorption, the varnish is drawn from the exterior surface, the varnish will dry dead, and this is one very common cause of this trouble. If it is drawn from underneath, there is not a sufficiency left between the film and the glass, and thus the foundation for future cracking is prepared.

For these reasons, in giving directions for varnishing, I have always recommended to let ten or twelve seconds elapse after the plate is completely covered, and before commencing to pour off. By taking this precaution, and using good varnish, I have had a complete exemption from the cracking trouble, which has never affected a single one of my negatives.

THE CAUSE OF PINHOLES IN NEGATIVES NOT THE BATH SOLUTION.

BY S. M. ROBINSON.†

WITHIN the last month our worthy and esteemed friend, J. W. Black, of Boston, has reported a bath so different

* *Philadelphia Photographer.*

† Read before the Pennsylvania Photographic Association.

from anything ever before used, that I present a paper on the ordinary bath with much timidity, as being nothing new.

I will call this my experience. That the bath has been accused of too many shortcomings is my belief. That is, the negative depends wholly, or nearly so, on the bath; that the pinholes, linings, and the many defects we see in the negatives are the fault of the silver solution.

The precipitation of iodide I would call particular attention to. O'Neil says when the bath is at 50, and shows an excess of iodide, it should be precipitated. I think the bath will never show excess of iodide at that strength. As 40 to 45 is the strength used, 50 grains would show pinholes from lack rather than an excess.

In F. Guttekunst's gallery, 712, Arch Street, I had entire charge of the dark room from September last to March. We had three baths in constant use, one holding four gallons, the others two gallons each. I cannot tell the number of plates dipped, but it was necessary to boil the small ones every other night, and the large one at least once a week. The iodide was never precipitated during that time.

It is a mistaken idea, excess of iodide in a bath. I claim it is not possible when it is kept up to the original or proper strength, and that pinholes "from excess of iodide" are only the surest indication of weakness. In this condition of the bath it is recommended by some to add one-third water, filter, boil if necessary, add silver to make it the proper strength again. The result is hard negatives; the film will be blue, and, of course, lack sensitiveness. The iodide which should be in the bath is taken from the collodion until the proper quantity is again replaced.

So long as the bath is up to strength and free from alcohol and ether (absorbed from the collodion) it will make good negatives. The more quiet the bath is kept the better. Too much fixing makes matters worse. If a bath needs filtering every night, it is the fault of the holder or of the careless operator. The remedy suggests itself.

My theory is, have a proper vessel for holding the solution; use pure water and silver, thoroughly saturated with iodide; a drop or two of nitric acid; then, with care, you bid defiance to pinholes and the many other faults the bath is blamed for. You will now ask, does your bath never get out of order? Are you able to make negatives in the same bath continually without faults? I answer, no. After a time, like our own system that has been overtaxed, it will give out. The bath will become acid, and foreign matter will get into it. Then it must be neutralized, boiled, and set in the sun for a number of days, when it will separate, and the deleterious matter will go to the bottom. Filter, and it is ready for work again.

The best thing I have ever used for neutralizing is cyanide of silver. It is what a blue pill is to a torpid liver. It cleanses thoroughly.

INTENSIFYING BY LIGHT.

REFERRING to the method of exposing an unfixed negative to sunlight as a means of intensifying, to which we recently referred as practised in Mr. Blanchard's studio, a correspondent (Mr. Archer Clarke) sends some details of experiments in the same direction. He finds that considerable latitude in the extent to which previous washing is necessary is perceptible, and that the results are perfectly satisfactory. We subjoin his brief note of experiments:—

"No. 1.—Plate exposed and developed as usual, washed and brought into bright light, it darkened; but when fixed the shadows were quite clear.

"No. 2.—Plate exposed and developed, but not washed, was taken into the light; it darkened more than the

other. Was washed in dark room, and fixed; shadows quite clear.

"No. 3.—Plate exposed, and, whilst developing, door of dark room opened, and developing continued in bright sunlight. It was washed, and then placed against a bottle to dry, *still in the sunlight*; when dry, returned to dark room; wetted the negative, and fixed it, dried in the sunlight as before, and printed from. It was unvarnished, and not strengthened; and although it was thus exposed to light, the shadows were quite clear, and the half-tone good; the density quite sufficient for a carte de-visite, and more than was needed for a vignette, if plenty of tone is desired. A print is sent for the Editor's satisfaction."

CARE OF THE COLLODION.*

COLLODION forms the basis of the photographic negative pictures; it is for the photographer of more importance than the paper for the draughtsman. It not only acts mechanically by fixing the sensitive film to the glass, but also chemically by containing besides the indifferent pyroxyline a whole line of products of disintegration, which have a material influence on the chemical and physical properties of the film. The care of the collodion is, consequently, of much importance for the photographer who desires to secure equal results always.

The changes which iodized collodions suffer manifest themselves by a change of colour, first yellow and then red, and by a decrease of sensitiveness. In these changes free iodide, which remains dissolved in the collodion, separates from the liquid, and gives rise to the formation of free nitric acid in the bath, which will impair the sensitiveness of the plate. The salts of cadmium have the least tendency to turning the collodion red, while the salts of ammonium have the greatest. While the collodion turns red, it becomes more fluid, and finally so limpid that it does not secure a homogeneous or tenacious film. It has been recommended to shake collodion which has turned red, with carbonate of soda, respectively with metallic cadmium, and to let it settle. These bodies will absorb the iodine and restore the bright colour of the collodion, but, at the same time, the plates will have a tendency to fogginess, probably in consequence of the formation of alkaline salts, which are partially soluble in collodion; for instance, Cd I and Cd O. It is much more preferable to mix the red collodion with cadmium collodion. The latter will remain white for months. It is somewhat thick, and by mixing it with red collodion we will get the desired consistency and colour very often. Any one who works with cadmium collodion exclusively will very seldom or never complain about red collodion. For other mixtures which have a tendency to turning red it is recommended to preserve the plain collodion and the iodizer separately. In this case the fluids are mixed in such quantities as experience has taught will be consumed in a short space of time.

Besides the disengagement of iodine a change in the proportion of alcohol and ether takes place, as well as the introduction of impurities, such as dust, &c. The excess of collodion which has been poured on the plate is generally returned to the bottle. But this excess has lost a part of its dissolving media by evaporation, and of course more of the fugitive ether than of the less fugitive alcohol. Hence, what is poured back into the bottle is thicker and richer in alcohol. With very careful management this does not matter much; under favourable circumstances a bottle of collodion can be used all but a very small remnant. And if this remnant should be too thick, it should be diluted with $\frac{1}{2}$ or $\frac{2}{3}$ of a mixture of three parts of alcohol to five parts ether. But much more annoying than this loss of fluidity is the accumulation of dust and other impurities. Small traces of dust are washed into the collodion bottled with

* From Dr. Vogel's "Hand-book of Photography," just published.

the excess which is returned from the plate; with every plate this quantity is increased, and finally the collodion will work uneven. This is more frequently the case when travelling, where we have to contend more with dust than at home; the annoyance is increased also with larger plates. The rough corners of the plates exercise a very injurious influence, as they form receptacles for dust and other impurities, which is only too easily overlooked and returned to the collodion. It happens quite frequently that the grooves of the plate-boxes are filled with impurities, all of which help to spoil the collodion.

All these evils can be avoided by returning the excess of collodion to a separate bottle. This collodion is by no means useless; it should be left to settle for a week or so, and the pure liquid can then be decanted and used. That the neck of the collodion bottle should always be kept clean is a matter of course. A bell-glass should be placed over the stock-bottle. When no special collodion bottle is employed, the neck of the bottle should be kept perfectly clean by wiping it with the finger, and the first few drops should be thrown away before pouring the collodion on the plate. The bottle should be corked immediately after the plate has been collodionized.

COLLODIO-CHLORIDE PICTURES ON OPAL GLASS.

BY G. SCUREIBER.*

In presenting my paper to the Association this evening, I do not pretend to give any new process, but simply to tell what my experience has been in making porcelain pictures, or, more properly speaking, collodio-chloride pictures on opal glass. I use the collodio-chloride process in preference. The first essential is to have the right quality of glass, the neglect of which I think has given the most trouble where the parties have not taken pains to look into the matter. I find one material will give a flat poor picture, while the other will give me the desired effect. You can see from the specimens I have brought, which were made both from the same negative and with the same mixture.

If I have a negative that is rather intense, I use the albumen thinner, which works very well. In toning porcelains, particular care should be taken that the toning does not proceed too quickly. It ought to take at least five minutes.

The collodion is made as follows:—

Alcohol and ether	...	...	equal parts
Collodion	...	...	1 ounce
Cotton	...	...	4 gr. to the oz.
Chloride of strontium	...	...	2 grains
Nitrate of uranium	...	...	1 grain
Citric acid	...	...	1 "
Nitrate of silver	...	...	5 grains

I mix it as follows:—

Take a clean six ounce bottle—I generally make about four ounces at a time—weigh off the uranium and strontium, put them into a mortar, and dissolve them in the smallest quantity of water, and add the alcohol, which is put in the bottle and well shaken. When you find it all dissolved, add your cotton, then add your ether, and shake again until your cotton is all taken up. All this can be done in the light. Now put your silver in the mortar, pulverize, and dissolve it in the smallest quantity of water. When dissolved, add a few drops of alcohol, after which add it to the collodion. This operation must be done very carefully, adding the silver drop by drop, and keep shaking while adding. I am merely giving these hints to parties that are inexperienced in this particular. After this is done, add your citric acid, which first dissolve in a little alcohol. Add in the same way as the silver. This can be used in half an hour after it is made.

* Read before the Pennsylvania Photographic Society.

When a picture gets over-printed, which sometimes happens, and you do not like to throw it away, you can immerse it in the soda first, and then tone it. It works very well.

Any toning bath will do; I generally use mine after the paper prints have been toned. I weaken it about four times, which leaves it quite strong enough.

ON A METHOD OF FIXING, PHOTOGRAPHING, AND EXHIBITING THE MAGNETIC SPECTRA.*

BY ALFRED M. MAYER, PH.D.

THE figures produced in iron filings, when these are set in momentary vibration on a surface placed over a magnet, have received considerable attention from natural philosophers. The geometrical discussion of these spectra made by Lambert, Rogot, and others, have developed their symmetrical properties, and thereby have evolved the law of that action which emanates from the magnet. De Haldat has used them as a means of exploring the distribution and intensity of the effect of juxtaposed magnets variously arranged. But, above all, have the researches of Faraday and W. Thomson on "the magnetic field" and on "the lines of magnetic force" given to these spectra—even when merely regarded as conventional symbols—an importance which has been fully shown, especially by Faraday, who was guided by their consideration to some of his most important discoveries. They have thus risen to so high a theoretical importance that a method which will fix them without danger of distortion, photographically reproduce them, and readily serve to exhibit them to the largest audiences, will, I imagine, be acceptable to both investigators and lecturers.

The only process of fixing these spectra known to me is that practised by De Haldat and Faraday, which, however, is but an application to the magnetic spectra of the method previously invented by Savart for preserving the Chladni figures of vibrating plates. In this process the spectra, produced in the usual manner either on glass or card-board, have pressed upon them a sheet of paper coated with mucilage, to which the filings adhere. In this operation of the transfer many particles are deranged from their positions, and the figures are yet more distorted by the shrinkage of the wet paper, and are, therefore, not fit to serve in measures of precision; while the impressions cannot be exhibited with much more facility than the originals.

My process is as follows: a clean plate of thin glass is coated with a firm film of shellac by flowing over it a solution of this substance in alcohol,† in the same manner as a photographic plate is coated with collodion. After the plate has remained a day or two in a dry atmosphere it is placed over the magnet or magnets, with its ends resting on slips of wood, so that the under surface of the plate just touches the magnet. Fine iron filings, produced by "draw-filing" Norway iron which has been repeatedly annealed, are now sifted uniformly over the film of shellac by means of a fine sieve. The spectrum is then produced on vibrating the plate by letting fall vertically upon it, at different points, a light piece of copper wire. The plate is now cautiously lifted vertically off the magnet, and placed on the end of a cylinder of pasteboard, which serves as a support in bringing it quite close to the under surface of a cast iron plate (1 ft. diam., $\frac{1}{2}$ in. thick) which has been heated over a large Bunsen flame. Thus the shellac is uniformly heated, and the iron filings, absorbing the radiation, sink into the softened film, and are fixed.

I generally allow the heat to act until the metallic lustre of the filing has disappeared by sinking into the shellac, and the film appears quite transparent. This degree of action is necessary when photographic prints are to be made from the plate, but when they are to be used as lantern

* We have been favoured with examples of Dr. Mayer's photographs, which are admirably perfect and full of interest.—Ed. *Photographic News*.

† The shellac dissolved in strong alcohol is allowed to stand a week or more, and the clear supernatant solution is then decanted.

slides I do not carry the heating so far. After the plate has cooled it is allowed to fall upon its ends on a table, so that any filings that have not adhered may be removed.

A short experience will give the proper strength of shellac solution to obtain a film so thick as just to be sufficient to hold the filings, and the requisite amount of heat to firmly cement them without injuring the transparency of the film.

The plates can now serve (1) for the most accurate measures upon the magnetic field; (2) for a photographic positive which, in the printing frame, will produce the lines in white upon a dark ground, giving most beautiful and distinct impressions; * (3) or, if it is required to exhibit these figures to an audience, the plates are provided with glass covers, kept from touching the spectra by intervening slips of card-board, and there result "slides" in every way fit for giving a fine exhibition when the images are projected upon a screen. I have thus obtained images, clear and sharp, of over twelve feet in diameter.

By this process many plates have been produced, † showing the action of single magnets of various forms, and of juxtaposed bars, as well as the effects of electric currents led by wires through holes drilled in the plates. Those exhibiting the inductive action of magnets on bars of soft iron, and the interaction of magnets and electric currents, are peculiarly interesting. An approximate representation of the resultant line of the terrestrial magnet action has been obtained by magnetizing equally tempered steel discs of from two to three inches, and even more, in diameter. The magnetic axis, or axes, of these discs being predetermined by making them the continuation of the axes of powerful electro magnets whose poles are conical projections with slightly rounded apices. The arcs of the great circles, including the terrestrial magnetic poles, having been calculated, the axes of the electro magnets are inclined at that angle, while the steel disc is held close to their poles. On passing the current the disc is magnetized, and we have an approximate representation of a section of the earth's magnetic effect. These results, when viewed as photographic prints, or as exhibited by the lantern, are as beautiful and instructive as to appear to me to warrant this somewhat formal description of the process of their production.

INTENSIFYING COPIES OF ENGRAVINGS.

BY W. J. BAKER. ‡

In the gallery we sometimes are called on to copy plans in line drawings: these should have a special intense collodion, but in a portrait business it is not often on hand, yet we want to make a negative that will print the lines clear, and keep the paper between clear too. This can be done only by a vigorous intensification. Pyro. and silver alone will not do enough, but the following will:—

A little short time the negative; do not hold the iron on too long; wash; apply pyro. with silver; wash; clear with cyanide; wash well; flow with bichloride of mercury solution; wash; flow with a weak solution of iodide of potassium; wash. If now the negative is almost strong enough, flow with sulphuret of potassium, and give a final washing. If it must be forced farther, make another application of silver and pyro., when you can repeat the mercury and iodide, with the respective washings, and finish this time with the sulphuret; or the silver can be for the third time resorted to, and then again a round with the mercury, &c. Observe: do not finish with the mercury; do not apply the sulphuret immediately after the mercury, without the intervening iodide, but the mercury can go on again after the sulphuret.

* Photographic prints from a series of eight of these plates I have presented to Harvard College, American Academy of Sciences, Sheffield Scientific School, Columbia College, Stevens' Institute of Technology, Hoboken; Lehigh University, Pa.; American Philosophical Society, Franklin Institute, Peabody Institute, Baltimore; Smithsonian Institute, Chicago Academy of Sciences, and to the University of Virginia.

† Many of these are 16 inches long by 10 inches wide.

‡ Philadelphia Photographer.

By a few experiments the right strength of the solutions can be determined, and any amount of intensity obtained from the most shadowy negative, though it cannot be claimed that the result will be as good as if the first development had been vigorous. The negative is probably an unchanging one. For reducing the strength of a negative if it has been intensified with sulphuret of potassium, a strong solution of cyanide of potassium works well. Of course the varnish must be removed thoroughly. If the negative is too intense, by reason of accumulated silver, flow with bichloride of mercury, wash, then flow with weak cyanide, repeating the operation as often as necessary, being sure that the washing after each chemical application is thorough. The reductions in both cases will be perfectly uniform, not injuring the lightest detail in the shadows, and far different from the eating of iodine and hypo, or cyanide.

APPEARANCE AND PRINTING CHARACTER OF NEGATIVES.

BY M. CAREY LEA.*

In some remarks which I lately published upon the great variety which exists in colour texture of negative films, I spoke especially of the tendency shown by a certain class of negatives to give very good prints. This communication has given rise to a good many remarks, most of them, but not all, agreeing with the views that I expressed. I noticed, however, that those who commented upon my communication seemed to rest upon the question of colour, whereas I attached quite as much, or more, importance to the texture, and spoke particularly of the appearance of a certain class of negatives in which the deposit was so fine as to work almost as if the material had been mixed up with varnish. This appearance is most commonly connected with a cream-coloured film, though by no means all such films show it. This texture gives hopes of excellent printing qualities and soft velvety effects that are very satisfying.

The writer of "Echoes of the Month," in the PHOTOGRAPHIC NEWS, whilst agreeing with me as to the value of these characteristics, differs from me as to their cause, or, rather, as to the cause from which the opposite character of negatives is got, the white granular sort. I attribute this fault commonly to there being an excess of bromide in the collodion. The photographer just referred to ascribes this white granularity to insufficient exposure, and is of opinion that a simple increase of exposure is sufficient to remove this trouble. Of course, other causes are competent to produce this white granularity, and I specially referred in my remarks to one well known cause of it, viz., too much acidity of the negative bath. Supposing, however, that this cause is absent, and that the bath is known to be in excellent order, the question becomes narrowed down to that of collodion and of exposure.

It would, I think, be interesting to compare on this subject the experience of a larger number of observers. My own experience has been strikingly confirmatory of the views which I express, but that of others may be different, and certainly has been in the case of the writer of the "Echoes." I never was but once seriously annoyed with this white granularity, and that was several years since. Perhaps it may be of interest to cite the case.

I made at that time a series of views on 8 by 10 plates with wet collodion—perhaps a dozen or twenty in number—and without printing any of them until some time after I exposed them fully; if anything, I rather over than under-exposed them; they mostly flashed up quickly under the developer, although not so very quickly as to threaten injurious flatness. The bath was in excellent order; moreover, I was using the two-bath system, in which excellent method of operating the bath solution on the plate at time of development is always pure. The plates were grey and crystalline, granular in appearance, nevertheless in technical

* Philadelphia Photographer.

character they were extremely good, so much so as to have quite impressed an old and experienced photographer who looked over them. Nevertheless, the printing was disappointing. The prints wanted pluck and spirit; it was difficult to say what was the matter with them; they would pass muster pretty fairly, but were not what was expected of the negatives. Most undoubtedly the fault was not in under-exposure.

It has seemed to me that a fine creamy deposit comes most easily with a collodion containing from one to one and a-half grains of bromide to the ounce, and that when we get up to two and a-half or three, we tend more to crystalline deposits. There is, however, certainly more to be learned about this matter than is now well understood, and a complete knowledge would be very valuable.

In this connection an interesting speculation occurs to me which I have no time to follow up by experiment, but will suggest here. Certain saline solutions added to the developer have, as is well known, a tendency to whiten the deposit, and this fact has been often applied in making ambrotypes. Now, in a negative bath that has been for some time in use, there is a continually increasing quantity of saline substances in solution, nitrates of all the bases used in making the collodion. Thus, in the case of a bath that has been for some time in use with some one particular collodion, the character of the salting in that collodion may tend to qualify the action of the developer, exactly as if the nitrates of the bases used in the collodion had been introduced into the developer.

Correspondence.

COPYRIGHT IN PORTRAITS.

SIR,—Will your correspondent J. Cunnington be good enough to give, for the benefit of your readers, the authority on which he states so broadly that "Sir Roundell Palmer has said that registration is required to precede the acquisition of copyright"? It would be of interest to know when, where, and under what circumstances, and in reference to what precise state of facts, he made the statement, if it ever was made, which seems to me more than doubtful.—Yours, &c.,
A LAWYER.

WEAK AND STRONG GOLD TONING BATHS.

SIR,—“Kent” clearly errs in his idea concerning weak and strong gold baths. If toning action was simply a process of chemical substitution (an atom of gold exchanged for an atom of silver), he would be quite correct in supposing that a large excess of gold works no difference in the results. But toning does not proceed on a principle of substitution; it operates by precipitation, just as a metal is separated from its salt by electro pressure. I am aware that eminent authorities have decided in favour of the substitution theory, but their conclusions are based on experiments where the devouring propensity of free chlorine was lost sight of. Having dealt with this subject so often in *extenso*, I briefly state the matter thus:—

A strong gold solution is a great mistake. You add a damaging amount of gold, then prevent, to some extent, ill arising by crippling the excess of gold with an addition of restrainers, and every atom of gold thus made inert is a clear amount of waste, for reconversion takes time.

A weak toning bath is one I would prefer. It is under control; it deposits the gold evenly; and the thin layer is sufficiently transparent to admit of the richness of the reduced silver peeping through, and from this last cause arise degrees of brilliancy.

W. T. BOVEY.

KEEPING SENSITIVE PAPER.

DEAR SIR,—Mr. Bovey, in last impression of *News*, gives an admirable formula for sensitizing albumen paper that is salted with ammonium or other alkaline salt, and says that if such paper be floated upon an alkaline bath, it turns yellow.

Granted, but is *all* the paper in the market salted with alkaline salts? I think not, therefore *one* formula will not suit every

sample of paper. The printing bath requires modification with different samples of paper if uniform results are aimed at.

I have had paper that, when floated upon an alkaline bath, would keep white for a week, and print well; but if the bath was acid, the paper turned yellow before morning, and the prints were anything but good. With another batch, if the bath was alkaline, the paper turned brown in an hour or two; but with acid, and three minutes' floating, then print—or thirty to sixty seconds' floating, followed by fuming before printing—the paper was everything that could be wished for. So if any one adopt Mr. Bovey's excellent formula, and it does not give satisfaction, let it be tested, and if acid, made alkaline with ammonia, or vice versa, then I have no doubt it will be found first-rate.

A word on toning. As the only province of acetate of soda is to neutralize the free acid, and as it is so easy to add excess, which causes bleaching and inertness of the bath, why use acetate of soda at all? The toning bath described on page 89 of the *YEAR-BOOK* for 1871 is excellent, and only contains just sufficient alkali to neutralize the free acid, and does not introduce anything foreign into the bath. Half a grain of gold will tone a sheet of paper in this bath.—I remain yours,—A PHOTO.

June 4th, 1871.

Talk in the Studio.

THE NEW METHOD OF ENGRAVING ON GLASS.—At the last meeting of the Photographic Society of Philadelphia Mr. Tilghman submitted some specimens of engraving on glass, prepared by the beautiful sand process of his brother, Mr. B. C. Tilghman, so well described in the March number of the journal *Franklin Institute*. A bichromatized gelatine negative is taken on glass from an engraving. This is then subjected to a stream of sand under a pressure of one to four inches of water. The gelatine film protects the glass, the parts not covered by it being cut by the sand. The process is complete in from three to ten minutes. The finest specimens are produced by using fine sifted sand at about one inch pressure, and a longer time of exposure. It is evident that the negative must be taken from an engraving to afford perfect contrasts of light and shade. Mr. Edward L. Wilson suggested that the process might be used to advantage in the manufacture of fine ground glass for photographic purposes, an article difficult to obtain in the market of proper quality.

STEREO PICTURES WITH ONE LENS AND ONE EXPOSURE.—At the last meeting of the German Photographic Society in New York the secretary said that Dr. Vogel had sent “a stereoscopic picture of a piece of machinery made by one tube, and without changing the position of the camera. It has an excellent stereoscopic effect; both pictures fall together at the first glance through a stereoscope. It has been made, as Dr. Vogel has already explained in his April correspondence in the *Philadelphia Photographer*, by using a three-inch short focus tube, and covering alternately about three-quarters of the opening. Of course, no photographer would think of taking his stereoscopes that way, but it was an interesting experiment, showing what could be done.”

WASHED PAPER.—At the same meeting Mr. Slatsky exhibited three prints from the same negative. The paper for the first print was treated in the usual way; for the second one it was washed right after silvering; and for the third it was washed after letting the silver dry first. The first one gave the most pleasing results—it showed clearness and depth in the shadows; the second was rather flat; the third not much better. Notwithstanding the favourable reports from Europe about washed paper, the old way seemed to him still to be the best; more experiments, however, would soon decide the point.

COLLODIO-BROMIDE PROCESS.—Mr. Carey Lea, referring in the *Philadelphia Photographer* to this process, says:—“I notice that washed ether is advertised for use in this process, and this leads me to remark especially, that both the ether and alcohol used in the collodion for this process should be of very high grade. The least wateriness of the collodion tends to make it difficult to get a smooth and even film; the coat exhibits a tendency to mottle, especially at the corner at which it is poured off. Washed ether is therefore unsuitable. In the washing, the ether is much purified if it contains foreign ingredients, but it takes up about a tenth of its bulk of water, and this

addition of water would be most objectionable in working. 'Concentrated' ether is the proper sort."

THE STUDIO OF M. ADAM-SALOMON.—"An Old Parisian," recording his tour "among the ruins" in Paris, says:—"At every hundred and fifty yards you see a man apparently playing the self-delusive game of the ostrich with his head concealed. It is that he is only photographing; not a brick shall fall to the ground, I fully believe, but it shall be photographed. A week ago, if you strayed into these districts, it was 'Halte là, or I'll shoot you!' Now, when the rare stranger crosses the desert, he is met on every side by cries of 'Pray, kind stranger, stop, and I'll photograph you for nothing, and frame the picture.' Wondering friends in London will soon see me as a dead Communist, a Versailles hero on the very top of a barricade, a terrified stranger, or a *brancardier*. . . I went to see the studio of M. Adam-Salomon, photographer and sculptor, who had a marvellous collection of choice specimens of the two arts to which he devotes his life. The house was there, with several holes in it; the garden of roses had been ravaged; but I was glad to hear that the artist and his gams were safe in the country." M. Adam-Salomon is himself, we believe, now at Fontainebleau.

PHOTOGRAPHIC SOCIETY OF LONDON.—The concluding meeting of the session will be held on Tuesday evening next, 13th instant, at eight o'clock, at the Architectural Gallery, No 9, Conduit Street, when Colonel H. Stuart Wortley will read a paper "On the Collodio-Bromide Process," and Dr. R. J. Mann will exhibit and describe a series of photographs recently taken by Mr. Rutherford, of New York.

THE ROYAL POLYTECHNIC AT FALMOUTH, which, for the last eight or nine years, has done much for photographers and photography, will again be before the art world of the west in August. All interested in exhibiting should apply to Mr. Collins, F.G.S., one of the secretaries, for a copy of the rules, conditions, &c. The committee would also do good service by restricting the eagerness of some exhibitors in sending so many specimens so nearly alike. One dozen or dozen and a-half of card portraits is enough for one person to exhibit—not frames of three or four dozen, nearly all alike. Specimens having a bearing upon commercial utility—such as the Heliotype, Woodburytype, and some of the block processes to print with letter-press—should have distinct and special "place and notice," and not be mixed up with the general collection. The Society have been in the habit of having "a fine art distribution"—in plain terms a lottery. This they should look to, and make themselves safe and sure, as there can be but one opinion as to the fact that the London Art Union, that has a special Act of Parliament, is the only body or society proceeding on sure ground. The Act, in fact, ought to be more comprehensive and general, so as to embrace all art societies.

DISINTERMENT OF UGO FOSCOLO.—At the ceremony in Chiswick churchyard on Wednesday, of exhuming the body of this great Italian patriot, poet, and scholar, photography was brought into requisition. Although the body has lain in the earth for forty-four years, the form was still intact, and the features perfect and recognisable. The whiskers, peculiar in shape, which Ugo Foscolo wore in his lifetime, were still there. His skin, which was now of a pale grey colour, remained unshrunk, and effectually hid all traces of the skeleton, the pores and texture being also uninjured. Under these circumstances, Signor Caldesi was requested to take a photograph of the body as it lay in its coffin, and also of the surrounding assembly, with the view of making a historical painting.

REDUCTION OF CHLORIDE OF SILVER IN THE MOIST WAY.—In the *Polytechnic Journal* Dr. Grager gives a detailed description of the reduction of chloride of silver dissolved in ammonia by means of metallic zinc, which process, according to the author, succeeds very well, and yields a silver of greater purity than is obtained by the process for reduction of silver by the moist way now in use, provided the operation be carried on in closed wide-mouthed stoppered bottles. The silver after complete reduction (and this has to be tested for by means of a drop of the ammoniacal fluid being put into some hydrochloric acid), is first thoroughly washed with concentrated hydrochloric acid, next with water, and lastly, for some moments, with dilute ammonia, and then again with distilled water, and provided the zinc be used in large lumps thick enough to admit of being readily removed from the spongy silver. It is clear that this method of reduction involves the use of a considerable quantity

of ammonia; but, this the author states, can in great measure be recovered by distillation.—*Chemical News*.

REGENERATION OF WASTE SILVER SOLUTIONS USED IN PHOTOGRAPHY.—In the same journal Dr. Grager, after first referring to the generally applied and well-known means now in use for this purpose, states that the best plan to treat these solutions is the following:—The solutions are boiled either in a porcelain basin or glass flask, and while boiling there is added to them recently precipitated, well washed, and moist oxide of silver, the boiling being continued for some time. The liquid is next filtered, and then evaporated to dryness, the heat being increased to fusion, so as to destroy ammoniacal salts; the residue is pure nitrate of silver. The sediment on the filter contains some oxide of silver, which must be added in excess; and, therefore, in order not to lose that, the filter is preserved, and the contents worked up at a subsequent operation. The nitrate of silver thus obtained is, by practical photographers, pronounced to be of excellent quality.

PHOTOGRAPHIC CENSUS.—*Punch*, in a statement of the general results of the census returns, says:—"Ninety per cent. of the population have had their photographs taken, and in three parlours out of five the Enumerators found an album lying on the table."

THE ECLIPSE PHOTOGRAPHS.—Dr. Winstanley, writing to *Nature*, says:—"As an ardent and not inexperienced votary of photography, I am fully alive to the value of photographic evidence, and regard with enthusiasm each fresh victory which photography achieves; yet I cannot myself look with any great degree of satisfaction upon the photographs of the late solar eclipse, either as examples of photography or as evidence contributing to our knowledge of solar physics. In saying this I make no reflection whatever upon the ability or efforts of those by whom the pictures were produced. On the contrary, I am aware that when these pictures were taken the first grand requisite of photographic success—a clear view of the object to be represented—was scarcely to be obtained. Briefly; from a technical point of view, the pictures are of but indifferent definition, and the identity of the coronal rifts in the Cadiz and Syracuse photographs not satisfactorily conclusive; in addition to which, in the picture by the American observers, the so-called coronal light extends a long way over the lunar disc, which seems to me to preclude the possibility of its being other than a phenomenon of terrestrial meteorology. A few weeks ago, when the sky appeared almost cloudless, I observed a beautiful lunar halo, very much resembling the so-called corona, which I apprehend no one would attribute to anything but atmospheric moisture. Why, then, in the instance of a sky burdened with innumerable clouds, should we attribute the halo of light surrounding the solar disc to other than atmospheric causes, even though there should be something which might be mistaken for a coincidence in two distinct photographs of one or other of the rifts which were characteristic of that halo?"

To Correspondents.

A NOVICE, referring to the letter of Mr. G. R. Griffiths in our last, asks what is meant by "washing crystals." We believe that the term is applied to some detergent in domestic use, which will be supplied by the oilman or grocer if asked for under that name. Probably ordinary washing soda may be used for the same purpose. Perhaps Mr. Griffiths will kindly give our correspondent more specific information.

ALFRED STAUNTON.—The nitro-gelatin developer given in our *Year-Book* is Professor Towler's formula, and is doubtless that intended by him when he refers to the ordinary nitro-gelatin developer. It certainly seems to contain too much nitric acid, and we should be disposed to use very much less. The nitric acid referred to is probably the nitric acid of commerce, which is generally about 1360 sp. gr. 2. When "acetic acid" is employed in English formulae, glacial acetic acid is generally meant. The most commonly used strength in America is what is there termed No. 8, which is about one-third of the strength of the glacial acid.

G. E. C.—Various articles have appeared in the *PHOTOGRAPHIC NEWS* giving formulae and details of the Heliotype process. You will find an article on the subject on p. 101 of our *Year-Book* for 1871. There is no work on the subject.

A. CLARKE.—Thanks. We do not know of any one who undertakes the production of enlarged paper negatives. Probably Mr. Solomon will do so.

AN AMATEUR.—If you had stated the composition of your soap flattening we could probably have pointed out the cause of your trouble; but as various recipes exist in such flattening, we cannot make any suggestion without knowing the formula employed; but, under any circumstances, you can get rid of the gloss by a coating of distemper colour. 2. Almost any toning bath may be used without delay, if made with hot water, and used when the solution is cold. We frequently use with success a toning bath made as follows:—A measured quantity of concentrated solution of chloride of gold, sufficient to contain a grain, is made into a paste with a piece of chalk as big as a pea; five ounces of hot water are then poured on, and the solution agitated. When cold it is fit for use, and will answer well. 3. To remove colour from the printing bath, add to each pint about a drachm of a ten-grain solution of common salt; shake and filter. 4. The only objection to the use of hot water in making a saturated solution of sulphate of iron is, that if common water containing carbonate of lime—which is present in most common waters—be used, the heat facilitates the formation of carbonate of iron. Hot distilled water may be used with advantage, or hot common water if the solution be filtered. If the water possesses no disadvantage in making a solution of sulphate of copper.

X. X.—We have no doubt that Mr. Edwards's Graphogenic Apparatus will prove an efficient substitute for a tent in the field, and also serve amateur purposes as a dark room. A photographer already possessing a good dark room would not probably, however, use the Graphogenic in preference to his dark room.

VENATOR.—The gold from used-up toning baths may be easily recovered. Add a strong solution of sulphate of iron; this will throw down the gold as a black powder. Let it subside, and pour off the water; wash the residue well with equal parts of sulphuric acid and water, to remove all traces of iron; rinse well with clean water, and then redissolve the powdered gold in aqua regia, to make fresh chloride of gold, as we have often instructed. 2. The photograph enclosed appears to be a view of Tintern Abbey, although it is a view of the ruins, with which we are not familiar. 3. You may neutralize your glue with carbonate of soda; the frothing you describe is due to the effervescence caused by the contact between an acid and alkali. We should be disposed to reject altogether the material containing so much acid.

J. BRIER, JUNR.—The zinc plates for developing carbon prints with a matt surface are grained, we believe, with fine yellow sand and a muller. It is an operation requiring practice, and it is doubtful whether you could do it for yourself with efficiency. It is probable that the Autotype Company would supply you with plates. 2. You can work on ground glass; a little modification of the wax or resin solution will probably get over the difficulty. 3. The actinometer now used by the Autotype Company is as simple as any. The transfer paper is made by coating plain paper with a solution of gelatine containing chrome alum. We are uncertain of the best proportions. You will find it wise to obtain these things ready prepared. The example you send is very good. Its only fault is a little over printing. We are glad to hear of your success, and doubt not that it will continue. Discussion has often the effect you mention: that it induces people to try for themselves.

W. R.—Excess of carbonate of soda will precipitate the gold. It is better to use carbonate of lime (chalk), which, being insoluble, does not readily cause precipitation, but will, nevertheless, neutralize any free hydrochloric acid present. Your new sample of chloride of gold probably contains less acid than that you have been using, and hence requires less alkali to neutralize it. 2. A saturated solution of carbonate of soda at 60° contains about three grains of the carbonate in five minims of the solution. A simpler plan is to make an eight-grain solution, one drachm of which will contain one grain of the gold salt. 3. Possibly you keep your toning bath in the light, which will promote the precipitation of the gold. 4. Possibly you did not make the cement into a sufficiently thick paste. There is a capital cement sold by chemists and others under the name of "Kay's Coaguline," which answers well for glass. 5. We have not a single copy of such a portrait. If ever we get any printed we will remember your request.

T. E. W.—The indication of an engraving being copyright consists in its possessing what is termed the "publication line," containing the name and address of the publisher, and date of issue. If the engraving possess the publisher's name, he will inform you whether it is copyright, and whether you may make the copies desired. 2. The necessity of using stops in enlarging is a matter you can easily determine by observation. You need only use them to secure the desired degree of definition. If you can get good definition all over without stops, by all means avoid them; and if you do not get sufficient marginal definition with full aperture, use the largest stops which will secure sufficient definition. Never use a smaller stop than is absolutely necessary to secure satisfactory definition. 3. If the paper used for a negative be coarse, the texture will show in the print; but good calotype paper does not yield any injuriously perceptible texture.

R. TUDOR MABLEY.—Thanks. We will communicate with you.

UNTUNED PATCH.—The presence of patches on albumenized prints which repel the solutions, and so cause spots of imperfect toning, is generally due to greasy marks on the surface of the paper, most commonly arising from careless handling of the prints during printing manipulations. Sometimes it may arise from the surface of the negative having been in contact with greasy fingers, and so communicating contamination to the surface of the paper. The general remedy is, of course, greater care; but in cases where the defect is present, it is important to observe each print whilst in the washing water, to see that it does not repel the water in any part before placing it in the toning solution, where it would, of course, also repel the water, and so cause uneven toning. Where such spots are apparent, take a large camel's hair pencil dipped in alcohol, and apply to the spot so as to dissolve the grease, and cause the water to flow evenly. Sometimes prints sticking together in the toning solution will cause this defect.

G. MACKIE.—You cannot remove the nitrate of soda so as to test your solution with the argentometer. You must test by standard chloride solution, using Mr. Hart's instrument, or a similar one, as we have often described. You will find a simple method described in our YEAR-BOOK for 1870, p. 115. 2. Possibly your collodion is too new and thin. Try coating twice; or if you have any good pyroxyline, add about a grain to an ounce of the collodion. 3. After retouching prints, the application of encaustic paste will give an evenly glazed surface. 4. When a sitter has light blue eyes, let them be turned from the light, and fixed on some dark object. This will aid you in getting satisfactory results.

N. EVANOFF and W. COMMER.—The results generally are good. You will find it desirable generally to use a lighter background for vignettes; otherwise, all the general qualities are satisfactory.

W. G.—To fully describe the manufacture of a tent would require the whole of the space we can devote to answering correspondents. We have often described various kinds of tents, the cost of which vary in proportion to size and completeness. If you state what size of plates you use, whether you wish to have it sufficiently portable to carry yourself, and other details of this kind, we will refer you to a detailed description. On the whole, we should recommend you to purchase one. You will find most of the dealers supply them, and occasionally you will see one advertised second-hand in our advertising pages. 2. Caustic soda, sometimes called hydrate of soda, is the oxide of the metal sodium, whilst carbonate of soda is the oxide combined with carbonic acid. Caustic soda is a more powerful alkali than carbonate of soda.

ROBERT KNOTT.—Thanks. The caenos forwarded are undoubtedly of the proper form—a true, regularly curved convex. We have not seen the presses or dies of which you speak, which only bulge the eard at the edges. In our estimation a proper convex die would be better.

W. H. SMITH.—We do not know anything of the quality of the paper of which you speak, and cannot, therefore, suggest the cause of insensitiveness or bad colour. It is impossible to speak with certainty of the time exposure should take, as the size and brilliancy of lime lights vary. As a rule, developed prints appear in the paper as much as on it; by skill in sizing the paper this may be remedied to some extent. Simply iodized paper has generally a tendency to give a greenish image when developed. The addition of a chloride or a citrate diminishes this tendency, but slightly reduces sensitiveness. 2. It is quite impossible to give details of relative exposure. Diffused daylight, or a window facing north, is of no use at all. In order to use a condensing lens you must have a specific source of light, emitting direct rays, like the sun, or an artificial light. 3. If you use citric acid with your pyro developer, you will reduce the tendency to a red image. To obtain a good black tone with gold, as we have often described. 4. The magnesium light is more actinic than the lime light.

Several Correspondents in our next.

Photographs Registered.

- Mr. FROOM, Malton,
Two Photographs of Hon. Mrs. Willoughby.
- Mr. H. T. JENNINGS, Bath,
Photograph of "Colonne Nationale," Paris.
- Mr. BELLINGER, Nottingham,
Photograph entitled the Lace Pattern Portrait.
- Mr. A. NICHOLLS, Cambridge,
Photograph entitled the Lettergraph Post Portrait.
- Mr. A. NICHOLLS, Cambridge,
Two Photographic Groups of three Chorister Boys.
- Mr. J. MONK, Preston,
Three Photographs of Rev. R. Cardwell.
- Mr. J. STUART, Glasgow,
Two Photographs of Rev. T. Brindle.
- Mr. J. W. CLARKE, Bury-St.-Edmunds,
Three Photographs of Mr. Hutton.
- Mr. J. W. CLARKE, Bury-St.-Edmunds,
Seven Photographs "Success to the A.M.C."
- Mr. THOMAS KINGSMILL, Ashford,
Two Photographs Committee of Odd Fellows.
- Mr. THOMAS KINGSMILL, Ashford,
Photograph of Dungeness Lighthouse.

THE PHOTOGRAPHIC NEWS.

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THE COLLODIO-BROMIDE PROCESS.

A VERY interesting and thoroughly practical paper on this process was read at the Photographic Society on Tuesday evening by Col. Stuart Wortley. A variety of causes have tended to prevent a process with so many elements of simplicity and excellence from becoming popular. Some inherent uncertainties have tended to this result; and the fact that advocates of the process, assumed to be authorities, have maintained the importance of diametrically opposite conditions as elements of success, has had a tendency to alarm and warn off those whose aim was rather to get results than to indulge in experimental operations. Mr. Dawson has maintained the importance of excess of free bromide, whilst Mr. Carey Lea has maintained the importance of free nitrate of silver, and the dicta of these two gentlemen have represented the claims of the two small schools or sections of workers who have tried the process. Col. Wortley appears to have worked out the process with great care, and has arrived at very definite conclusions. He holds, with Mr. Carey Lea, that free nitrate of silver is an important element of success, but he doubts whether it is obtained in the formula given by Mr. Lea. He uses a much larger proportion of free nitrate, and finds in that the definite element of certainty and excellence in the negative. With sufficient excess of free nitrate he obtains absolute uniformity of results, a negative of fine non-actinic green tint, every departure from sufficient free nitrate tending to produce a browner tint in the negative; and this colour-test he gives as an absolute guide to the operator as to the correctness of his conditions in this respect. A very slight washing, just sufficient to make the water flow freely over the plate and permit it to receive the preservative evenly, is another condition of simplicity and success. The claims of the process are simplicity, excellence, great sensitiveness, and good keeping qualities in the plates. The exposure is said to be very little more than that required by ordinary wet collodion, and the plates have been kept four months without deterioration. The plates exposed after preparation, before drying, are said to be much more sensitive than wet collodion as usually worked. The process employed by Col. Wortley is, in general details, the same as that of Mr. Carey Lea, with more free nitrate and less washing. His account of its good qualities was confirmed by Mr. Black, of Edinburgh, who, having tried all dry processes, gave this the undoubted palm of excellence. We shall publish Col. Wortley's paper in our next, and also Mr. Black's remarks, and the general discussion to which the paper gave rise. To all dry-plate workers the question is one of much interest.

CYANIDE OF POTASSIUM AS A CURE FOR CONSUMPTION.

For some years past the injurious effect on the health produced by inhalation or absorption of the poisonous substances employed by photographers has been a constantly recurring and very natural topic of discussion, and many cases have been recorded in which there is too much reason to fear that health has been undermined, and, in some instances, life sacrificed, by long continued carelessness in dealing with very dangerous chemicals. Almost every agent used in the photographic studio is poisonous if taken internally, whilst some, such as bichloride of mercury and cyanide of potassium, act powerfully and injuriously on the system by absorption or inhalation. The fumes of ether and alcohol continually breathed produce a train of distressing symptoms, often issuing in a form of debility and low fever, which, we are informed, has, by one medical authority, been specifically classified as "ether fever."

With this series of depressing facts before us, it is refreshing, as well as novel, to meet with facts and arguments of a distinctly opposite character. A correspondent, M. Ogier, of Jersey, sends a long communication on the remedial action of cyanide of potassium in phthisis, and cites his own experience in evidence of his position. It is beyond our province to discuss the therapeutical value of hydrocyanic acid; but we have pleasure in putting on record the facts stated by our correspondent, as necessarily interesting to our readers generally. We feel bound, in doing so, however, to reiterate previous cautions as to the use of cyanide of potassium. There is constant risk of breathing the fumes of prussic acid continually escaping from the salt, and these fumes are, in some cases, fatal, the death of the celebrated chemist Scheele having resulted from their inhalation. There is equal danger attending its absorption through the mucous membrane or a lesion in the skin, three drops of the concentrated acid being absorbed by a wound or the mucous membrane of the eye being sufficient to kill a cat. The statements of our correspondent as to the action of cyanide, and in regard to the intermission of the amendment when the cyanide was not used, are very specific, otherwise we should have been disposed to suggest that the healthy influence of interesting employment and open air exercise might have had some influence in aiding recovery; but a variety of the facts named seem to negative this supposition. If the practice of photography and the individual action or combined action of any of the agents employed be found of value to consumptive patients, a new phase of interest will be found in the art. The subject is, at any rate, well worthy of note and investigation, and we commend the facts which follow to the especial attention of our medical readers.

M. Ogier's letter is as follows:—

"Sir,—Should you consider the following remarks of sufficient interest, I would request their insertion in a forthcoming number of your journal.

"About the month of November, 1868, I was at Jersey laid up with a pleuritic attack, with dull pains between the shoulders, having nightly fits of perspiration, and from time to time intermittent fever, according to the condition of the atmosphere. To these maladies were added a violent cough and symptoms of bronchitis of a distressing nature. As for several years past I had suffered from chronic bronchitis, my symptoms caused me to think that I was passing from bronchitis to phthisis. I had arrived from Madeira, where my wife had just died of consumption, and my fears as to my malady were, therefore, strengthened, as I had always believed, perhaps erroneously, in conjugal contagion.

"At Jersey I consulted a physician, who is also a friend of mine, and he strongly advised me to discontinue my literary labours, and to occupy myself instead with manual work of some kind. My pains still continuing, at his instigation I resolved to take up the subject of photography, and after obtaining some lessons from my friend, Mr. P. Godfray, a photographer on the island, I set to work at my new employment. I did, however, very little, in the first instance, as it was winter time during the first three months of my labours at the commencement of 1869, but towards the end of April, Mr. Godfray absenting himself in France for a couple of months, I was left free run of his studio, and during that time, from morning till night, I worked furiously at my new calling, finishing about one thousand *cliches* of about as bad a character as can possibly be imagined.

"Instead of employing hyposulphite of soda, Mr. Godfray invariably used cyanide of potassium for fixing his negatives; for this reason I also used cyanide, and as in the evening I made a custom of dining at the table d'hôte, and went afterwards in society, I freely employed this agent, moreover, for cleaning and removing from the hands any spots or stains of silver, which, from my inexperience, were to be seen very frequently upon my fingers. I employed a strong solution for the purpose, dissolving six ounces of cyanide of potassium in twenty-four or thirty ounces of water, and this was applied more than twenty times a day for fixing negatives, and two or three times in the twenty four hours for washing my hands, as much as four or five ounces of the liquid being taken for dipping the fingers. If the stains were of an obstinate nature, I resorted to the use of pumice stone after immersion in cyanide, and again treated my hands with the liquid afterwards. Indeed, in my reckless employment of this agent, I paid little attention to any little scratches or ruptures of the skin produced by the plates or the pumice. At the end of a fortnight's work in this manner, I found the pains in my back diminish, the sweats which troubled me at night ceased altogether, and the cough itself slackened in its intensity, if I abstained from washing, and avoided a damp atmosphere for three days running.

"In a couple of months the serious symptoms with which I had been troubled had passed away, and now for three years I have enjoyed, relatively speaking, perfect health. My chronic bronchitis even, that had troubled me so long, almost disappeared.

"What, then, are we to conclude from this?

"Is it to the employment of cyanide of potassium that the change is to be attributed? I think so. The ether, iodide, and bromide, may have contributed towards the result, but the action of these substances is known, and the cyanide must, therefore, have been the principal agent in bringing about the amelioration of health; for at the end of a certain period, of which six or seven weeks were past without having been once placed in contact with cyanide, although I was exposed for the whole time to the fumes arising from an open bottle of iodized collo-

dion in my room, I was again attacked with the cough and with soreness of the throat, which, however, at once disappeared on the re-employment of cyanide.

"The effect of the cyanide is much more marked when the patient practises photography out-of-doors in summer; in that case, whether one works in a photographic carriage or a tent, at the top of a hill or under the cliff, the manipulations are calculated to bring about a cure in any case where the malady is not hereditary. The exercise in the open air in the sunshine, the strong fumes in the closed carriage, and especially in the tent, and the absorption into the system by washing with strong solutions of cyanide, have re-established my health, and I believe that all those similarly afflicted, who would follow my example in a suitable climate—as, for instance, Jersey in summer, and Madeira and Malaga in winter—will have cause for congratulation.

"I have communicated these facts to an eminent French physician and chemist, and have desired him to make experiment upon sheep and rabbits, who are often attacked with pneumouia; and although he is not, as yet, in a position to make a decisive report upon the subject, he has authorised me to state that he has obtained some decisive results with cyanide.

"In photography, however, the operator comes into contact with other substances besides cyanide; it is possible that the sulphate of iron and the citric and pyrogallic acids influence the blood and respiratory organs; but in any case this action is but trivial.

"I have tried the effect of taking the cyanide inwardly, in the proportion of two drops of a solution made by dissolving two ounces of cyanide in twenty ounces of water to the dose, and have obtained excellent effects in this way, of a calm sedative nature; but it is, of course, for the physician to decide upon the utility of this manner of absorbing the agent.

"As regards the quality of the cyanide which yields these curative principles, I may mention that it is the white commercial cyanide of English manufacture; the yellow material, as also that which is more or less damped, is not endowed with these properties.

"I have waited two years before venturing to publish my observations; but since I have been convinced of the fact that the use of cyanide cannot be injurious in photographic manipulations, I hesitate no longer. In making these remarks public through your columns, my colleagues are free to make any objection to or confirmation of them, and I only hope that some good may result from the enquiry to those suffering from disease or sickness, and to whom medicine has been of little avail.

"The remedy I propose is an attractive one, and the moderate exercise necessitated in photographic operations is exceedingly suitable for invalids.—Believe me, &c.,

"St. Helier's, Jersey, June 7th, 1871. E. P. OGIER."

COPYRIGHT IN PORTRAITS.

THOSE of our readers who were anticipating an authoritative decision on the law of copyright in relation to photographic portraits will be disappointed to learn that at the hearing of the case *Conroy v. Taunt and Carden*, before Justices Blackburn and Mellor, no such decision was obtained. It will be remembered that about two months ago Mrs. Conroy was convicted before Sir Robert Carden of having sold copies of a photograph of the Oxford boat crew, by Mr. Taunt, of Oxford, who had produced the photograph for publication, and had, as he believed, complied with the legal conditions for securing copyright. Mrs. Conroy was fined thirty-five pounds, with the alternative of nine months' imprisonment, which form of punishment, the fines not having been paid, we understand Mrs. Conroy has been for two months enduring. Mr. Merriam, on behalf of the defendant, having taken certain exceptions, gave notice of appeal. On the twenty-

fourth ultimo a rule was obtained in the court of Queen's Bench to show cause why a certiorari should not issue to bring up the conviction in order to be quashed, and it was understood that various moot questions in relation to the law of copyright in photographic portraits would be discussed before a competent tribunal, and some authoritative expression of opinion obtained on the points in discussion. The case was heard on the twelfth instant, and the conviction was quashed on a mere question of informality. The defendant's place of business was in the city, and the charge was made and heard in the city. The Act provides that the charge in such cases shall be decided by two justices of the peace having jurisdiction where the offender resides, and as the home of the offender in this case was at Wandsworth, the Court held that Sir Robert Carden had no jurisdiction, and it was unnecessary to go into the facts. To the defendant we can readily conceive that the quashing of the conviction on any plea was as satisfactory as it must inevitably be unsatisfactory to the complainant; but it must be matter for regret that the general question of a photographer's claim to copyright in portraits taken for his own purposes was not duly argued and decided. As, however, there is a possibility of the case being taken further, the questions of interest may yet be discussed before a competent tribunal.

We subjoin a report of the case which we have received from a correspondent.

COURT OF QUEEN'S BENCH, MONDAY, JUNE 12, 1871.

Before Mr. Justice Blackburn and Mr. Justice Mellor.

THE QUEEN v. SIR R. W. CARDEN.

EX PARTE CONROY.

In this case a rule had been obtained, upon several points, calling upon Sir R. W. Carden to show cause why a writ of certiorari should not issue to quash a conviction against Mrs. Theresa Conroy for selling eleven copies of an alleged copyright photograph of "The Oxford Crew, 1871." The rule was obtained on the 27th ult., on the application of Mr. WILLIS, and came on for argument this morning. Mr. POLAND and Mr. MURPHY appeared to show cause against, and Mr. WILLIS (instructed by Messrs. Merriman and Powell) to support the rule.

Mr. JUSTICE BLACKBURN said, to save the time of the Court, counsel had better grapple with the first point: the question of jurisdiction. The section of the Act under which this conviction was recorded said that "the penalty might be recovered by action at common law, or summary proceedings before two justices in the district where the person offending resided."

Mr. POLAND argued that the case came under Jarvis's Act, and that the district in which the offence was committed was sufficient to give the magistrate jurisdiction.

Mr. JUSTICE BLACKBURN: No; here is a new offence, created by the legislature, and a special mode for the recovery of the penalties, created at the same time.

Mr. POLAND: It is not for one moment to be supposed that the legislature ever intended that a man living (say) at Brighton, and selling pirated photographs in London, where the witnesses would be, should be able to put the prosecutor to the expense of going to Brighton to recover the penalties.

Mr. JUSTICE BLACKBURN: That argument might be a strong one against the drawers up of the Act.

Mr. JUSTICE MELLOR: Where the statute creates a new offence and a new mode of procedure, we are bound to adopt it.

Mr. POLAND submitted that as the penalties were enforced under Jarvis's Act, that Act applied in other respects; and cited several sections of that Act to support his view of the case.

Mr. JUSTICE BLACKBURN: This Act expressly stipulates for two justices; if Jarvis's Act applied, one would be sufficient.

Mr. JUSTICE MELLOR: Besides, it distinctly says *where the defendant resides*.

Mr. POLAND: In the County Court Act residence is held to be where the party abides, carries on business, or resides, and that is sufficient; and the learned counsel proceeded to argue at some length that, inasmuch as Mrs. Conroy had a warehouse or a room where she received letters and stored goods, that that was sufficient to constitute a residence within the meaning of the Act.

Mr. JUSTICE BLACKBURN: Do you mean to argue that if a man has goods stored in the London Docks, for which he pays rent, that the Docks can be held to be his residence?

Mr. POLAND: No, my lord.

Mr. JUSTICE BLACKBURN: He would as much abide there as this woman at her store-room. No one could say that Mr. Abel Smith resided at Leadenhall Street, but everyone knew it was the

"abode" of the firm of Smith, Payne, and Smith, the eminent bankers.

Mr. POLAND cited a number of sections of different acts of parliament, and judgments given by the different courts at various times, in support of his argument, when

Mr. JUSTICE MELLOR said: Probably the cases you cite, and the judgments then given, were perfectly correct; but here, Mr. Poland, you must go further, and *prove* the actual residence before you can give the magistrate jurisdiction.

Mr. POLAND observed that the city magistrates, Sir Robert amongst the number, had before convicted in similar cases, and their judgment had not been questioned.

Mr. JUSTICE MELLOR: That may be, but he cannot give himself jurisdiction.

Mr. MURPHY having intimated that he had nothing to add to the arguments advanced by his learned friend, the Court said there was no necessity for going into the other points advanced by Mr. Willis when he made the application for a rule, nor was it necessary to hear him now.

Mr. JUSTICE BLACKBURN, in delivering judgment, said it had been argued that it was absurd to suppose that the legislature meant that the penalties under the Copyright Act were only recoverable in the district where the party offending resided. It might be absurd; and he [the learned judge] was sorry to say that the legislature was guilty of many absurdities; but the intention of the legislature was clear in this instance, and it was expressly stated that though the penalties were discretionary, the only modes of recovery were by action at common law, or by summary procedure before two justices in the district *where the defendant resides*. The argument that because a person had goods in a room within the precincts of the city, that that could be taken as sufficient residence to give jurisdiction to a city magistrate, was untenable. The rule must be made absolute.

Mr. JUSTICE MELLOR was of the same opinion. Though the cases cited by Mr. Poland were sensible in themselves, they did not apply here. It was clear the magistrate had no jurisdiction.

FRITZ LUCKHARDT'S METHOD OF MASKING TO OBTAIN PICTORIAL EFFECT.

AMONGST the photographic art studies which have reached this country from Germany during the last two or three years, few have excited more admiration than the card and cabinet heads of pretty girls by Fritz Luckhardt, which have generally been distinguished by unusually fine light and shade, and great force without hardness. Any hints or details of the modes of working by successful artists are sure to be read with interest. A short paper describing his mode of masking or stopping out negatives, to modify the light and shade, appears in a recent number of the *Correspondenz* published in Vienna. It will be seen that in the course of his remarks he revives the old subject of discussion as to the plan pursued by M. Adam-Salomon to obtain similar modifications. As we have remarked on former occasions, the great French artist made it a practice generally to secure the effect of light and shade which distinguished his portraits in the negative itself; but where modification was necessary or desirable, his plan was very similar to that now recommended by Herr Luckhardt: he applied a coating of some water colour pigment—often carmine—to the back of the negative, to such portions of the lights as he desired to appear more brilliant in the prints. Herr Luckhardt applies the same idea, but in a more manageable form. He says:—

"The artistic effect of a portrait is undoubtedly increased when the relief of the head, and, in their degree, of the hands, is increased, while the drapery and surroundings are allowed to recede into the background. To achieve this it is necessary, when the picture has been fully printed in the ordinary manner, to cover up with black masks of suitable shape those portions which it is desired should appear prominent, and to allow the uncovered parts to be further acted upon by the light until those are somewhat over-printed. Afterwards, if still requisite, the print may be placed under a plate of glass, and when the face, hands, &c., have been covered, a further darkening of the image round the head or at the margin of the print may be effected, the gradation of the tinting being managed by means of cotton wool. In this way, it appears to me, the effective pictures of Adam-Salomon have been produced, the aspect of which is moreover

improved by the warm reddish brown tone and glossy surface presented by them.

"The cutting out of the masks, as also the operation of printing in this wise, is exceedingly laborious and time-taking, and for this reason the undermentioned plan is to be recommended, especially when it is desired to bring out the details of the over-exposed portions—such, for instance, as white robes, lace, and the like—by continued printing.

"A dark alcoholic solution of aniline red is in the first instance prepared, and to this is added some drops of a thin normal collodion, so that, when applied to the glass negative upon the reverse side, a very uniform red film is obtained. After a short time has elapsed, to allow the fluid to become set and dry, by means of a small wooden splinter those portions of the film are removed where the negative is not required to be intensified, and the remaining portion of the surface allowed to remain. If the wooden tool is moistened a little with the tongue, the operation is easily performed.

"The intensification can be applied to the face and dress, as also to the surroundings, when, for instance, it is necessary to lighten the hair of a blonde model. In the latter case a second application of the liquid may be used, so that the face is covered once, while the hair is coated twice, and the print is thus rendered much lighter in those parts.

"To increase the durability of this film upon the plate, a few drops of negative varnish may be added; such an addition is, however, not absolutely necessary, and the removal of the film in parts is in this way rendered more difficult.

"The thickness of the glass prevents any sharp definition of outline being observed, but, nevertheless, it is necessary to follow very exactly the lines of the face, hands, &c., which can easily be done if the negative is placed against a window and operated upon in that position.

"In theatrical impersonations (as, for instance, Selika in the *Africaine*), where it is desired that hands and face should appear dark, a simple method is here at hand by means of which the wished-for effect may be obtained without it being necessary for the model to colour the features, as the true effect may always be secured by employment of the dark red collodion mixture."

A WET PROCESS FOR ALKALINE DEVELOPMENT.

BY W. DE W. ABNEY, F.R.A.S., LIEUT., R.E.

LET me premise the details of this process by assuring other "discoverers" of the same that I have no wish to claim any of the credit due to them. I rely on the editor to save me from rough usage in his columns, and I plunge at once *in medias res*.

Take any plain collodion yielding a powdery film. Add to each ounce

Iodide of ammonium	...	...	2 grains
Iodide of cadmium	...	...	2 "
Bromide of cadmium	...	...	2½ grains

To be used when ripe. Having coated the plate (it is better to have a substratum of albumen) and sensitized in the bath for about six minutes, withdraw it and rinse with distilled water. Wash it *well* under the tap, and rinse once more with distilled water. I now run the washed plate with either

Coffee	...	...	500 grains
White sugar	...	...	50 "
Gum arabic	...	...	100 "
Boiling water	...	...	10 ounces
Glycerine	...	...	1 ounce

(The gum to be pounded, and the mixture suffered to cool in a corked bottle.)

Or,

Tannin	...	...	100 grains
Gum arabic	...	...	100 "
Glycerine	...	...	1 ounce
Water	...	...	10 ounces

Drain as usual, and place the plate in the dark slide; expose about twice the time requisite for an ordinary wet plate. The following developer will be found efficient:—

I.—Pyrogallic acid	...	...	5 grains
Water	...	...	1 ounce
II.—Ammonia	...	...	1 part
Water	...	...	6 parts

After well washing under the tap, one drop of No. 2 is added in the developing cup to each drachm used of No. 1.

The image flashes out immediately this is applied, and when all the detail is well out, the plate is washed and intensified in the usual manner. Should over-exposure be suspected, the following developer may be used:—

Pyrogallic acid	...	...	5 grains
Acetic acid	...	...	5 drops
Water	...	...	1 ounce

A drop of a twenty-grain silver solution is added, and the development carried on as usual.

The negative should be fixed with hyposulphite of soda or weak cyanide; the latter is recommended. The plates prepared as above will keep moist any reasonable time—say from one to two days—the glycerine preventing rapid desiccation. The appearance of the fixed negative is somewhat transparent, and is similar in colour by transmitted light to those produced by the old coffee process. If every particle of free nitrate of silver be removed from the film after sensitizing, and every trace of ammonia be neutralized before intensification, the negative will be as bright and beautiful as if it were a wet plate proper.

Should any one, not having discovered or worked the process before, wish for further explanations of my mode of working, I shall be glad to communicate with him.

I think in all probability a trace of ammonia added to the preservatives (as in the process just published by Mr. Blair) would accelerate the exposure.

BROMINE SALTS CONTAINING IODINE.

BY DR. JULIUS STINDE.*

WHENEVER it is desired to become accurately acquainted with any of the chemicals employed in the practice of photography, it is a matter of the first importance that the element or compound under examination should be, beyond doubt, chemically pure. In regard to the composition of collodion, there are many points upon which we might be better informed, and especially upon the subject of the proportion of bromine and iodine salts that the same contains. Of the action and value of bromine salt in this combination, a great many contradictory opinions have been expressed, and much discordant evidence adduced, for while one operator has obtained results of one kind, another has been led to conclusions of a totally opposite nature.

The impurity of many of the bromine preparations with which we have to deal is, no doubt, here at fault, for it is certainly a fact that many of the compounds of this kind to be met with in commerce are frequently contaminated with iodine and chlorine impurities. Sometimes this is even the case with bromide of potassium, which, therefore, cannot always be implicitly relied upon. In the chloride of potassium and salt manufactories, in which the raw products of rock salt are worked up, the mother liquor, containing bromide of calcium, bromide of magnesium, and iodine alkalies, is employed for the preparation of bromine. For the purpose chlorine gas is used, and the bromine released in this manner is extracted by means of ether, the ethereal solution being afterwards shaken up with potash lye, evaporated, and burnt, so that the salt is again decomposed. In this manner there is created chloride of bromine and chloride of iodine, which subsequently form chloride and iodide of potassium respectively, and render the product impure.

If we proceed upon Faldres's method, and place upon a

* *Photographisches Archiv.*

sheet of paper which has previously been coated with a little paste some crystals of the suspicious bromine salt that we are desirous of testing, and moisten the surface of the paper slightly, it is necessary to have but a trace of chlorine gas to liberate any iodine that may be present, and which, on evolution, would at once produce a blue stain (iodide of starch) in the vicinity of the bromine salt. The best mode of proceeding with this experiment is to obtain a wide-mouthed stoppered bottle, to half fill it with asbestos which has been moistened with bromine water, and to allow the bromine issuing from the neck of the bottle to act upon the crystals of bromine. A bottle of this kind, if properly stoppered, so as to prevent escape of the bromine, will remain serviceable for a long time.

This test is, indeed, an indispensable one when it is requisite to study the behaviour of bromine salts in photographic operations; and the very different results which have been obtained from time to time with bromized collodion may possibly be explained by the existence in the bromine salts of impurities of this nature—to wit, alkaline combinations of iodine and chlorine.

ON THE EMPLOYMENT OF COLOURED GLASS IN PHOTOGRAPHY.

BY DR. H. VOGEL.*

SEVERAL years ago a proposition was made to employ a screen of blue glass in front of the lens when reproducing oil paintings, the colours of which, as we know, are difficult to render properly. The idea was put into practice on many occasions, but without any show of success, and the affair was, therefore, considered to be an illusion, of which there have already been many in matters connected with photography.

How a blue glass can facilitate the rendering of colour is, by the way, difficult to understand; but, at the same time, the application of coloured glass with the camera is by no means fallacious. In printing we have for some time past employed green glass for covering thin negatives; it has the effect of retarding the action of the denser portions of the negative, and the result is that the whites become brighter and the shadows deeper by this modification: the picture thus printed becomes a little harder, or, rather, we should say, increases in brilliancy.

Another means of effecting this without recourse to coloured glass may be here mentioned: if the paper is sensitized upon a weak silver bath of 1:20, and subsequently fumed with ammonia vapour before printing, or, better still, if powdered carbonate of ammonia is sprinkled over the pad which lies in the printing frame behind the paper, an increased amount of vigour may be at once obtained. I have in this manner obtained brilliant pictures from negatives of an exceedingly soft and monotone character.

To return, however, to the subject of green plates; it must be remarked that the same may be employed with much advantage in the negative process, in cases, for instance, when it is desired to produce a positive again from a negative, or when a new negative altogether is wished for.

Such reproduced negatives are easily secured in the camera by means of the ordinary wet collodion process.

The negative is fixed against the window, and a matt plate placed thereon, and the image is then sharply focussed and exposed to a wet plate in the camera. In performing this operation it is best to place between the negative and the lens a large tube or box, to cut off any surrounding light: an ordinary camera without lens is particularly suitable for the purpose. In this way a positive is obtained, and afterwards, in like manner, a negative may be produced. By means of the collodio-chloride process the matter is more easily conducted, namely, by copying in contact in the printing-frame; but, unfortunately, such a plan of

operation is only suitable when one has to do with plate glass, and negatives are but rarely taken upon material of this kind. For if the glass is not perfectly flat, blurred results are produced, from the fact that the two surfaces do not come into actual contact; in most cases, therefore, the wet process in the camera is the only one that is applicable.

Those who have essayed to obtain a second negative from a first are well aware how seldom such an effort succeeds, when it is desired that the duplicate shall have all the sharpness, softness, and depth of the original. As a rule, the second negative is hard by reason of short exposure, or flat from the reverse cause, or, again, it is often fogged. The reason of this is obvious: in the original negative the contrasts of light and shade are much stronger than they are in nature, and on this account it is difficult to hit upon the requisite amount of exposure, for the transparent portions appear too light, and the opaque parts too dark. It becomes a question, therefore, whether this defect can in any way be removed, or, in other words, whether any means can be devised to weaken the brighter parts without in any way injuring the darker portions.

It is this difficulty which has recently been overcome by M. Grasshoff, by setting up in front of the original negative a pale green glass plate, and photographing the image through this medium. The result obtained in this way is truly surprising. I have seen prints of reproduced plates, as likewise enlarged negatives, taken in this manner by M. Grasshoff, which were exceedingly similar to the original negatives and prints, and which were certainly the best that I have seen of examples of reproduced pictures.

This manner of employing a green glass in order to preserve the proportional contrast possessed by a negative has been supplemented by another somewhat analogous application, proposed by Dr. Schultz; this is, to use a yellow glass plate for the depiction of objects which appear illuminated by a particularly hard light; and the results show that such a manner of proceeding may be employed with much success. It happens not unfrequently to be the case that statues, busts, and similar objects have to be photographed in libraries, drawing rooms, and other interiors, and these, especially when standing in the vicinity of the window, exhibit some very bright high lights, and also exceedingly deep shadows. A change of position or point of view, or a modification in the way of illumination, is sometimes impossible, and, in such instances, even when the best chemicals are used, and particular care taken in the manipulation, a hard picture with solarized lights and inky shadows is the only result. To improve matters under these conditions, the use of a yellow plate tinted very thinly with iodide of silver will be found very effective, for it weakens considerably the action of the high lights without, to any material degree, interfering with the character of the shadows. In this way, therefore, a much longer exposure may be given without in any way fearing for the solarization of the high lights.

The pictures taken by Schultz, in this manner, of plaster figures which were but inadequately lighted are, in truth, quite astonishing as regards their apparent illumination, and one would scarcely believe that the yellow screen would be capable of influencing the reproduction to such an extent. As before stated, the yellow glass is but a film of iodide of silver, which Dr. Schultz produces by simply allowing iodine vapour to act upon a silvered plate until the surface has assumed a yellowish tint. A perfectly transparent iodide of silver plate produced in this manner answers the purpose admirably, for it absorbs most completely the violet and indigo rays, and allows all others to pass through uninjured and unimpaired.

It is no wonder, therefore, that a picture—such as we see in an oil painting—with blue sky, white clouds, green trees, and brown rocks, would be differently rendered if

* *Photographische Notizen.*

photographed through a medium of this kind, than when depicted in the camera in the ordinary manner. In the latter case, the sky is fully impressed upon the film before the landscape is sufficiently exposed, while in the former instance (with the yellow screen in front of the lens), the sky will be weakened, and its over-exposure, therefore, need not be feared, and the result is a harmonious picture. Of course, it by no means follows that all oil paintings may be better taken in this manner. Many sorts of blue do not exhibit a bright reflection at all, as, for instance, Paris blue with oil, and indigo, which latter must not be confounded with the indigo of the spectrum. But a reference to the table of colours in my manual will show at once the comparative power of the different tints.

PHOTOGRAPHY FOR THE UNINITIATED.

I.

In our most recent American contemporary, the *Photographic Times*, to the interest of which we have before referred, a series of articles addressed to boys is commenced by Mr. Charles Wager Hull, an able New York photographer. As they may interest the sons and apprentices of some of our readers, we shall make some extracts therefrom. He commences:—

MY DEAR SON,—You have now completed your fifteenth year, and I am about to fulfil my promise given you many years ago, when you were a little prattling boy, scarce able to toddle about. Then you would ever insist that my laboratory ("laberty," as you termed it) was just the place for you, and to exclude you from it—do you remember?—it was for so many years my habit to bribe your departure by the promise that when you were old enough I should teach you all I knew, and allow you to make as many photographs as you desired.

Under this promise I often forbade your entrance to "my den," and you, with the denial ringing in your little ears, would leave me deep buried in the mysteries of our "Black Art."

Now you ask me to fulfil my part of the compact, I shall do so.

Before entering upon my instructions, I shall name to you other reasons than the one as to my promise, why I intend to cheerfully give you this instruction. I propose publishing all I have to say in the *Photographic Times*, that others may have the benefit as well as yourself. I write thus, in addition to my many conversations with you, believing that much that I shall write will not only be of value as reference, but will probably be better impressed upon your mind than when spoken.

Now for my other reasons.

1st. I fully believe that all boys, as well as men, have some hobby, some speciality, often proper ones, often not; therefore, while I can direct you a willing subject in that which will certainly prove to you an advantage, I shall gladly do so, believing that both your hands and your thoughts would in this great city sooner or later find employment that might not prove as much to your benefit.

2nd. Photography, if intelligently studied, leads you by kindly steps to the great studies of chemistry and physics, and may ultimately lead you a willing student into those sciences. The power and the character of light will have to be considered in every picture you make; you will early discover that there is much difference in light; you will discover how brilliant your image appears in your camera, and yet how slowly it develops under your chemicals, and how dull and miserable is the result: the reason for this you will desire to know. In learning it thus practically, you are never likely to forget it, as you now too often forget your daily studies, learned too much by rote.

3rd. Photography will bring you into the open air, and lead you amidst the beautiful in nature, where health will be promoted; it will teach you to look for the beautiful;

it will educate in you a love for the picturesque; it will induce you to inquire where the beautiful may be found; after visiting, it will naturally induce you to study the history of such places, and thus increase your store of information upon your own desire, the best way of making knowledge useful and entertaining.

4th. Photography will teach you order, system, great exactness in all you do, uncompromising neatness, and general habits of regularity, which cannot but be of great service to you in your battle with the world.

5th. Photography is a profession which to-day furnishes bread to thousands; it or some kindred science will always exist; and in choosing for you a hobby, I feel as though one which would support you, if required, is a better one than one which would not aid you in the procurement of a single meal.

6th. Photography properly followed is not an expensive pastime; it will not cost one-quarter the money that may be easily expended upon billiards; and will not lead, as such too often does, to "driks and cigars."

7th. It is truly the least selfish of all pastimes; unlike fishing, driving, riding, or boating, it divides your pleasures not only with those who are with you, but with all to whom you may present copies of your pictures; it amuses and instructs many a family circle far and near, and, so long as the picture lasts, you divide with all who view it a portion of the pleasure you had in producing it.

It was not my intention to begin my instructions in this letter, but principally to inform you more fully than I ever had of the beauties and unequalled charms of the art you are now about to study, that you might feel assured that there is much to enjoy as well as much to learn.

GELATINED PRINTS.*

BRILLIANT pictures of this kind are much in vogue in some countries, and the method of producing them is far from being an unknown one; but, nevertheless, there are many operators who go so badly to work, and understand the manipulations so imperfectly, that in finishing a dozen favourable specimens, an amount of material equal to that expended to good purpose is often thrown away. The plan which is here described will be found to succeed perfectly if only the instructions given are closely and attentively followed.

In the first place, a series of glass plates is obtained of the same number as there are prints to be glazed, the surface of these plates being always carefully examined to ascertain that there are no scratches or defects thereon, for any imperfection, however slight, of this nature, will not fail to be reproduced upon the prints. The glass is cleaned with the same care as if required for negative manipulation, and the plates coated forthwith with normal collodion, composed as follows:—

Alcohol	...	...	50 eub. cents.
Sulphuric ether	...	...	50 " "
Gun-cotton	...	...	1 gramme

It is of little importance whether the collodion is of thicker or thinner consistence, or whether it contains more or less alcohol than ether; and, indeed, in making up this compound, ether and pyroxylic of an altogether inferior quality may be utilised.

After coating, the plates are put into a suitable locality to dry (sheltered, of course, from dust) upon the reverse side of each plate being pasted a small piece of paper, to indicate at once which is the collodionized surface.

Thirty to forty grammes of gelatine are now moistened in a porcelain saucer with 500 cubic centimetres of water; then heat is applied gradually until the material is completely dissolved, and when this has come to pass, the solution is filtered through a piece of linen into a glass or porcelain vessel. The prints, after being retouched and

* *Rivista Fotografica.*

finished, are then floated face downwards upon this gelatine, care, of course, being taken to prevent the formation of any air-bubbles; after being in contact with the liquid for two or three minutes, the print is removed from the bath and placed in a perfectly horizontal position, so that the gelatine may spread itself uniformly over the paper. When the solution has cooled and become set, the prints are placed, sheltered from dust, in a convenient locality, where they may become perfectly dry.

The same operation is now performed with the collodionized plates, to cover these in like manner with a film of gelatine, the glass being held by means of a pair of forceps, so that only the surface bearing the coating of collodion comes into actual contact with the liquid gelatine.

If only a small number of pictures are to be glazed, these, as likewise the glass plates, may be coated with gelatine by means of a very fine, soft brush; but by using a bath, it should be remembered, a much more even and uniform film is always obtained. Usually the gelatine solution is employed in its ordinary condition, but some very pleasing effects may occasionally be produced by tinting the liquid of a slight rose or blue colour.

When the surfaces, both of the prints and glass plates, are perfectly hard and dry, the next operation is proceeded with, namely, that of putting the two into contact.

Two baths are prepared, containing water which has been previously filtered, and which should be maintained at a low temperature. In summer it is necessary to employ a little ice in the baths to cool them down sufficiently, so that no dissolution of the two gelatine surfaces shall take place. In one of these baths are placed the prints, either all at once, or one after the other, and after the lapse of a few minutes the coating becomes softened and the paper distends; in the other bath is plunged the glass, the film of collodion uppermost, and the operator, raising the plate with one finger, with the other hand lays the wet print face downwards upon the glass, and causes it to adhere thereto. The glass plate is then lifted briskly out of the water, taking care that the print remains adherent, and by the aid of the fingers all water and air-bubbles which may remain between the two surfaces are repelled.* Afterwards the plate is allowed to drain, contact between the two surfaces being still assured until actual fusion is apparent. The same operation is repeated with all the other couples, the water being changed from time to time, whenever any little impurities are found to be therein, for however insignificant these may appear, they become very apparent when the print is in its finished state.

Before the prints have become perfectly dry, there should be pasted or cemented at the back a piece of thin cardboard, not thicker, for instance, than four or five thicknesses of albumenized paper. A stout Bristol board, such as is employed for mounting ordinary photographs, has a tendency to prevent the picture from detaching itself easily from the glass, and becomes cockled or creased in a manner which it is difficult afterwards to remedy. The same inconvenience is met with if the cardboard itself is not immersed in water for at least an hour before being employed for mounting. A thick solution of gum-arabic is the most suitable mounting material for this purpose.

As soon as the thin cardboard has been attached to the pictures as described, these are arranged in a pile one above the other, with a sheet of blotting-paper between each, and upon the uppermost one is placed a weight of some capacity to keep the pile flat.

At the end of a few hours, and before the whole of the moisture has gone off, the weight is lifted off, and the prints separated; they are then placed one by one in a shaded place to become quite dry. They must, however, be continually watched until the prints begin to show signs of leaving the glass, when they are again piled up, this time with sheets of dry paper between, but without

any weight. The pictures will be found to detach themselves from the glass spontaneously, and as they come off they are gathered together, those which still adhere to the plate being not sufficiently dry.

If the glass has not been well cleaned in the first instance, or if its surface presents any irregularities, the prints will only be removed with difficulty. They will be found to separate most readily if, previously to the collodion being applied to the plate, the surface is first of all washed with an alkaline solution; this precaution is, however, by no means indispensable.

A METHOD OF TRANSFERRING THE NEGATIVE FILM.

BY MELETIUS DUTKIEWICZ.*

MANY plans for removing the film from the glass plate by means of gelatine and collodion have appeared in the photographic journals, but as one cannot depend with any certainty upon the success of any of them, I am tempted to publish an improved mode of proceeding, a knowledge of which will be valuable to all those occupied with mechanical printing processes.

As such films which have been removed by means of gelatine always possess a certain amount of stiffness and glaze, which is practically of some value, I employed this material in my manipulations. Varnished negatives are, in the first place, treated with a solution of—

Caustic potash	1 ounce
Water	10 ounces
Alcohol	10 "

This is poured upon the plate several times in the same way as collodion, to remove the varnish, and the surface is then washed under a stream of water. A five or ten per cent. aqueous solution of muriatic or acetic acid is then poured upon the plate, and allowed to remain flowing over the same for a couple of minutes, at the end of which time it is again washed with water, care being taken not to lift the film which has thus been loosened from the glass. After draining, the surface is coated with a gum solution—

Gum	1 ounce
Sugar	1/4 "
Water	10 ounces

and then allowed to dry.

Freshly prepared negatives which have been intensified with pyrogallie acid may be gummed at once, but films developed and intensified with iron always require to be loosened in the first place with acid. It is in this, indeed, that the improvement consists. Dry plates do not require to be treated with acid, for the films are already so much disposed to leave the glass that the application of a varnish at the margin is necessary to prevent their removal during development.

The gummed and dried negatives are placed in a horizontal position by the aid of a water level, having previously been heated to a temperature of 30 to 35° Reaumur, so as to feel hot to the hands, and are then forthwith covered with gelatine solution, in such a manner, however, that none of it flows over the edges thereof.

This gelatine solution, at the time of its employment, must be at a temperature of 45° Reaumur, so that it may flow easily; it is thus compounded:—

Gelatine	3 ounces
Isinglass	1 ounce
Sugar	1/2 "
Glycerine... ..	2 drachms
Water	24 ounces

After dissolving, two ounces of alcohol are added while the mixture is agitated, and the whole is then filtered through a piece of thick linen. The solution is poured

* The rubber squeegee would be here useful.—Ed. P. N.

* Photographische Correspondenz.

upon the plate to a thickness of an eighth of an inch, as, on drying, the film shrinks considerably in thickness, and soon sets and becomes dry at the margin. In an atmosphere of 20° Reaumur the film will dry in twenty-four to thirty-six hours, but in a less warm temperature two or three days are necessary.

When the surface is over all dry, the plates are placed over a vessel of water, about one or two inches from the same, the gelatine film downwards; the vessel and plate are covered with a wooden or cardboard cover, so that none of the aqueous vapour can escape. If maintained full of lukewarm water, the plate will be sufficiently acted upon after remaining over the vessel for a period of three or four hours, but if cold water is used, as long as twelve or twenty-four hours is necessary, according to the season of the year. The best test of sufficient impregnation of moisture is to raise the plate, and to press the thumb-nail into the film; if the nail penetrate readily, the gelatine is fit to be removed, and the film is then cut round the margins of the plate, one corner of the gelatine being raised by the point of the knife, and the whole then torn off by hand.

Instead of placing the plate over a water bath to become damp, the negative may be kept in a moist cellar for twenty-four hours with a similar result. The image, when removed, is kept in a flat state in a book or other suitable locality.

If desired, the negative, after coating with gum, but previously to the application of the gelatine, may be retouched with a soft pencil, or by means of a brush and pigment; retouching may also be undertaken after the removal of the film, but in this case the latter must, in the first instance, be varnished.

Gelatine films which take too long to dry in cold or rainy weather are often possessed of a dull matt surface, and in this case they also must be varnished. A suitable varnish for the purpose is the following:—

Gum sandrac (the white grains being picked out) ...	...	2½ ounces
Venetian turpentine ...	...	1 ounce
Oil of lavender ...	...	½ "
Camphor ...	...	½ "
Absolute alcohol ...	...	1 pound

This varnish is applied cold, by means of a soft broad brush, and dries in a few minutes with a glassy brilliancy.

I have already removed the films of three hundred negatives in this manner, and can, therefore, recommend it very emphatically.

One other method may be mentioned involving the use of collodion. In this, the varnished or unvarnished negative is treated with acid, gummed, dried, and retouched, as in the above described manner, and then covered, while in a horizontal position, with normal collodion as thickly as possible without the liquid running over. In two hours the collodion is dry, and may then be cut at the margin of the plate and the latter placed in water; in a quarter of an hour or sooner the film leaves of its own accord, and is then dried and preserved as above. The best collodion for the purpose is that prepared from papyroxyl, mixed with one per cent. of castor oil, which dries without structure.

ON THE FADING AND TURNING YELLOW OF THE PHOTOGRAPH.

BY M. P. SIMONS.

I HAVE had, recently, some very important experience upon this most vital point in photography, and, with your permission, will lay it before your readers, for their investigation and decision of its value. Most writers, as you well know, who have written upon this subject, seem to think that the contingency of discoloration of the silver print is owing chiefly to insufficient washing, and, therefore, they

recommend to wash from five to eight hours; while some have gone so far as to fix all night for the minimum time. This long, tedious washing I never thought necessary, always believing that one hour in good running water, with a little attention—such as changing it a few times at first, and occasionally turning over the prints—was ample to wash out anything that is soluble in water. Besides, I have good reasons for believing that, if prints are left soaking longer than is necessary, it is more likely to do them harm than good. This belief has been very much strengthened by the late experience here alluded to; teaching me, also, at some cost, that the cause of prints turning yellow is not for want of proper washing, but is due principally to the fact of their coming into contact, during the operation of fixing, with stale soda—i. e., stale from frequent use—which may be traced to the kind of dishes used for the fixing solutions. We have thought (or, at least, I have) that any old scaly dish, if apparently clean, was good enough for the hypo bath. But I am now well satisfied that this is a great mistake—the very greatest a photographer could make in his chemical manipulations, as I now hope to prove—and that nothing but glass dishes are fit for the print-fixing solutions, for the reason that nothing else can be washed free from hypo with any certainty. Take, for instance, a porcelain dish, the next best to glass, while new, and if there is the least break or crack in the enamelled surface, it will absorb almost as freely as sponge; consequently, if used for a fixing dish, will soon become impregnated with old hypo. And although we have come to the conclusion that it is not safe to use the print-fixing solutions more than once, we are, if my theory be correct, compelled to use it over and over, so long as the old dish lasts, and thus keep up the leaven, getting each day just enough of the old to contaminate the new. Admitting this to be the fact, how evident it must be to any thinking mind that our prints are seldom or ever fixed in anything but stale hypo, although we make up fresh for every batch. What caused me to look into this matter of discoloration at this time was altogether accidental. The dish we had been using for the fixing-bath got broken, and my boy replaced it with an old one, the enamel of which was very much cracked, and having been used long ago for the same purpose, it was consequently well supplied with old hypo, that, like some hideous monster, was ever ready, at a moment's notice, to pop out and attack, with its slimy claws, anything that came within its reach. It caught me right badly twice, spoiling two batches of prints—the first quite a large one—before I discovered the old rascal's lurking-place. I rather suspected it was the dish at first; but, thinking that it had not been well washed, and that this might have been the cause of the trouble, I ventured to use it again, when I caught it even worse than at first. The severe rubbing and scrubbing it received after behaving so badly must have stirred up the scamp to greater action, as this time he could not help showing himself in his true colours. There was now no mistaking the real cause of the trouble; the prints told the whole story. Some were ornamented with a perfect stencil-like impression of the cracks on the bottom of the dish; some of them, that did not receive this extra finish, feeling the slight, soon turned a dirty yellow; while a few, which you would not suspect of ever having been in such bad company, I have kept on probation to see how long they can keep up a respectable appearance. They are now decently attired in pink and blue, but I am expecting every day to see them out in a new dress of brimstone complexion. This change, though, may not take place for several months. And this is the reason why we photographers are so apt to attribute effects to the wrong causes: our mishaps are usually so slight, that the mischief does not show itself until the circumstances that caused it have passed out of mind. Is it not, then, very fortunate that we are sometimes favoured with extreme cases that cannot but arrest our attention, to set us right and keep us from going too far wrong?

In looking over what I have written, I fear that I have treated this important subject too lightly; but with a parting word I most seriously declare that I would no more think of using any other than a glass dish for the printing bath than I would of doing anything else that was well known to endanger the permanency of the photograph.—*Photographic Bulletin.*

Correspondence.

COPYRIGHT IN PORTRAITS.

SIR,—There appears to be a misapprehension with respect to the case *Taunt v. Conroy*. The question of copyright does not arise. Mr. Merriman's objections were directed, at the hearing, against the whole proceedings, from the beginning to the end, as being illegal. The first objection was, that there was no jurisdiction in the city. The act directs that summary proceedings shall be taken before any two justices having jurisdiction where the party offending resides. In this case the defendant resided with her family at Battersea, having a warehouse in Bond Court, Walbrook. The Alderman overruled the objection with others, and convicted the defendant. A rule was obtained requiring Sir R. Carden to show cause why a certiorari should not issue to bring up the conviction, in order to quash it. On Monday last Mr. Poland and Mr. Murphy appeared to show cause against the rule. At the conclusion of Mr. Poland's arguments upon the first point, Justices Blackburn and Mellor, without calling upon Mr. Willis, who appeared for Mrs. Conroy, made the rule absolute.

This result has arisen entirely through the severity of the sentence passed by Sir R. Carden. For the sale of eleven cards he adjudged the defendant to pay fines amounting to £35, or undergo nine months' imprisonment. Had the defendant committed a felony by stealing eleven cards from Mr. Taunt, then the maximum punishment under the Criminal Justice Act could not have exceeded six months' imprisonment. Thus, infringement of copyright, which is a civil offence, is much more severely punished than a felony. Had a moderate penalty been inflicted, the amount would have been paid, and no more notice taken of the matter.*

In a recent letter I quoted the judgment of the Lord Chief Justice in the case of Boulton and Park as bearing upon the conspiracy case of Lawrence, Coleman, and Hooper; and now we have a judgment of the Court of Queen's Bench which virtually decides that in that case the civic functionaries had no jurisdiction. Lawrence has now the satisfaction of knowing that he suffered twelve months' imprisonment wrongfully. Aldermen Sir R. Carden, Sir J. Lawrence, Sir B. Phillips, Sir T. Gabriel, Besley, Gibbons, and Allen are all worthy citizens, but perhaps not very good lawyers; and although, on Monday, Mr. Justice Blackburn rather wickedly remarked that one alderman was equal to two justices, still they have not shown remarkable discrimination by dealing with matters where they had no jurisdiction.

Doubtless those publishers who have recovered penalties under wrongful convictions will hasten to refund the amounts to the defendants who paid them; and the aldermen's feelings of justice may induce them to make some compensation to those individuals who may have suffered imprisonment through their failure rightly to interpret the law.†

As the case of Mrs. Conroy is one which fairly exemplifies the manner in which prosecutions for piracy are usually conducted and the law construed, I will in my next letter give some account of it.

Your correspondent "A Lawyer" will find the speech of Sir R. Palmer in Hansard's Debates for July 24th, 1862.—I am, sir, your obedient servant,
J. CUNNINGTON.

A NUT FOR COPYRIGHTISTS TO CRACK.

SIR,—In the picture taken of the assembled crew of the *Galatea* (some 600) and an elephant, would the artist require the written consent of every one represented to secure the

* As the legitimacy of the copyright was raised in connection with the subject when Mr. Knight was charged, it was only natural to expect that it would have come before the Court in the case in question.—Ed.

† The existence of a technical error does not prove that the defendants in any such cases had done no wrong, or that they ought not to be punished.—Ed.

copyright of the picture? Perhaps some of the gentlemen who have written on the subject will explain this point.

ENQUIRER.

APPRENTICES AND ASSISTANTS.

SIR,—In your excellent article in last week's *NEWS* upon "Apprentices and Assistants," I most heartily agree with your suggestion, and that it would make photographers' assistants a more respectable class of young men; but I have some doubts respecting the "trial," which I should like cleared up.

I find that a month's trial is generally requested by an employer about to engage an assistant; but it often proves very inconvenient to the assistant, on account of the season. How is he to act when, supposing he is engaged at the beginning of the season, but must come "a month on trial," at the end of which his employer finds that business is not so brisk as usual, or his fresh hand not quite so efficient as he expected, and, without any other reason, dismisses him? He is thrown out of berth at a bad time (the openings having been filled up during his trial), and has to take anything he can get, beside it being very objectionable to have to apply to his former employer for a second reference (which, by the bye, he is not obliged to give, even upon the first application). But, on the other hand, employers are not to be expected to engage fresh hands without a trial of some sort. Perhaps some one will kindly suggest an improvement to our present rule, and oblige, sir, yours very respectfully,
A PHOTOGRAPHER'S ASSISTANT.

LIVERPOOL DRY PLATES FOR VIEWS WITH GREAT CONTRASTS.

SIR,—For some months I have been using the Liverpool dry plates, and early in the season, when trees were bare of leaves, I was much pleased with them; but now that the foliage is luxuriant, I find, in taking a light-coloured house with masses of trees on each side, I cannot give the proper exposure to suit both: either the house when printed is too light, or the trees simply a mass of black shadow.

Would you kindly point out where the error lies?—Your obedient servant,
J. S.
June 11th, 1871.

[We have not tried these plates for the special class of subjects our correspondent mentions. We can only suggest to him to expose fully, so as to do justice to the worst lighted portions of his subject, and then develop slowly with the most dilute solutions. Have any of our readers experience which can aid our correspondent in this matter?—Ed.]

STRENGTH OF TONING BATHS, ETC.

MY DEAR SIR,—A few years ago, when Mr. Wilson, of Aberdeen, was writing about his mode of working—speaking of the optics of photography—he says, when on this point, he always "fights shy" of such men as Dallmeyer and Ross. So, when I find such an one as Mr. Bovey putting me right in the matter of printing and toning, I, too, feel inclined to fight shy and to "cave in," as an American would say. I may add, however, that my gold solution is acid certainly, but in so small a degree as to require no restrainer in addition to the acetate put in the bath in the first instance. In fact, a little boiling water poured over the chloride of gold before insertion in the bath quite destroys the little acid there is. I do not know that I can call my bath a very strong one, as the amount of deposit which I re-dissolve in the winter is very small indeed. For your remarks upon strong toning baths I am much obliged.

Lately we have here had very uncertain weather, no steadiness whatever with the light, on some days altering in a few seconds very greatly. For the last year or two I have been in the habit of reckoning the length of my exposure by the brilliancy of the light in the dark room coming through the yellow glass. I have noticed very often that on a dull day, or part of a dull day, the light was far more brilliant in the dark room than was to be expected, and at other times that a bright day brings but a very modified light through the yellow glass. When I regulate my exposures by the strength of this light I generally find myself correct: I am thus inclined to think that there is some connection between the actinism of the light and its brilliancy after coming through yellow glass. Have you thought of such a thing?—Yours very sincerely,
KENT.

WASHING CRYSTALS FOR CLEANING PLATES, AND TONING BATH.

DEAR SIR,—If your correspondent "A Novico" will try any grocer's, he will be able to get "Manby's Washing Crystals" (not the soap powder) at a very cheap rate, either by the dozen packets or the box. It is very superior to nitric acid or anything else for the purpose, as it does not destroy the clothes of the person using it; and an errand boy may clean any old varnished negatives, so that the glass will do equal to new. If one packet is placed on the plates in a pan, and about a gallon of boiling water poured on them, and let soak for about five or ten minutes, they may be rubbed with a little whiting, and placed in another pan of water for a time, and swilled a few times, they are then fit for the final polishing, and may be used without any fear of a dirty plate or of injuring the bath. I have used it for six or seven years with the greatest success. It is simple, quick, and cleanly in use.

The proportion of gold should have been three grains in my letter of May 26th. I always add to the toning solution poured in the dish for use half a grain (of a solution, a tube to fifteen drachms of water) for each sheet of paper I have to tone, and always find it sufficient. It can either be used warm or cold, and never gives a mealy print if used as soon as made up. This bath, I think, is in accordance with the opinion of Mr. Bovey, expressed in his letter of last week. "Keut" is wrong, in my idea, in reckoning gold as an uncertain item, as I consider no more gold should be added than is wanted for toning. If a tube is added at the making of a bath, it does not tone so quick as when put in at the time of using; neither does it last so long. I know I am writing in opposition to some of the old theories, but let some of your readers try it in practice, and I am sure they will bear me out in what I state. If they will try it, and give their experience in your columns (with your permission), they will oblige yours, &c., J. R. GRIFFITHS.
15, Wind Street, Swansea, June 13th, 1871.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

The final meeting of the present session of this Society was held in the Architectural Gallery on the evening of Tuesday, the 13th inst., Mr. J. GLAISHER, F.R.S., in the chair.

The minutes of a previous meeting were read and confirmed.

The CHAIRMAN, in referring to the meeting as the last of the session, asked members to use exertion and influence in securing a good exhibition for the opening of the next session in November.

Mr. PRITCHARD, officiating as secretary in the absence of Mr. Spiller, said he had, been requested by that gentleman to urge upon members the especial importance of sending in contributions as early as possible, and complying with the conditions which would be duly issued, in order to secure satisfactory hanging and cataloguing, as it was quite impossible to do justice to the exhibition if pictures came in at the last moment before its opening.

Dr. MANN read a paper on the astronomical photographs of Mr. Rutherford, of New York, and exhibited some fine examples, consisting of enlargements, about twenty inches in diameter, of the moon; a negative of the sun's disc, and also a fine print of the totality of the late eclipse, showing the corona very perfectly, by Mr. A. Brothers. The paper will appear in our next, no discussion arising.

The CHAIRMAN, in proposing a vote of thanks, commented on the exceeding perfection of the definition and detail, and the great value to science of such perfect photographic registration.

COL. STUART WORTLEY read a paper on the collodio-bromide process, and exhibited some fine examples in illustration. Mr. Black, of Edinburgh, Liout. de W. Abney, and some others joined in the discussion which followed. The details of the discussion will appear in our next in conjunction with the paper itself. The report would be of comparatively little interest apart from the paper, hence we delay its publication until next week.

After some votes of thanks, and some further exhortations to activity and punctuality in regard to the next exhibition, the proceedings terminated.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The last meeting of this Society for the present session was held on the evening of Thursday, the 8th inst., the Rev. F. F. STATHAM, M.A., &c., president, occupying the chair.

After the reading of the minutes of the previous meeting, Mr. Howard exhibited several stereoscopic transparencies printed-in in carbon.

The CHAIRMAN then made some observations on the photographs in the International Exhibition, which he had that day visited. The first thing that struck him was the sad paucity of foreign photographs compared with the display in previous exhibitions of a similar kind, which was doubtless to be accounted for by the war. Another thing that had struck him was that some of the photographs were placed too high to be seen, and others too low to be appreciated. Had the artists in these cases known what fate had been in reserve for their works they would have hesitated before sending them for exhibition. He thought that the works of Luckhardt and some other Vienna artists were very fine, and well worthy of close attention.

Mr. PRICE considered that in portraiture the foreigners beat us entirely.

Mr. FOXLEE asked if that superiority were not owing to the elaborate retouching of their negatives.

The CHAIRMAN said that, so far as he could see, there had been a very great amount of work put on the negatives of the portraits he had eulogised.

Mr. CROUGHTON, in reply to an observation made by a member, said that in the matter of having a negative properly retouched, there was this difference between the English and the foreign artists that had been named—the latter spared no expense to have their negatives properly worked upon by competent artists, whereas those of our country grudged such expense.

Mr. HOWARD considered that if a real work of art were wanted, retouching was in most cases necessary, and in all cases legitimate.

Mr. FOXLEE held that photographic societies should urge the desirableness of producing the best class of work from negatives which were not indebted to the handwork of an artist for their effects.

Mr. T. SEBASTIAN DAVIS claimed for the works of English artists in the Exhibition a superiority in respect of tone over those of their foreign competitors.

Mr. J. T. TAYLOR dissented from Mr. Davis's statement. Admitting fully the beauty and richness of the tones in Mr. Blanchard's portraits, it could not be denied that among the works of the English exhibitors there was every variety of tone, from brick red to iuky blackness; while in the works of the foreigners there was no such diversity. He considered the tones of Fritz Luckhardt's pictures as leaving nothing to be desired.

On the subject of composition pictures,

Mr. DAVIS thought that in the pictures of Mr. Hubbard there was a degree of completeness that one had rarely seen previously. They conveyed the idea of a unity of design and execution in a way that he had not seen in the works of other artists.

Mr. CROUGHTON agreed with Mr. Davis, but thought that the composition pictures of Mr. Diston, although crowded owing to their small size, were also worthy of high praise.

On the subject of facilities for practising out-door photography by the wet collodion process,

Mr. SEBASTIAN DAVIS would remark, as a preliminary consideration to the estimation of the various appliances invented to facilitate the manipulation of the wet collodion process in landscape photography, that he thought the production of the finished picture on the spot an essential requirement. Although the impedimenta of wet plate photography might be greatly lessened by reserving the processes of fixing and intensification to a subsequent period, yet, as far as our present knowledge extends, this could only be done with an expenditure of great additional labour, skill, and risk, ending in less satisfactory results. The admirably ingenious and promising apparatus introduced to the Society by Mr. Edwards on a recent occasion unfortunately involved the subsequent operations under consideration, although the improvement now introduced, of the easy removal of the division of the developing tray, might possibly obviate the absolute necessity. The great charm of wet plate landscape photography consisted in the consciousness of being in possession of a permanent record of an admired

scene, capable of re-awakening feelings of pleasure in our own and other minds at any future period before leaving the spot. If the satisfaction of this pleasure of certain possession were dispensed with, prepared plate photography rivalled in interest and convenience any incomplete wet plate negative process. In connection with these remarks, he introduced a box tent designed by himself, selected from others that he had contrived at different times for special purposes, as being the most practically useful, simple, and inexpensive for ordinary field work. The chemicals, plate-holder, developing glasses, &c., were all arranged within it in the most convenient places for use, and were as immediately accessible as if placed in an ordinary box. When closed, the apparatus had the appearance of a simple trunk, about two feet in length by about ten inches in depth and width. The lid and front were hinged to the body of the case and had the dark covering attached to their margins. When opened and fixed, the tent was completed by placing a red of wood to which the upper edge of the covering was fixed upon the extremities of two inclined supports, which slipped into fastenings on either side of the box. The whole was so arranged that it could be fixed upon the tripod stand before any part was opened, and the binding screw was retained in its place by a strip of elastic, which allowed it to recede when placed on a level surface. In front of the operator was arranged the place of the bath, with a suitable cover, and a hinged yellow glass window to admit white light and air to the interior as required; the latter was externally protected by a shutter of wood. Mr. Davis felt confident that he could safely recommend the whole arrangement as an aid to successful landscape photography, on the grounds of general utility, simplicity, and practical efficiency.

The tent and its appointments were minutely examined by the members.

Mr. PRICE exhibited an adaptation to his camera [already described in former reports of this Society's meetings] of Edwards's patent graphogenic apparatus. He had tried it in his garden with successful results, and would soon try it in a more distant and extended field of action.

Mr. HUNTER presented for examination some negatives taken by him with the graphogenic apparatus. He had found that pictures developed in the field, when taken home, fixed, and intensified, were invariably fogged in the shadows by the latter operation. He explained that he fixed the negatives with hyposulphite of soda.

Mr. HENDERSON said that with respect to converting the image into iodide of silver, after fixing, by an application of a solution of iodine, as Mr. Hunter had done, it was a common, but one the less a bad, plan to only partially convert the deposited silver. It was in his opinion a bad method to use hyposulphite of soda for fixing. The better way was to employ cyanide of potassium, after which, if the image were intensified with citric and pyrogallie acid, there would be no stains or fogging such as that in the negatives before them.

Mr. PRICE also considered that the fogging was owing to the hyposulphite of soda used in fixing. The use of cyanide of potassium would prove a complete remedy.

Mr. FOXLEE said that by exposing the plate rather less, and forcing more with iron, followed by cyanide fixing, there would be no difficulty in getting dense and clear pictures by intensifying with citric and pyrogallie acids.

Mr. HOWARD gave it as his experience that, when working in the field, hyposulphite of soda should be entirely discarded, and cyanide of potassium used instead.

After some further observations the subject dropped.

It was announced that, in accordance with the usual practice during the recess, the president would be glad to see at his residence as many of the members as could visit him on the evening of Saturday, the 29th proximo. And it was further resolved that the usual outdoor meeting of the Society should be held on the last Thursday (the 24th of August), particulars of which would be duly announced.

The meetings for the winter session will be resumed the second Thursday of October.

Talk in the Studio.

COPYRIGHT IN ROYAL PORTRAITS.—As in the discussion as to the photographer's copyright in portraits of public men taken by the photographer for his own purposes, it has been by some

assumed that it was very improbable that any intention existed in the sitters to allow the photographer to acquire any exclusive rights in relation to the picture, it may be worth while to mention that, in relation to the recent photographs taken by Mr. Hawke of H.R.H. the Duke of Edinburgh, his elephant, and the crew of the *Galatea*, the Duke had himself signed the memorandum of agreement vesting the copyright in Mr. Hawke. In our view, the photograph having been taken by Mr. Hawke for his own purposes, the copyright belonged to him without a special assignment; but the fact that to make assurance doubly sure the Duke signed the memorandum in question, illustrates the fact that sitters in such case have not necessarily any indisposition to confer exclusive rights upon the photographer.

THE AUTOTYPE MANUAL.—A new edition, revised and enlarged, of Mr. J. R. Johnson's manual of the process of carbou printing, as practised at the Autotype Company's establishment, has just been issued. Those of our readers who have been awaiting its reprinting will be glad to learn that the work is now ready.

PHOTOGRAPHY AND WOOD ENGRAVING.—The last issued part of the *Family Friend* (Partridge and Co.) contains a fine example of wood engraving from a photograph in the portrait of the late Dr. Davis, who died whilst aiding the sufferers in the late continental war. The photograph is by Mr. G. W. Wilson. The engraving is excellent. The work is well illustrated throughout by very admirable examples of wood engraving.

PHOTOGRAPHY IN PARIS.—The keen commercial spirit of Frenchmen is beginning to resume its sway in Paris, and the photographers are making capital out of late disasters, and are, it is to be hoped, recompensing themselves for past losses. The Paris correspondent of the *Echo* says:—"Photographs of the ruins from all points of view cram the shop windows by the side of the portraits of the principal Communists. One indignant shopkeeper labels his wares with epithets, such as 'the infamous Pyat,' 'the bleedthirsty Raoult,' 'the fiend Delescluze.' These portraits attract general attention, especially among foreigners, whose only regret is they couldn't see these gentlemen alive. However, I daresay Tussaud will do all she can do to satisfy this want." The correspondent of the *Daily News* casts doubt on the genuineness of these portraits, and says, speaking of the ingenious devices for making shells useful, if not ornamental, which may be seen in Paris, "There is at least one comfort for the inexperienced in purchasing this kind of relic, namely, that they run little danger of having a supposititious article palmed off on them, seeing that the supply of shells, burst and unburst, in Paris just now, is likely to be sufficient for almost any possible demand. As much cannot be said of the photographs of the leaders of the Commune, which daily attract crowds of passers-by in all the print shops. Many of these portraits are purely fanciful, to my certain knowledge. There is one of Dombrowski in particular, which is not even a bad likeness of the late 'General of the Army of Paris.' In to-day's papers I see a letter from a lawyer, complaining that his photograph is being sold as that of a prominent member of the Commune, and that he by no means appreciates the joke, as he is in continual fear of arrest in consequence." The fear of falling a victim to the assiduity of the photographer is not confined, apparently, to the lawyer spoken of, for "An Old Parisian" from whose experience among the ruins we last week quoted, says, in a subsequent letter in the *Telegraph*:—"I have before referred to going out to see ruins—I distinctly state I decline going out to see any more. I have supped full of them, and they have given me indigestion. I have just been nearly caught by a photographer; but I turned a deaf ear, or rather a closed eye, on that black devil and all his works."

TELL-TALE PHOTOGRAPHS.—*Galignani* says that "photographs exist of the ruins of the Vendeme Column in which the portraits of National Guards, in triumphal attitudes, are plainly recognisable. Each of those heads, after having been enlarged, has now been placed in the hands of the detective police. A series of views of the principal barricades also were published just before the troops entered Paris, and several hundred portraits of insurgents are given. The likeesses will in many cases lead to the condemnation of the men so depicted." The *Echo* says: "Should our own police think it necessary to provide against a similar contingency, the remarkable taste exhibited

by all English agitators against the Government for indulging in demonstrations and 'marching in their thousands' will give many opportunities for the execution of instantaneous portraits of all the 'disaffected element' of our population."

EMPTY BOTTLES.—One of the most accumulating nuisances in the operating room of the photographer—one at once irritating and difficult to deal with—consists in the gradual acquisition of all kinds of bottles—too good to throw away, but useless for any purpose to which the photographer can apply them. We have pleasure in suggesting a remedy in our advertisement columns. Messrs. Franklin and Strango announced their readiness to purchase these bottles, and we feel sure that many of our readers will thank us for calling attention to the chance afforded them.

To Correspondents.

AN OLD SUBSCRIBER.—There are several methods of intensifying a varnished negative. You may remove the varnish by means of alcohol, and intensify with an alcoholic solution of pyro and silver; but the simplest method is one we introduced some years ago. It consists in first moistening the varnished film with alcohol, and then applying a six-grain solution of iodine in alcohol. The change will be chiefly observable in colour. The iodine combining with the silver will form iodide of silver. The stage at which to stop the operations is when the deposit forming the image assumes an olive tint: throw off the iodine solution at once, and rinse with alcohol, then dry. If necessary, you can again varnish, but that is not usually necessary. If the application be continued too long, the colour will become yellow and transparent; but if stopped at the olive stage, the colour is very nunctinic, and considerable accession of intensity is gained.

J. C. SMITH.—No serious injury will result from the addition of common carbonate of soda to your nitrate bath. The bicarbonate is better, because the ordinary carbonate is at times impure. If sunning fail to restore it, try permanganate of potash or boiling down. 2. Baths made with all examples of nitrate of silver, whether specially recrystallized or not, require iodizing in the usual way. 3. The addition of acid to a nitrate bath retards the rapid reduction of silver in developing, and so prevents fog.

W. L. DAY.—As a rule, each especial form of residue requires its own flux. For chloride of silver twice its weight of mixed carbonates of potash and soda will answer well; for sulphide of silver nitrate of potash answers better. The addition of sulphate of iron to gold solutions throws down the gold in a black metallic powder.

N. D. P., OF S. X. O.—We do not know of any one who purchases landscape negatives. If they possess special interest for publication, you may try Marion and Co., or the Stereoscopic Company, or Mr. Frith of Reigate.

M. PRICE.—Dr. Van Monckhoven, in enlarging by means of artificial light with new apparatus, used a development process. You will find details on page 613 of our volume for 1869. He has not published any especial formula for printing enlargements direct, either by artificial light or sunlight. A highly salted paper, say twenty grains of chloride of ammonium to an ounce of albumen solution; a strong silver bath, about 100 grains to the ounce, will give the highest degree of sensitiveness; and fuming will still further aid; but the albumenized papers in the market, with a fifty or sixty grain silver bath, and fuming, will answer well.

MID KENT.—The loss of the high surface obtained by enamelling is due to the moisture of the paste softening the gelatine employed, and this, of course, removes the beautiful surface which was practically a casting from the surface of the plate glass. To avoid this it is necessary to mount with as little moisture as possible. If you use good glue, not too hot, this will aid you. If you mount with india-rubber, or with the alcoholic solution of gelatine which is in the market, the result will be better still. Some contrive to mount the print whilst still on the glass by cutting it before enamelling, pasting the back, pressing down the card, and leaving it to dry on the glass, and then removing. This is efficient, but somewhat troublesome. If any of our readers know a better plan than any of these, we shall be glad if they will communicate it.

C. W. H.—The yellow colour of old engravings may be to some extent removed by immersing them in, or sponging with, a dilute solution of chloride of lime. In the case of varnished prints there is no remedy that we know. You will find a good formula for intensifying in such cases on page 243 of our last.

H. W. TAUNT.—We did not receive the letter to which you refer as having been sent last week. We shall be glad to learn further particulars.

A LITTLE PHOTOGRAPHER, referring to the approaching out-door season, would like some further hints on the best places in South Wales, in addition to those with which our esteemed correspondent, Mr. Gulliver, favoured us last year, and would be glad of hints as to where to go in North Wales. Can any of our correspondents oblige us with suggestions on the subject?

J. CUNNINGTON.—Our correspondent holds some strong views as to acquisition of copyright in photographic portraits; we believe his views to be utterly erroneous and misleading. Whilst lay opinions, unfortunately, settle nothing, we cannot with propriety aid in the promulgation of his views without pointing out what we believe to be their error, and our space is too limited to permit of continued iteration and contradiction, which can lead to nothing decisive. As the subject is important, we repeat here, once for all, his reiterated opinions on the subject, and once more briefly point out what we conceive to be his error. He says:—"With reference to our argument respecting what constitutes a good consideration in the maker of a commissioned work of art, it is evident that your view is more contracted than mine. Your opinion appears to be that a money payment, or something equivalent thereto, is necessary to constitute a good consideration. I take a much wider view, and find sometimes a good consideration in a mere motive. It should be remembered that judges will construe the words 'good consideration' in their legal sense, and not in the same way that a layman might do. You are right in saying that my argument is based upon the supposition that the copyright of a portrait always vests in the sitter. That argument I am prepared to maintain generally, and I think I can show that it is in accordance with law and common sense." We do not hold it to be either in accordance with the law or common sense, and until a legal decision is obtained, the question remains. He proceeds: "That such was the intention of the legislature no one who has read the speeches of Lord Overstone upon copyright can doubt. When the Bill left the Commons it provided that in all cases the copyright should vest in the author. The Lords annulled it by vesting the copyright of works commissioned for a good consideration in the patron." The opinions expressed in speeches by the Lords decide nothing. Our correspondent further proceeds: "I will now point out the good consideration which would be present in certain cases. Suppose a person were to go into a friend's studio, and his friend were to say, 'Sit down, and I will take your portrait for you,' which is done. According to your theory the copyright would vest in the photographer; according to mine it would vest in the sitter. The portrait was taken on his behalf, and the good consideration would be found in the friendship subsisting between sitter and artist. If the copyright vested in the artist he might publish or distribute copies of the portrait, perhaps, to the sitter's annoyance, and the sitter would have no remedy; but if the copyright vested, as I maintain, in the sitter, then, if the artist issued copies without permission, he would be amenable to the common law, although not to the law of copyright, as the copies, though illegal, would not be piracies." Our correspondent's illustration and argument do not represent our position, and prove nothing. He represents the photographer as saying to his friend, "Sit down, and I will take your portrait for you." This at once makes the service and its result belong to the sitter, as it is expressly done for him. "Another illustration: suppose a photographer were to take a negative of a child for his own purposes, the copyright would vest in the parent or natural guardian of the child, and the good consideration would be found in the motives of the child consenting to sit, and in the trouble of sitting. If, however, human beings were chattels, and a photographer a sort of Giant Blunderbore who could seize his victim, place him in front of the camera, and order him to keep quiet while he took his portrait, then, I admit, copyright might vest in the photographer. But it is not so; a portrait can only be taken by consent of the sitter, whereby privity of contract is created, and the work becomes a commission; the good consideration will be found in the sitting, and in the motives which cause the work to be executed." If the sitter obtain the benefit of the sitting by acquiring the copyright, how can his sitting possibly constitute a "consideration" of any value to the photographer? If the sitter be engaged and paid as a model by the photographer, or if he give his time and permission for the purposes of the photographer, it is clear that the copyright belongs to the artist in accordance with the terms of the Act.

CHARLES WEBSTER.—In building a ridge-roof studio, with liberty to select any position, you cannot possibly do better than place it with the ends east and west, and obtain your principal light, both side and top, from the north. You need not have any light in the south side unless you like, although a small portion, to be kept covered in direct sunlight, may sometimes be useful. Such a studio will permit you to work from both ends with equal convenience.

Several Correspondents in our next.

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15, Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.

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TWO TINTS IN LARGE PORTRAITS.

THE day of elaborate retouching on the print itself is almost over in this country. The art was, for some inexplicable reason, rarely practised here with much skill. When retouching was in vogue, it was not unusual to see prints in which all trace of the photograph was obliterated by a surface of pigment, often opaque body colour, applied in very elaborate hatching and stippling, with much labour and patience, and occasionally with some mechanical skill, but with generally an entire absence of either appreciation of art truth or photographic truth. Some trace of the likeness might remain, but a stiff, hard, mechanical effect was the general result. It was not uncommon to see prints produced on the Continent, both in France and Germany, in which a considerable amount of retouching was present, but in which it was applied with such skill and judgment that at first glance the picture did not suggest retouching at all. In the first class of retouched prints to which we have referred, the artist commenced his work with a specific aim to cover up the photograph, all the draperies even being worked over. In the second class the artist began his work evidently with an intention to cover up nothing which was already good, but to supplement the shortcomings of the picture, or enhance its beauties, with the pencil as unobtrusively as possible. The latter result, it is unnecessary to say, was always most effective and pleasing, as well as most true.

The practice of retouching on the negative has banished almost entirely the practice of elaborate retouching on the print; but amongst the contributions to the present International Exhibition are some examples of this work which are well worthy of attention for certain novel and, in some degree, attractive qualities. The especial feature of the retouching consists in the presence of two tints, to give a tender, flesh-like warmth in the face. We find this style adopted in the work of two artists only, both Austrians. Herr Rabending, of Vienna, contributes some portrait busts full life-size, in which this style is adopted; and Herr A. Perlmutter has a series of prints varying from twelve inches by ten to about twenty by sixteen, the latter being heads of about half life-size. In all cases the photography appears to be very perfect, generally inclining to an excess of brilliancy bordering on hardness. It is quite relieved from hardness, however, by skilful retouching, and in the face the hatching in monochrome is blended with hatching in a delicate carmine tint, giving a pleasant but subdued glow to the cheeks and lips, the latter receiving, of course, the greater share of colour. This is done with such unobtrusive delicacy that it is quite possible for the ordinary observer to look at the print without discovering the actual presence of colour; that something gave the pictures a very pleasing effect would be apparent to every one; but

only a close observer would discover any deviation from the monochrome. Of course, every one is familiar with the large crayon heads by Sir Thomas Lawrence and others, in which a tint of red is effectually hatched near the cheek and lips; but though this style is analogous to the chalk effect, it is much more subtle and delicate, and, therefore, more in keeping with the general photographic gradation.

We have often expressed a conviction that life size, or very large photographic portraits, were rarely satisfactory without some treatment by the pencil of the artist. In the first place, the shortcomings of photography become painfully apparent in pictures of such a scale; and, in the next place, however perfect the photography, there is a certain emptiness, a ghastly void, in large photographic heads, which is very unsatisfactory. The imitation of life without the presence of life produces something of the same discomfort which many persons experience in examining wax-work figures. When skilfully retouched by the artist, such pictures enter the region of art, and acquire a new interest, and beauties of a special kind. Where it is necessary to resort to retouching to remove defects or make improvements in the picture, the style we have mentioned may in many instances be adopted with advantage. The examples will be found, very badly hung, unfortunately, in the corridor behind the capital refreshment department of Messrs. Spiers and Poud, in the southern portion of the Exhibition.

THE COLLODIO-BROMIDE PROCESS.

If the recommendation of an experienced and skilful photographer, familiar with many dry processes, constitute a satisfactory ground of confidence in the collodio-bromide process, dry-plate workers may, without much scruple, proceed to work the process described by Col. Stuart Wortley on another page. Commendation, to be of value, should come from a person whose standard of excellence is a high one. We remember some time ago a dry process which was praised highly by its inventor as the most rapid and most excellent yet introduced, and a pamphlet was devoted to its details. One of the most able dry-plate photographers we know, deeply interested in the description, after some trouble obtained a sight of the author's negatives, upon which he based his encomiums, and in stating to us his opinion of them, remarked, "there was not a negative that did not require an exposure of ten times as long as it had received, and not one which was worth stooping to pick out of the streets." In accepting the recommendation of Col. Wortley, photographers have the assurance of a high standard of excellence in his exhibited works, and hence the value of his judgment.

The special feature of the process as worked by Col. Wortley, varying from the formulæ of Mr. Carey Lea, who, by long experiment and valuable modification, has practically made the process his own, consists in the use of a large proportion of free nitrate of silver. Mr. Carey Lea uses excess of silver to the extent of two or three grains per ounce, so far as the bromide is concerned; but this amount, or the greater proportion of it, is, in Col. Wortley's view, "absorbed by the aqua regia, and by the collodion itself." We do not quite follow his meaning here. We can see, of course, that a portion of the free nitrate will be converted into chloride of silver by the hydrochloric acid in the aqua regia, and it is possible that with some samples of collodion a portion of silver enters into combination; but beyond this no absorption of silver can take place. It is probable, however, that the addition of two drops of aqua regia, the whole of the silver in two or three drops of free nitrate may be converted into chloride of silver.

Col. Wortley suggests an analogy between this process and the Wothlytype process, in which nitrate of silver and nitrate of uranium are dissolved in collodion. In the latter process a sufficient amount of free silver was an imperative condition of success: when the full proportion of free silver was present, the image printed of a rich velvety green colour, toned well, and gave a fine picture. In this point we can offer confirmation; not only did we find this the case in the Wothlytype process, but we have always found it in the collodio-chloride process. Vigour has been largely dependent on the presence of a sufficient proportion of free nitrate, and the green tint of the image has generally been a good indication of satisfactory conditions. Col. Wortley finds this fact obtain in the collodio-bromide process. With insufficient free nitrate the image is of a brown tint; and although the brown tint is not an objection *per se*, it is so in Col. Wortley's experience, as a certain indication of imperfect conditions. When the deposit is of a fine green tint, not only is the negative of the best quality, but the sensitiveness is greatest, and all other conditions most satisfactory.

We need not repeat the details of the formulæ, as the whole is very clearly stated in Col. Wortley's paper. It will be seen that the operations are of the simplest possible character, an especial feature here being the slight amount of washing the plate requires. After the plate is coated, it is simply washed under a tap or in a dish for a few moments, then immersed for a minute in the dish of preservative solution, and is ready for drying. The preparation is scarcely any more trouble than that of a wet plate; and if, as both Col. Wortley and Mr. Black affirm, the prepared plate exposed before drying possess a higher degree of sensitiveness than what is termed the ordinary wet process, it may be found valuable in the studio operations of the portraitist. The chief trouble consists in the preparation of the collodio-bromide, a special pyroxyline being of great importance. Should the process, however, acquire popularity, this will not long remain a difficulty, as the materials, of good quality, ready for mixing, will, doubtless, be supplied by respectable manufacturers. We hope shortly to state our own experiences, and shall be glad to learn those of our readers. To those who may experience difficulty or failure, we commend the courteous offer of Col. Wortley to give advice and information. If any of our readers need this aid, and will send us their difficulties clearly and concisely stated, we shall have pleasure in placing them in due train for solution.

ON THE IMPORTANCE OF COSTUME IN PORTRAIT PHOTOGRAPHY.

BY HANS HARTMANN.*

THE very great influence that good and suitable clothing exercises upon the whole aspect of a man is, perhaps, no-

* Photographische Mittheilungen.

where more apparent than in a photographic portrait. Painters and sculptors enjoy so many privileges and liberties in the exercise of their craft, that with them the subduing of an unpleasant effect, or removal of an injurious defect, is easily accomplished. With the photographer, however, who is constrained within more narrow boundaries of truth and reality, it is very different, and with him the arrangement of costume should be the object of the greatest solicitude. For it is only when he can judge rapidly and well in this matter that he can make sure of success, a result easily destroyed by vacillation and delay. For these reasons study of the toilet becomes a matter of exceeding importance, and photographers must learn what it is that imparts beauty to the one, or ugliness to the other. Even when one is aware of the presence of certain defects and ungracefulness in the attire of a model, a quick and certain knowledge is necessary to effect the removal of the eyesore rapidly and effectually.

The first object of clothing is, of course, to protect the body from the effects of climate, and this object should be coupled with that of ornament, in the same way as buildings, vessels, weapons, are made ornamental as well as useful. If we observe the exterior form of clothing, we shall find that there are two different and distinct points in connection therewith to be considered, some portions of the attire fitting close to the body, while other parts hang loosely over the limbs. The principal portions of the garments which fit closely round the body must, so to speak, set well to the figure, or, in other words, they must adapt themselves to the shape of the model, so that the form of the latter may be perceived through the drapery. From their very nature, these portions of the clothing can only be placed where there is no very marked bending of the body or limbs, as, for instance, round a lady's waist, and upon the shoulders and thighs and legs of a man. If the stuff forming the garment is of a soft, elastic nature, it will answer the purpose better than if made of thick, stiff materials. Any folds and creases formed in these parts must be smoothed out, as they interfere with the form of the model; or, if this is impossible, the defects must be subsequently removed by retouching. On the shoulders of ladies' dresses this tendency to crease is often observable; from the hollow of the shoulder there is apt to cross over the breast from each side a deep, and in silk dresses a particularly hard, furrow, which destroys, to a great extent, the rounding of the breast.

To the same reasons is due the ugliness exhibited by the thick winter cloaks, the material of which is so thick that not a single part of the muscular development is apparent under the guise, and, moreover, is so stiff that no agreeable folds are formed by the garment. Such habiliments as these can, at the most, be employed to cover a thin man, or to give more fullness to a model of extraordinary height. Quite as ugly in effect as folds in the waist of a lady are those around the upper part of a gentleman's leg, produced by continual preservation in the pockets of large and unsuitable objects. Purses, keys, and such like paraphernalia should be laid on one side during the depiction of the model, and if any folds still remain, these must afterwards be removed by retouching. While using the brush, care should be taken to improve the outline of the garment by removal of any angular folds and ugly prominences, so that the muscular form of the model coincides with the attire. Such prominences are to be found as the knees, elbows, and shoulders, and always impart an angular appearance to the sitter; the outline of the shoulders of a well and beautifully developed female model may be entirely spoiled by those sharp folds around the shoulder blades which are so often met with, and the whole effect of the original's grace and beauty is thus irretrievably lost.

What has been said in respect to folds and creases in

gentlemen's garments also holds good, and with more effect, regarding uniforms, in which the proper fitting of the tunic over the breast is of great importance. In military men, where bodily perfection falls so heavily in the balance, a great deal depends upon the filling out of the whole muscular system; and nothing is so calculated to show off a fine figure as a well-fitting and tasteful uniform, which enhances to so great degree the beauty of the human form.

A point in reference to the waist of ladies is of importance, namely, the length of the same. It will be remembered that many years ago, at the time of the great revolution in France, the ladies' waists were so shortened that they were situated immediately below the arm-pits. Later the waists became lengthened, and fashion went to the other extreme, and long thin waists were the order of the day, so exaggerated as to be both injurious to health and unsightly to the eye. At the present day, when fashion is more moderate, and the practical is blended with the ornamental, the waists of our ladies are rightly and reasonably situated. Should a lady sitter have a too long or too short bust, she may, by judicious selection of costume, easily disguise this defect. A loose-fitting garment, with a broad coloured girdle, will make the bust appear shorter, because it is thus rendered broader; on the contrary, the modern tight-fitting jackets which ladies sometimes wear, and which fit closely round the waist without belt or girdle, have the effect of lengthening out and continuing, as it were, the bust. This is one of the instances in which instinct, as a rule, directs a lady upon the right path; but she will not be the less thankful to receive from a competent photographer such hints and rules as will guide her to understand matters of this nature, which are not always particularly clear to the uninitiated.

(To be continued.)

PHOTOGRAPHY IN COLOURS.

BY DR. SCHULTZ SELLAG.*

IN the communication which I have just published† upon the action of light upon the haloid salts of silver, I showed how various colours or tints may be produced upon a prepared film of iodide of silver by subjecting the same to light of different intensity, or for different periods. By suitable exposure under a somewhat hard negative it is possible to obtain upon a golden tinted iodide of silver collodion film some beautiful coloured effects of metal reliefs and the like, in yellow, brown, purple, lilac, green, blue, and greyish white. The colours thus obtained appear particularly beautiful if the plate is inspected in the dark room through a small window.

If an iodide of silver collodion film is not allowed to dry too much before immersion in the silver bath, a film of iodide of silver is obtained, which by reflected light also exhibits magnificent colours, but which are modified by the continued action of the light.

The colours are caused by the light acting upon the iodide of silver, and converting it into a pulverent form, the rays being reflected through the film. That the iodide of silver remains unchanged during the process is proved by the fact that these colours may also be produced without any action of light whatever. But although the various colours in the white light are obtained by varying the intensity and time of exposure, and the tints are secured by the action of light, we have not actually to do with true photography in colours, in which red is depicted by red, blue by blue, &c.

It is very likely that the colours in the photochromic processes of Becquerel and Poitevin were produced upon the browned chloride of silver exactly in the same way as with iodide of silver; at any rate, I have observed in

chloride and bromide of silver the same mechanical separation of the particles as in an iodide film. According to the theory of Dr. Zeuner, upon the processes of Becquerel and Poitevin, there takes place a chemical decomposition and formation of films of silver at half light-wave distances. In the unequally formed film of precipitated chloride of silver it appears to me that the formation of uniform light rays is scarcely likely; furthermore, in the Poitevin process, at any rate, a chemical reduction is not to be anticipated, as that investigator particularly requires the presence of oxidizing substances. It is much more likely that an oxidation and bleaching of the browned chloride of silver takes place in the presence of chromic acid and chloride of potassium, as Poitevin has pointed out. If, however, no chemical reaction takes place, then there only remains the mechanical change, the presence of which I have proved in my previous communication.

The reproduction of colours *cau*, in like manner, be secured by means of the iodide of silver film, which, in fact, is sensitive only in the indigo-blue and violet of the spectrum, and which we must act upon, therefore, with violet light, of different intensity, passed through red, green, and blue glass. According to the strength and continuance of the exposure, colours are obtained with iodide of silver (by transmitted light) pretty well in the same order and manner as with the Becquerel process; that is to say, they are best produced when not too intense a light is employed, for with a strong light the final greyish white tint is in both cases obtained. The iodide film generally shows only single colours, at times one of the series in sufficient distinctness before it changes to a greyish white; it is the same with the photochromic chloride of silver film, which, according to the manner in which it is prepared, yields only single colours, as shown by Niepce de St. Victor. If the photochromic film can reproduce other colours besides those of the same nature, it may be inferred that the apparent specific action of the colours is, in fact, only the intensity-action of the violet spectrum contained in the colours, which exerts an influence solely upon chloride of silver. The creation of like colours is but accidental, and the problem of photochromy cannot, therefore, by any means be considered solved.

NOTES ON THE COLLODIO-BROMIDE PROCESS.

BY COLONEL STUART WORTLEY.*

HAVING for some considerable time past been working with the collodio-bromide process, and finding it to be of such value, and so infinitely superior in many points to any dry process with which I am acquainted, I am glad to have the opportunity of laying before the Photographic Society the formulæ with which I work, and by the use of which the working of this process is reduced to an absolute certainty. You are aware that the workers with the collodio-bromide process may be said to be divided into two sections—those who believe that there should be an excess of bromide in the collodion, and those who, on the contrary, hold that there should be an excess of silver present in the emulsion. Mr. George Dawson, of King's College, whose interesting articles on the process you have, no doubt, read, may be considered the champion of those who work with an excess of bromide in the collodion; while Mr. Carey Lea, whose articles are equally interesting, professes to use an excess of silver in the emulsion.

Now the question of the excess or not of silver in collodion is one which has the greatest interest for me. After I had become thoroughly acquainted with the *Wothlytype* process, I found that its good working depended mainly upon the fact of its having a considerable excess of nitrate of silver in the collodion; and when the collodio-bromide process of Messrs. Bolton and Sayce first attracted my attention in 1866, I at once found that by using nitrate of silver

* *Photographisches Mittheilungen.*

† This article is in type, and will appear in our next.—ED.

* Read before the Photographic Society of London, June 13.

in excess great sensitiveness was obtained; but there was a difficulty in controlling the action, owing to its tendency to produce fogged negatives. Owing to the advantages I had expected to accrue from the presence of a minute quantity of chloride in the bromized collodion, I added a small quantity of hydrochloric acid to the collodion, in order to produce a chloride by its union with the nitrate of silver. I found that this addition enabled me to work with an excess of nitrate of silver, and to obtain clear pictures; but as I had at that time no use for dry plates my experiments were laid aside, and not recommenced till the late interesting discussion on the merits and formulæ of the collodio-bromide process drew my attention to it again. I may say now that not only do I think Mr. Carey Lea perfectly correct in demanding an excess of nitrate of silver in the collodion, but I go far beyond him, inasmuch as my principle of working is to have a very large quantity of free nitrate of silver in the collodion at the time of its use, and I much doubt whether in the formulæ he has published he has any free nitrate at all in his emulsion. My experiments lead me to think he has not; and as the amount of silver absorbed by the aqua regia, and by the collodion itself, is considerable, it is possible that Mr. Carey Lea may have underrated their power. You can test this by adding aqua regia to plain collodion, and sensitizing with silver; you get a more or less creamy emulsion, and can get pictures with it; and my experiments lead me to think the acid absorbs more silver than has yet been suspected. If there is any one here who ever worked with the Wothlytype process, he will not fail to remember that when the process worked satisfactorily, and the prints printed and toned as they should do, the shadows were of a deep, rich, velvety-green colour; and that, on the contrary, when things were not in a satisfactory state, the prints were invariably of a red or brown colour in the shadows. That depended entirely, as I have said before, on the amount of free nitrate of silver present.

Now it is a remarkable thing that it is exactly the same in the collodio-bromide process: so long as the bromide is at all in excess in the collodion, various tints of orange, red, and brown form the colour of the negatives. The instant you dispel this excess of bromide the negative commences to take an appreciable tinge of green; and when worked as I shall presently point out to you—namely, with the collodion, so to speak, saturated with free nitrate—the negative is of a clear, unmistakable olive-green; and no matter what the preservative used, or what the kind of development, the green tinge invariably appears in the negative. These negatives will show this clearly. A has great excess of bromide; B less again; and C less still; while in D, where we have slight excess of silver, you see the green colour appearing. In E we have a large amount of free nitrate, and a delicate green negative is the result. Now, so certain am I of the correctness of these facts, that if any one would prepare one or more collodio-bromide negatives, I would engage to tell, without the possibility of mistake, the proportions of bromide and nitrate of silver that were present in the collodion.

You will, I doubt not, remember the interesting paper read by Mr. H. Cooper, jun., at the January meeting of this Society, and may possibly have been surprised to find him, in connection with the process for which he was laying down rules for its certain working, make the following remarkable statement:—"The colour of the image varies so much (often from bright orange to pale-green or brown) that it is sometimes a good plan to print a trial proof before varnishing." Now, if this were the case, it would do away with much of the value of the process; but I can thoroughly clear up the point by proving to you that where the colour was orange or brown there was an excess of bromide in the collodion, and where the image was green there was an excess of silver. Now I know Mr. Cooper to be one of the most reliable and careful experimentalists that we have, and I am convinced that he was working his proportions in so extremely delicate a manner that the most trifling

variations even in the method of sensitizing the collodion with the silver, or in the washing of the plates, were sufficient to alter his results. To show how easily this can be done, I will quote a fact in my experience, and which any body can prove for himself: if I take a bromized collodion which contains the right quantity of bromide, and sensitize it with a great excess of nitrate of silver, the mingling proceeds perfectly by adding the alcohol containing the silver by small quantities at a time; but if I have an excess of bromide in the collodion, no matter how infinitesimal, there is a certain point in the addition of the silver when, for an instant, a curdy appearance may come in the collodion: a good shake instantly does away with this abnormal appearance; but an effect has been produced in the collodion that affects the sensitiveness of the plates. As, then, so trifling a variation in the proportion of bromide produces so marked an effect, that, of course, explains the variation in colour which Mr. Cooper speaks of in his negatives.

I will now place before you the exact formulæ by which the working of the collodio-bromide process is reduced to an absolute and unquestionable certainty. I may here take the opportunity of pointing out how deeply indebted we all are to Mr. Carey Lea for the investigations he has made into the conditions of this process, and for the liberal manner in which he has made public the result of his numerous experiments. I had never been able to work this process to my entire satisfaction (because my conditions of proper working are a collodion saturated with free nitrate) till Mr. Carey Lea made the valuable suggestion of adding nitro-hydrochloric acid, brought to an orange-colour by means of warmth, as an acidifier to the collodion.

Good negatives can be obtained by the use of hydrochloric acid only; but the mixed acids, as proposed by Mr. Carey Lea, are of great advantage to the certain working of the process. It is advisable to manufacture the collodion with a pyroxyline prepared at high temperature, very soluble, and giving an intense image; and the sample that I use is one prepared by Messrs. Hlopkin and Williams, and which answers perfectly. My plain collodion is made according to the following formula:—

Pure sulphuric ether	...	...	1 ounce
Alcohol of sp. gr. 805	...	...	1 "
Pyroxyline	...	...	20 grains

When required for use I thin this collodion in the proportion of five parts of collodion to six parts of ether, this proportion varying slightly according to the size of the plate to be used. I find it convenient to keep all the chemicals I use in this process dissolved (for convenience of calculation) in the proportion of 1 drachm to 1 ounce; we will, therefore, make up the following solutions:—

C.—Anhydrous bromide of cadmium (136)	...	...	1 drachm
Alcohol	...	...	1 ounce
Solution will be facilitated if the alcohol is heated.			
P.—Pyrogallie acid	...	...	1 drachm
Alcohol	...	...	1 ounce
A.—Carbonate of ammonia	...	...	1 drachm
Water...	...	...	1 ounce
B.—Bromide of ammonium	...	...	1 drachm
Water...	...	...	1 ounce
G.—Gum arabic	...	...	1 drachm
Sugar...	...	...	1 "
Water...	...	...	1 ounce
Carbolic acid...	...	...	1 drop

The above may all be considered standard permanent solutions. Take of the above plain collodion $2\frac{1}{2}$ ounces; thin it with $3\frac{1}{4}$ ounces of ether, and add $4\frac{1}{2}$ drachms of the standard solution, C, of bromide of cadmium.

The acidifying solution is now made as follows:—

Hydrochloric acid	...	...	2 parts
Nitric acid	...	...	1 part

Place the bottle of mixed acids in hot water till the solution turns of rich orange-colour, renewing the hot water if

the first quantity does not produce the effect; to the above quantity of collodion add 9 minims of the mixed acids; this mixed acid, you must remember, has a powerful effect on the collodion, increasing greatly its sensitiveness up to a certain point, and then overbalancing itself and producing the opposite result. Now, when experimenting with one or two ounces of collodion, it is difficult to measure one or two minims of acid in a measuring-glass; I therefore, in my own experiments, use a dropping-bottle, from which the minim is, of course, invariably dropped of the same size, and I therefore know exactly how much I am using. To show how greatly the measuring of minims varies, I may mention that 80 minims, as dropped from my dropping-bottle, measure 120 minims in the small graduated glass which I use for my bromizing solution. It will, therefore, be necessary for any one working this process to add at the rate of about three minims of acid to two ounces of collodion; and experience will soon show whether the proportion should be increased or diminished. The acidified bromized collodion is now ready at any time for the addition of the silver. To sensitize one ounce of the above collodion I carefully measure out sixteen grains of powdered nitrate of silver, convey it to the bottom of a test-tube, and pour on it three drachms of alcohol (825). The solution of the silver is obtained by boiling the alcohol over a spirit-lamp, and is then added, little by little, to the ounce of collodion, shaking it thoroughly as the addition is made. The sensitive collodion must now be rigidly excluded from light; and I do not find it material as to when the plates are prepared with it, as I have had equally good plates two hours after the collodion has been sensitized, and after a lapse of thirty-six hours; I have not, however, very carefully gone into this part of the subject, as the method I find convenient is to sensitize the collodion at night, and prepare the plates in the morning, or to reverse this proceeding. No filtering is necessary. The plates are prepared for the reception of the collodion by being washed, and put away dry; when they are required for use, a mixture of an egg beaten up in a pint of water, with about a drachm of ammonia and a few drops of carbolic acid, is applied to their surface by means of a broad camel-hair brush, and they are put in a rack to dry. Now, I must ask you to give attention to the extreme simplicity with which these plates are prepared, and to note how different is the method of preparing the excess of free nitrate plates from the tedious washing required when an excess of bromide is used in the collodion; and I may here call attention to the fact that it is quite possible that the variable results observed in the plates prepared with the excess of bromide may be in a great measure due to the uncertainty of the time for which the plate has been washed. The sensitive collodion is now poured upon the plate in the ordinary way, and as soon as set is washed under a tap, or rinsed in a pan of water, till the greasy appearance produced by the ether and alcohol is washed off, and the water runs smoothly off the film. It is now drained for a few seconds, and then immersed in a preservative bath composed of the solution G 1 ounce, water 5 ounces, and the solution P 20 minims.

My favourite preservative is, and always has been, since Mr. Hardwich proposed it in 1859, alkaline gum only; but I think I find certain advantages in the addition of the pyrogallie acid. I consider this a most excellent preservative; and Mr. Carey Lea again deserves our thanks for its proposal. The pyrogallie acid has a great effect in giving clearness and density to the negative; and where an extremely sensitive and thin plate is required, the proportion of pyrogallie solution may with advantage be diminished. The plate should not remain too long in the preservative bath, a minute, on the average, being a sufficient immersion. A non-actinic backing is now run over the back of the plate, and it is put up to dry. Contrast this with the wearisome washing required for all other dry plates, and you must admit that we gain one conspicuous advantage to start with. These plates are absolutely certain, and their sensi-

tiveness is equal, if not superior, to wet collodion: but the term "wet collodion" has a somewhat elastic significance, and the wet process varies greatly in its sensitiveness according to the way it is worked. I will remark, however, that, comparing the collodio-bromide plates with two standard developers that have lately been proposed for use, the one of pyrogallie acid and sulphate of copper, by Mr. Lorenz, and the other by Mr. Edwards, for use with his ingenious graphogenic apparatus, they are more sensitive than wet negatives thus produced in the proportion of at least three to two, besides giving a more delicate and finely graduated negative. These plates are developed by the ordinary method of alkaline development: a drachm of the solution P is mixed with ten ounces of water (distilled water is not necessary), and placed in a dish; the details of the negative immediately begin to appear; and the addition of five minims of the solution B, mixed with twenty-five minims of the solution A, will bring out the picture, more of the solution A being added to produce enough density in the negative.

Fix in—

Hypo	...	...	...	...	3 drachms
Water	...	...	...	...	1 pint

I have not found in my own practice any intensifying with silver necessary; but this would, doubtless, vary with the quality of pyroxyline used in the collodion.

I may now briefly sum up the process as follows:—A collodion containing about five and half grains of bromide of cadmium to the ounce, and two average minims of nitro-hydrochloric acid to each ounce, is sensitized by the addition of sixteen grains of nitrate of silver dissolved in three drachms of alcohol; this collodion is poured on a glass, washed under a tap, or rinsed in a dish for a few moments, laid for a minute or so in a pan of preservative solution, backed, and put up to dry. Its sensitiveness is equal to average wet collodion, superior to it when the latter is worked with old and more or less insensitive developers; and it is absolutely certain in its production of good negatives, while the keeping qualities of the plates are undoubted; also the deposit is very fine, and the negative most suitable for enlargement. There is no waste whatever in its working, as the residue of the collodion after a batch of plates have been sensitized has a certain quantity of plain bromized collodion added to it to desensitize it; and to sensitize it again, the proper proportion of nitrate of silver is added to any portion when again required for use. I hope the editors of the photographic papers, and other workers, will try this process as proposed by me with this liberal excess of free nitrate, and they cannot fail to find everything that I have advanced borne out to a certainty in their own experience; and if at any time any questions should arise on which workers of the process should require information or advice, I shall be most happy to give it through the medium of either of the journals. I may say that it is in no way necessary for the collodion to be put away to ripen: in my own practice I bromize my plain collodion as I want it, and sensitize at once; and my confidence in the process is shown in the fact that I am going to Paris to-morrow night for a hurried visit, and hope to bring back thence a few interesting negatives. The collodion I shall use was made up from the pyroxyline four days ago; the portion required, bromized and acidified this morning, will be sensitized when I go home to-night, and the plates prepared to-morrow morning; and this must be conceded to be as good a test of a practical working process as we can possibly have. I should have liked to have brought down a large series of my experimental negatives, and have gone still more thoroughly into the subject with you; but as there was already another paper to be read this evening I was fearful of trespassing too much on your time.

MR. LEWIS RUTHERFORD'S PHOTOGRAPHS OF THE SUN AND FIXED STARS.

BY ROBERT JAMES MANN, M.D., F.R.A.S.*

At the meeting of the Royal Astronomical Society, held on Friday, the 14th of April, surpassingly beautiful photographs of the Solar Disk and of the Pleiades were exhibited by Lewis M. Rutherford, Esq., of New York, the gentleman who has been so interestingly known to the world of science, among other things, by his beautiful photographs of the lines of the solar spectrum. Through the kind permission of Mr. Rutherford, and of the Council of the Royal Astronomical Society, these photographs are now also brought under the notice of the Photographic Society.

In presenting these photographs to the Royal Astronomical Society, Mr. Rutherford explained that his success in their production was mainly due to the photographic excellence of his telescopes—the object-glasses of his instruments having been corrected for photographic work, with peculiar care, under a plan of his own. The instruments, in their photographic equipment, are simply valueless for all ordinary purposes of astronomical vision, but they are as nearly perfect as may be for astronomical photography.

The object-glasses of all astronomical telescopes are carefully corrected, both for chromatic dispersion and for spherical aberration. But these corrections require a very material rediscussion and modification when the object-glasses are fitted to perform the highest class of photographic work. This further modification, in the case of his instruments, Mr. Rutherford has mainly accomplished by a very elaborate and refined process of step by step observation of imperfections in the photographic image, and step by step correction of the imperfections as they are noted in the successive observations.

The photographic corrections for chromatic dispersion have been mainly effected by a peculiar application of the prism. By photographing the spectrum again and again, and by correcting the form of the constituent lenses of the object-glass until the image of the spectrum falls exactly into a proper and predetermined range, the figure of best photographic performance in this particular—or, in other words, the simultaneous and coincident photographic action of the different coloured rays—is finally secured.

The most important and the most difficult part of the spherical-aberration correction of an object-glass, for ordinary astronomical vision, is that which is required in consequence of irregularity of figure in the lenses. The only plan that has hitherto been found to be available for effecting this correction has been the somewhat tedious and laborious one of repeated observation of the image of a fixed star formed in the telescope, to ascertain to what extent, after each renewed application, the local remedy has been efficacious. This experimental plan has been extended by Mr. Rutherford to photographic correction by photographing the image of either Sirius or Vega (the only fixed stars that have been found to have sufficient actinic vigour to answer for the purpose) again and again, any irregularity of figure that is detected in each particular image of the series having its own particular correction applied to the lens before the next photograph of the series is taken on the sensitive plate. If the process for the correction of this irregularity of figure is found to be tedious and laborious for simple astronomical vision, when the telescope can be pointed to any fixed star that happens to be conveniently situated, and the eye immediately applied to examine the form of the image, it will be readily understood that the process must become infinitely more troublesome and more tedious when only one of two particular stars can be used, and when the telescope has to be carried, by delicately adjusted clock-work, during a comparatively lengthened exposure for each photographic image that is secured upon a sensitive plate to indicate the particular treatment that is called for in that stage of the correction.

* Read before the London Photographic Society, June 13.

The photograph of the sun's disk presented to the Royal Astronomical Society is of exquisitely fine definition. The faculae are clearly rendered; and a large group of dark spots are shown in their minutest detail, with the incipient bridging across one of them in the process of approaching disruption.

The photograph of the Pleiades, however, is a much more remarkable object. This photograph was made with a telescope of thirteen inches aperture, with six minutes' exposure, the telescope being, of course, carried during the time of exposure by a very carefully adjusted clock, so as to keep the image of each individual star upon exactly the same point of the sensitive plate during the whole period of exposure; and this service has been so marvellously well performed by the clock that the image of each star is a clear round dot, without the slightest trace of elongation in the direction of the star's movement. There are about thirty stars registered in the photograph, clustered round Alcyone, the chief of the group; and it is very remarkable that the several stars are actually of different magnitudes from Alcyone, which looks very much like a period of punctuation in printer's diamond type, to vanishing dots that can only be discerned by the help of a lens.

The magnitude of the stellar disk is most probably a result of diffraction; but however this may be, there certainly it is. The stars on the photographic plate are not mathematical points, but little dots of different sizes, just according to the notion that the eye forms of them in looking on the group with an aperture of large diameter. There is one very ingenious piece of precautionary contrivance connected with the photographic impression of these stars well worthy of note. Mr. Rutherford's main object, in the labour he has been incurring in perfecting his process of celestial photography, is to afford a ready means of providing registers of the exact positions of the fixed stars which shall be altogether free from the possible errors of personal observation. Now it unfortunately happens that photography has an awkward and mischievous trick of making stars on its own account, which may readily be confounded with the photographic impressions of the proper host of heaven. Any speck of accidental imperfection in a photograph may be readily taken for the image of a star. It therefore becomes a matter of paramount necessity, when groups of fixed stars are to be dealt with for astronomical purposes, that some method shall be devised whereby the portraits of the stars shall be distinguished from the photographic accidents and star-ghosts. This object Mr. Rutherford has most efficiently and satisfactorily accomplished by the simple expedient of covering the object-glass of the telescope, and disconnecting the instrument from the clock movement for a few seconds, after the six minutes' exposure necessary to give the image of a fixed star, and then again attaching the telescope to the clock and giving a second exposure of six minutes. The immediate effect of this is that every true star image is closely followed by its double—thus . . . ; in other words, every star photographically portrayed is a double star; and this process of reduplication is obviously one which photographic imperfection, or accident, is quite unable to simulate.

When once the photographic images of a group of fixed stars are impressed upon a plate, the measurement of their relative distances becomes a mere matter of mechanical operation. But in Mr. Rutherford's proceeding the relative positions of the stars is also fixed by securing upon the photographic plate a tracing of the direction in which some star moves across the plate, when the telescope is not carried by the clock-movements—that is, a tracing of a line coinciding with a circle of declination. Bright stars, such as Sirius and Vega, leave a distinct trail as they travel across the plate. In the case of fainter stars the same result is secured by giving a second exposure of the star after a brief interval. A line then drawn from the first image of the star to its second image gives the exact direction of the declination parallel. In the photograph of the Pleiades it will be

seen that Alcyone has thus been made to leave a position-impression nearly half way across the plate from the re-duplicated image first registered, and that these successive images have been subsequently connected, for the purposes of reference and measurements, by a visible pencil line.

As the photographic focus of a telescope does not correspond with the focus of the visible rays, it is, of course, impracticable, when taking the impressions of fixed stars, to arrange the proper focus by looking at the image. Mr. Rutherford meets this difficulty by photographing a suitable double star several times in succession, with the focus arranged at small amounts of distance on each side of the supposed correct position. The position of best definition is then recorded as the proper photographic focus for celestial distances; and this position can be restored for future occasions by reference to a micrometric screw with a divided head. A compensation for the difference of the position of exact focus in different degrees of temperature is also provided by the attachment of a thermometer to the telescope-tube, which is made of iron—the precise amount of correction necessary on each occasion being settled by reference to a table giving the accepted coefficient of the expansion of wrought iron under definite increments of heat.

Three large telescopes have already had their object-glasses corrected for photographic work under this plan of Mr. Rutherford's. The first on which the correction was made was composed simply of two disks of glass constructed under the ordinary arrangements of the achromatic combination, and had an effective aperture of eleven inches and a quarter. A second, with an effective aperture of thirteen inches, is now in use in Mr. Rutherford's observatory; and this large instrument has ingeniously been fitted to be used for ordinary astronomical vision, or for photographic work, by applying the photographic correction through the instrumentality of a separate constituent. The object-glass has such a figure that it is visually perfect, until it is thrown into photographic equipment by the addition to it of a third lens of glass. It is primarily composed of the ordinary double lens, one of flint, and one of crown glass. The photographic correction is all concentrated in and applied by a third meniscus lens of flint glass, which is added to other two lenses when the telescope is to be used for photographic work, and which is taken away when the instrument is to be employed in the more usual work of visual observation. This arrangement is found to be so convenient, and to act so admirably, that there is no doubt it is the form which will henceforth be adopted in all important observatories, to enable their large equatorial instruments to be turned to account in occasional photographic work.

The third telescope which has been photographically corrected is of the same form of construction, and has an effective aperture of six inches and a half. This instrument was made for the United States Government Eclipse Expedition, and was used by the Expedition in Catania in December last.

The optical adjustments in the two telescopes in which the photographic corrections have been applied by Mr. Henry G. Fitz, of Peconic, New York, an able young optician, who is spoken of by Mr. Rutherford in terms of very high praise.

[Dr. Mann exhibited in connection with his paper two large photographs of the moon, another of the sun's disk, and a photograph of the last total eclipse, showing the corona and red prominences.]

the pictures of the moon, the eclipse of the sun, the self-registering thermometers and barometers, &c. But not less to be appreciated are the applications to which the art may be put; and, among these, one of the most important is certainly its adaptability for the purpose of an accurate photometer. With all branches of physics is the progress of photometric research bound up, for a clear statement of facts and figures invariably carries with it conviction to the mind. Do these coincide with the laws with which we are acquainted, we then know for certain that we have no phantom to deal with, but with a tangible and reliable result.

In order now to become accurately conversant with light measurements or photometry, and to prevent the possibility of any seemingly conflicting statements, we must bear in mind the multifold action of light rays. The earliest observation made in regard to the action of light was its optic-physiological influence upon the retina of the eye, as likewise the fact that light rays not only illuminate, but also warm; the observation that the illuminating power and warmth exerted by light rays do not always bear the same relation to one another belongs, however, to a more recent period; and of still later date is our knowledge of the chemical action of light rays. In this manner, as in almost all branches of science, the expressions we use were started during the time of our imperfect knowledge of the subject, and the meaning of many words have, for this reason, either been enlarged or narrowed. Let us agree to employ the word *phos* (light), as also its combinations, in a broad sense, distinguishing, however, between optical, thermal, and chemical action of the rays.

If we look at the spectrum of a light ray, whether the same emanates from a natural source (as the sun), or from an artificial one (as the Drummond lime-light, for instance)—that is to say, if we decompose the light in its components of different refrangibility—we shall find that certain rays appear especially bright to the eye, while others have a particular warming influence, and others, again, exert an exceptionally powerful chemical action. While the most brilliant rays are those of moderate refrangibility, which lie in the yellow portion of the spectrum, we find the greatest amount of heat evolved by the least refrangible rays in the outer red, and colour beyond; while, again, the most refrangible rays exhibit the greatest degree of chemical activity, so that it is the violet and ultra-violet portions of the spectrum that are the most actinic. This alone shows us how impossible it is for us, by a comparison of the optical action of two sources of light—or, as we might term it, the illuminating power—to decide upon the nature and extent of their thermal and chemical action.

The progression of science has, therefore, made us acquainted with a threefold photometry or description of light measurement, each branch of which requires special instruments and special scientific investigation. The extent of confusion which existed some years back in reference to this matter may be best gathered from the fact that, until recently, valuable treatises upon light were wont to put forward, among optical photometers for comparing the power of illumination, the Leslie photometer. This instrument is, however, simply a differential thermometer, contrived for photometric purposes, which serves exclusively for comparing thermal action, and belongs, therefore, especially to the set of apparatus for testing the heat of light rays, as yet by no means in a perfect and reliable condition.

Each of the three kinds of photometry have their special advantages and difficulties. While the chemical action depends upon the sensitiveness of certain substances, and is, therefore, different in chlorine compounds to what it is in iodine combinations, and in silver salts to what it is in those of iron, we have, with optical photometry, only to do with the retina of the eye—with, therefore, to a certain

ON THE MEASUREMENT OF CHEMICAL RAYS.

BY PROF. E. REITLINGER.*

NUMEROUS and valuable have been the services rendered by photography to the natural sciences, as exemplified by

* *Photographische Correspondenz.*

extent, only one description of sensitive plate. Of course, there is a difference between the power of different eyes; but, inasmuch as we have only to do with normal—or, in other words, healthy—eyes, and as, moreover, our better photometers are so arranged that the eye, in measuring, has only to discriminate between the illumination afforded by two different lights, individuality is a matter of but little moment. At the same time, difference of colour offers, in this instance, very great, and, indeed, almost insurmountable, difficulties when it is desired, for instance, to institute an accurate comparison between the illuminating powers of various coloured lights. This last named stumbling-block is removed, both in thermal and chemical photometry, for we may experiment in both these branches without having recourse to decomposition of the light by means of the spectrum. Again, the thermal and chemical actions are found to differ when the absorbing or chemically sensitive films vary in their nature.

Thus, in reality, there are as many different photometers of actinic rays as there are substances sensitive to light. Fortunately, however, it happens that, at any rate in many cases, parallel conclusions may be drawn. While it is totally impossible, from the optical action of two sources of light, to form a reliable estimate of their chemical value or action, it is perfectly allowable to make deductions, sufficient for practical purposes, from the action of a light upon chlorine and hydrogen, forming hydrochloric acid, as also upon a photographic paper covered with chloride of silver. This has, indeed, recently been confirmed by Messrs. Roscoe and Thorpe.

After these preliminary observations I will now proceed to describe briefly an excellent photometer, which is well suited for use in the prosecution of scientific investigations, and which has, in truth, already received practical application.

It had often been contemplated to base a photometer capable of measuring the activity of chemical rays upon the photo-chemical reaction that takes place upon chlorine and hydrogen when hydrochloric acid is formed. The action upon chlorine water, for instance, it was sought to utilize; but, as Bunsen and Roscoe have shown in the first part of their well known photo-chemical researches, such a course was impracticable, as the hydrochloric acid formed by the chemical rays exercised some influence upon any further change that takes place. At the same time, these great chemists were both of opinion that the idea suggested by Draper, that equal volumes of chlorine and hydrogen, which are converted into hydrochloric acid by exposure to light, would afford an efficient means of measuring light intensity, and was capable of being applied to the purpose if the process were sufficiently elaborated. Draper had already conceived the possibility of estimating the activity of light rays by calculating the diminution in the volume of the gas which takes place when the formation of hydrochloric acid takes place; but as he established no statical equivalent between the absorbed and non-absorbed gases by the light, he was incapable of actually furnishing a photometer.

This, however, Bunsen and Roscoe have succeeded in doing after very considerable labour. A mixture of equal parts, accurately measured, of chlorine and hydrogen gave them, by means of electrolysis, dilute hydrochloric acid. A particular arrangement allowed them to maintain the pressure to a constant degree during the streaming through of the gases. After the gas had passed for a period of several days, they established the required statical equivalent between absorbed and non-absorbed gases. Any further ingress could then be prevented by means of a stop-cock, and the chemical light intensity could be estimated by examining the diminution in the volume of the solarized gases. They stated that the basis of all photometry—viz., that diminution of the intensity of the rays takes place in proportion with the square of the distance—was here observable. I must content myself with

this brief description of Bunsen and Roscoe's photometer (of which a detailed account is given in *Poggendorff's Annalen*) and pass on, without allusion to its further photo-chemical and meteorological employment.

The difficulty of taking meteorological observations by the aid of an instrument of this nature caused MM. Bunsen and Roscoe to proceed with another idea which had been suggested as a promising plan for ascertaining light intensity. On the publication of photography to the world, the first experiments made in the matter by Jordan, Hunt, Herschel, Claudet, and others were to endeavour to measure the strength of light by its tendency to blacken sensitive paper. In this way of proceeding it is of the greatest importance to have a film of always uniform sensitiveness, and then the intensity of the light will be found by comparing the depth of the blackening action with the period of exposure.

In regard to the last point, Bunsen and Roscoe confirm, to a certain extent, the experiences of Malaguti and Hankel, that uniform products of light intensity and periods of solarization determine equal amounts of blackening upon chloride of silver paper of uniform sensitiveness. In prosecuting these observations, the physiological quality of the eye was made use of, so that a reliable judgment might be formed of the intensity of the blackening, in the same way as the eye discriminates between the brilliancy of various lights. As unit of measurement was taken that light intensity which, within the space of a second, yielded a certain amount of blackening, this being designated normal blackening; the time, given in seconds, then expresses the intensity of the light by the measure decided upon. The periods of time are calculated by means of pendulum apparatus specially prepared for the purpose. As regards the preparation of the normal sensitive paper, I must refer the reader again to *Poggendorff's Annalen*, where a full description of the same will be found. A simplification of the process was more recently described by Roscoe, that chemist suggesting the use of a slip of paper which is blackened and fixed in the pendulum apparatus.

In the practice of photography Swan has actually employed the process of Bunsen and Roscoe in a modified form, using the same for estimating the time of exposure in carbon printing.

For this and other photographic operations, Dr. Vogel designed his photometer for the measurement of actinic rays, as likewise, no doubt, for purposes of a scientific nature. He uses for his instrument a sensitive chromate paper which is durable for weeks, placing the same under a semi-transparent paper scale, the clearness of which gradually decreases from one end to the other; after exposure to light the intensity of the light is judged by means of the numbered scale showing the degree to which the browning action of the light has spread.

To the photometers of chemical rays must be numbered that of Becquerel's. Two iodized or otherwise sensitized silver plates are sheltered from the action of light, and immersed in water to which a little sulphuric acid has been added. If now the light rays are allowed to act upon one of the plates, while the other is removed altogether from the action of light, an electric current is set up, the strength of which is indicated by means of a delicate galvanometer. It is obvious that upon this reaction the construction of a photometer might be based, which, however, would not be simpler in its laws or application than the instrument already practically tested by MM. Bunsen and Roscoe.

If we contemplated photometry of chemical rays not only from the theoretical stand-point of natural science, where its importance is undoubtedly greatest, but also in its practical aspect, it cannot be disputed that photography is one of those branches of labour where its utility is very considerable; and yet, at the present moment, if we exclude the fact of its employment as a guide in carbon

printing above referred to, there is no use of the photometer made at the present moment by photographers in estimating the light with which they work, whether this is derived from an artificial or natural source, and exposure to the sun's action is generally governed solely by personal experience. In the estimation of the photographic value of artificial light, a subject which is every day becoming more important, photometry is urgently called for.

The photometer elaborated by Bunsen and Roscoe, which is based upon the formation and absorption of hydrochloric acid, and which, on account of its sensitiveness, would be very welcome, cannot, unfortunately, on account of the difficulties attending its manipulation, be used in general practice, and requires, indeed, the attention of a scientific physicist, when the estimation of artificial sources of light is to be determined. Of more easy application is the photometer consisting of the pendulum apparatus, in which the light intensity is shown by the blackening of sensitive paper, which has been elaborated by the same gentlemen; but this instrument, again, in order to be of service for estimating the value of artificial lights, requires to be improved, and its theoretical basis and practical application to be more definitely fixed. Suitable experiments in this direction, undertaken by physicists, would be calculated to spare the photographer much dearly bought experience, and for this reason I think photographers should give particular attention to the subject of measuring actinic rays.

Correspondence.

APPRENTICES AND ASSISTANTS.

DEAR SIR,—I read with much interest last week your excellent article on photographic apprentices and assistants.

I once discharged a young man for dishonorable conduct. I am not going to give a bit of private grievance, but make public some practices that are of very great interest, both to employers and operators. I give the case as an example, otherwise I should scarcely be believed—or, at least, should be blamed for exaggerating if I stated the truth.

I engaged an assistant operator; that is, one to take charge of the dark room under myself, and take a negative in my absence. The salary was thirty shillings a week. I received some very good specimens, and a very satisfactory character from a former employer. On his arrival I found him so utterly ignorant that he could not tell how many eight times fifteen were, nor did he know whether to spell "white" with or without the "h." Of course the idea of trusting him to mix the simplest solutions was out of the question. For every branch he was as deficient.

But now comes the part that is of interest to the profession generally. Although I was sending him away for not being, as I stated to him, worth twenty shillings instead of thirty shillings, he had the assurance to say that, as he had been with me, he would advertise for a situation as first-class operator, and ask for £2 a week, and asked me if I would give him a character. I said, when he got a situation, if his employer wrote to me, I would just give him such a character as he deserved. I learned from him that it is a common practice, when an employer wishes to get rid of an assistant, to give him a character better than he deserves.

And here I would give advice to a photographer's assistant as to going a month on trial; and it is, engage for what you are worth—or, rather, a little under—and your employer will find it to his interest to keep you, even at a little inconvenience, in the dull season. The practice and idea amongst photographers' assistants seems to be, to ask as much as possible, thinking they will be thought better, and be more likely to get a situation. Of course they will not keep it long; but my assistant coolly told me that he could save more in a few weeks with a high salary than in a much longer time with a low salary. In other businesses (for here I am treating of the business aspect of photography) it is considered a disgrace if an assistant does not keep a situation for a considerable time—

say six or twelve months at the very least. It would be well for photographers if this idea were entertained by assistants.

The remedy will be when properly trained apprentices are to be had; but in the meantime let employers look well to the references of assistants, and not accept written characters, but write to former employers; and let employers, for their own sakes and the interest of the profession, give such characters as their assistants deserve.

I would also give a few words of warning to albumenizers of paper. My assistant came to me one day with a bit of paper with two or three small albumen spots on it, each about the size of the head of a pin, and said the paper was very bad. I said it was not, unless there was much more wrong with it than what he showed me, and that I had used the paper by the same albumenizer for years, and there was no better in the market. Of course I stated that such a fault as he pointed out would occur with the most careful. He then stated that it was a common practice amongst employers of a certain class to keep those pieces until they had six or eight, and then send them to the parties from whence they received the paper, and say it was all the same, and get, perhaps, a quire or half quire for it.

It may be said by assistants, and by some employers, that assistants such as I have described are the exception; but I believe I state the truth when I say that a good assistant is the exception—I mean of that class who are entitled to from £1 5s to £2 a week. The reason is plain: a boy, probably little better than a City Arab, is engaged as message boy; after a time he is taken to assist in printing; then in operating; and after a time he comes out as an assistant. Now with drapers even a message boy will not get to more than light porter very rarely indeed he will get behind the counter. Should not photographers be much more careful in relation to their assistants?

I trust the agitation which has now commenced will end in much brighter days for photography.—I am, dear sir, yours truly,
D. WELCH.

Newry, Ireland, June 17th, 1871.

COPYRIGHT IN PORTRAITS.

SIR,—In closing our controversy upon what constitutes "a good consideration" in the case of a commissioned work of art, I will remind you that the opinions I have advanced are shared by others more competent to uphold them than myself. My attention was first drawn to the subject by the remarks of Mr. Commissioner Kerr, who held that the sitting was a good consideration.

[Our correspondent's citations of authority are not sufficiently accurate. We do not find that Mr. Commissioner Kerr held that sitting was a good consideration. In a case heard before him, Mr. Lewis urged this odd notion, and another not less absurd, namely, that the sitter was the "author" of a portrait as meant in the Act! But surely no one seriously cites such nonsense as of any weight.]

The argument is not now, for I find it in a report of a case heard before Mr. D'Eyncourt, respecting a rejected negative (see PHOTOGRAPHIC NEWS, vol. viii., pp. 483 and 496). Mr. Beard appeared for the complainant, and Mr. Lewis for the defendant. Mr. Beard argued that as his client had not been paid for the negative, the copyright vested in him. Mr. Lewis, on the part of the defendant, argued that the sitting was a good consideration, and vested the copyright in the sitter. The magistrate, without going into that question, decided that the money paid by the sitter was a consideration for all that was done by the photographer, and that, therefore, the copyright was in the sitter.

[Mr. Lewis in this case also repeated the same objection; but in course of the same defence he distinctly urged that no consideration passed for the portrait. Our correspondent cannot seriously quote as law what is said by an advocate in defence.]

There is another reason which you may not have considered, independent of copyright law, why the copyright would not vest in the artist, and that is, because the common law right of the sitter would prevent it. An artist might have the verbal consent of the sitter for the publication; but the right would not pass in that form, and the sitter might at any time revoke his consent.

[Our correspondent persistently argues as though his erroneous notion, that the copyright in all cases vests in the

sitter, were admitted as correct. If the copyright vests in the author, as the Act says it does (except in case of commission), there is no right to pass at all in any form. With equal right he might argue that a painter has no copyright in the picture he produces from the model who sits to him.]

A photographer might without permission enter upon a person's land and take a view of his house for the purposes of publication. In that case he would produce a work for his own benefit, and, as far as the copyright law is concerned, entitled to copyright. But the copyright would be barred by the common law right of the owner of the house, who, by exercising it, would suppress the photograph.

[The "common law right" of the owner of a house in a picture of it is, we imagine, purely hypothetical, and has certainly not been decided.]

When the Duke of Edinburgh made a written agreement with Mr. Hawke, he assigned his rights existing in respect of the portraits of himself and the elephant, which was all he had the power to do. As no assignment was made by the other sitters, any one of them may oblige Mr. Hawke to suppress his portrait, the consent implied by his sitting not being a legal assignment of his right.

[Everything depends upon circumstances, and cannot be decided at random.]

With reference to your foot notes to my last letter, I may observe that Mr. Knight's case occurred after Mrs. Conroy's, and in her matter Mr. Merriman considered his objections to the form of proceeding so formidable that it was not necessary to touch upon the copyright. Mr. Knight defended himself, and the magistrate refused to state a case; the matter will probably be removed into the Queen's Bench on the ground of excess of jurisdiction.

In cases where defendants have done legal wrong, compensation should be awarded to the complainants; but no punishment, in the legal sense of the word, should be inflicted upon the defendants. I maintain that magistrates have no power to punish, and that defendants are only liable in the same way they would be if actions were brought against them. The duty of the magistrate is, upon proof of the copyright and the infringement thereof, to assess the damage sustained by the complainant, and to amerce the defendant accordingly, and in default of payment to issue a distress warrant upon his goods. Should the defendant have no goods, there is no further remedy. The penalties awarded against Mrs. Conroy should not have exceeded eleven shillings for eleven cards, and in the case of Mr. Knight, one shilling.—I am sir, your obedient servant,
J. CUNNINGTON.

London, June 21st, 1871.

[The law inflicts a penalty with a view to prevent crime. The money loss involved in the breach of the law is not by any means the measure of the wrong done.—Ed.]

COPYRIGHT IN PORTRAITS.

SIR,—Mr. Cunningham refers me to a meagre, slipshod, and evidently incorrect report in Hansard, as his authority for stating that Sir Roundell Palmer holds the opinion that registration must precede the acquisition of copyright. This, in fact, is no authority whatever; and I think I may venture to say, from having had the honour of being in frequent communication with Sir Roundell Palmer while the Copyright Bill was in progress through the House, that he never uttered so preposterous an assertion as that which Mr. Cunningham so broadly and rocklessly attributes to him.

In spite of all the crazy phantoms that Mr. Cunningham raises wherewith to muddle himself and his non-legal readers, the law is really very simple and clear, if the Act be carefully and grammatically read. Its application may not always be easy, but this is a difficulty common to all law. Every case will depend on the ascertaining the precise facts, and not on hypothetical incidents and fanciful suppositions and motives affecting the parties concerned.

As for the "intentions of the Legislature," any artful clerk of six months' standing will inform Mr. Cunningham that they can only be arrived at from the words of the Act itself. Nothing that Lord This said in the one House, or Mr. That in the other, has any weight or authority whatever in the interpretation of it.

Mr. Cunningham, with a specious show of profound learning, writes very glibly of "common law rights," "valuable consideration," "privity of contract," and sprinkles his offusions with a variety of other legal phrases, but of their meaning

it is evident he has very hazy notions—I might say, is entirely ignorant—and thus he misleads himself as well as others whom he professes to enlighten. I fear that the pirates, with whom he professes so much sympathy, have not got a very reliable adviser.—I am, &c.,
A LAWYER.

PS. Before your correspondent "Enquirer" asks us to crack his nut, he must be good enough to let us have it; viz., tell us all the facts of the case. At present he has given none.

ASSISTANTS' REFERENCES.

SIR,—I shall feel obliged if you can allow space in your journal for the following, as a caution to photographers' assistants.

Having been engaged for a situation in a manufacturing town, the employer obtained my references, which were satisfactory. But at the last moment the employer wrote and broke off the engagement, and declines to give up my references. I find it objectionable to apply to my former employers a second time for a reference.

Perhaps some one might suggest a remedy for the evil, and oblige, sir, yours respectfully,
A PHOTOGRAPHER'S ASSISTANT.

KEEPING COLLODIO-BROMIDE OF SILVER.

DEAR SIR,—In the collodio-bromide process, after you have prepared your plates, and have a residue of sensitized collodion left, will any injurious result follow if the collodion is not desensitized, and how much collodion is it necessary to add to desensitize it?

I am anxious for opinions on this subject, as I kept some sensitized for a week, and am inclined to think that it was improved in consequence. I am, in a few days, going to prepare a plate with some collodion that has now been sensitized a month.

If collodion is not injured by being kept sensitized, it is certainly an advantage, and my last experiment certainly showed no deterioration, but rather an improvement, if anything.—Yours truly,
S. M.

Beckenham, June 21st, 1871.

CYANIDE OF POTASSIUM IN CONSUMPTION.

DEAR SIR,—Some years ago you may remember that I wrote to you stating that I had suffered from a cough for many years, and that since I commenced the practice of photography some years before, my cough was better. Also I mentioned that a medical friend of mine, who had been puzzled to know why my cough got better if photography was, as was generally supposed, unhealthy, attributed the improvement to the fumes of cyanide and ether, but chiefly the cyanide. On Saturday last I forwarded the paper to him for his opinion, and I now beg to enclose his letter in reply, as I believe its publication would be useful.—I am, dear sir, yours truly,
Newry, Ireland, June 20, 1871.

D. WELCH.

"Enniskillen Medical Hall, June 19, 1871.

"MY DEAR WELCH,—The account of the action of the cyanide of potassium in phthisis or consumption given in the paper you send me, and which I return by this post, quite tallies with my experience of the action of the salt on yourself, as you may remember I told you some years back. I was then quite satisfied that it was the chemical amongst all you were using which was doing you the good I observed. I have since observed its action in two similar cases, and the results have been the same.

"My time, as you know, has been, and is, so fully occupied that practically I have had no time to devote to the study or elucidation of these apparent effects, but from actual observation of them I am satisfied of their value. . . . But the wholesale use of this deadly salt there recommended would do far more mischievous than useful, and in the case of cuts, abrasions, &c., being exposed to its action, would, I am sure, be frequently attended with fatal results.—Yours faithfully,
"O. TERNDU."

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

WE resume the report of the meeting of this Society, held in the Architectural Gallery on the evening of Tuesday, the 13th inst., Mr. J. GLAISHER, F.R.S., in the chair.

Col. STUART WORTLEY, having read his paper on the collodio-bromide process (see p. 291),

Mr. BLACK (of Edinburgh), being called upon by the Chairman, said that, having had considerable experience with the collodio-bromide process, he could fully endorse the statements of Col. Wortley as to the certainty and simplicity of the process, and the excellence of its results. When he first took the process up last year, he was contemplating a tour in South America; and he was anxious to be in possession of a dry process upon which he could depend. He tried the various methods of preparing dry plates, and found so many difficulties and uncertainties, that he had almost made up his mind to abandon the idea; and as the wet process in such a journey was quite impracticable, he felt that he must give up the project of photography altogether. However, on seeing the collodio-bromide process detailed by Mr. Lea, he determined to try it. His first attempts were failures; he persevered for months, and still produced failures. The few successes amongst the failures gave him hope, and also led to a knowledge of the cause of the failures, which he found to be over-exposure; and on reducing his exposure from forty to ten seconds, he got good negatives. Then came other failures, which he traced to excess of care in preparing his plates: he washed them too much. This was remedied by reducing the washing from twenty or thirty minutes to five minutes, which he found quite sufficient. Since then he had had no failures. Much, however, depended on having proper collodion. To secure this, he tried a small sample first, and when he got a suitable one from any maker, laid in a stock. He thought his plan was more simple than that of Col. Wortley. He followed Mr. Lea's formula exactly—left the plate five minutes in the water and four minutes in the preservative, then dried. Exposure varied from five to fifteen seconds, but he thought the shorter time sufficient. He developed in the same way as Col. Wortley, and never intensified except with ammonia. He had used the cochineal preservative, but thought that employed by Col. Wortley would probably be better. The plates, if exposed wet, gave very fine negatives, and were exceedingly sensitive. He had tried Mr. Dawson's formula with excess of bromide, but agreed with Mr. Lea and Col. Wortley, that excess of nitrate of silver was best. Photographers were greatly indebted to Mr. Lea for his excellent process.

A conversational discussion between Mr. Black and Col. Wortley followed, in which the latter insisted that excess of nitrate of silver was not obtained in Mr. Lea's formula.

Lieut. ABBEY had tried the process both ways, and preferred excess of bromide. With Mr. Lea's formula he got fog, whilst with the other formula he got good negatives with an exposure of seven seconds. In some cases he got instantaneous results after keeping the plates a week.

A conversation as to the colour of the negatives followed, Col. Wortley again pointing out that the brown colour indicated excess of bromide, and the green colour excess of silver.

In answer to questions as to keeping qualities, Mr. BLACK had found them good up to six months after preparation. Col. Wortley had kept the plates four months after preparation, but not more than a week after exposure. He felt so much confidence in their excellence and sensitiveness, that he used the plates in regular studio practice instead of wet collodion.

The subject then dropped.

Talk in the Studio.

PHOTO-ZINCOGRAPHIC REPRODUCTION OF MAPS, &c.—A daily contemporary, under the heading of "Amiable Confidence," says:—"The following announcement will, however, surprise many people. Major-General James, the chief of the Ordnance Survey Department, says:—'I had the honour of explaining to Count Moltke the photo-zincographic process in our War Office, the process which probably enabled him to supply the officers in the German armies with an unlimited number of the best maps of France.' And why not also with an unlimited number of our Ordnance maps, for the use of Prussian officers, if the battle of Dorking is over to become a reality? Is this done out of sheer simplicity or thoughtless vanity, or from a desire to play the part of the frog in the fable? From whatever cause, it is to be hoped our amiable weakness will not be attended with similarly disastrous results." Our contemporary

need not fool much alarm, as the process of heliographic engraving in operation at the Royal Printing Office in Berlin produces finer results than the photo-zincographic process. Although Count Von Moltke, doubtless, examined the process with care, it is doubtful whether he obtained any information with which he was not previously familiar.

ROYAL CORNWALL POLYTECHNIC EXHIBITION.—Those of our readers interested in this exhibition will find an announcement regarding it in our advertising pages. It will open on the 11th of August, prizes being offered for photographs as heretofore.

RETOUCHING THE NEGATIVE.—A correspondent of our Philadelphia contemporary has some remarks on retouching worth attention in this country. He says:—"I have lately had an opportunity of examining a large quantity of cards from all parts of the country, and I see there exists an extensive 'retouching mania.' Old heads are not apt to run astray, but I believe the second and third-class artists are, many of them, very much injuring their work, and reputations too, by careless manipulations and their attempts to cover up defects by retouching. Nine-tenths of the retouching I see is most miserably done, and even some by first-class artists present harsh outlines, spotted and stroaky work, that is far from being either pretty or truthful representations of nature. I do a little retouching myself, but sparingly, and only to cover up bad work (except in cases of moths, freckles, &c., when I consider its aid invaluable); but I contend that by carefully posing and lighting a subject, then proper exposure and development, a negative can be made requiring little or no artist work upon it. I enclose you a few cards, made the past week, that are wholly unretouched, and I think you will bear me witness that for delicacy of tone, even gradation of light, roundness, and relief, they are very little surpassed by any retouched work; yet I am a backwoodsman of only a few years' experience, and lay no claims to artistic ability. Let the young beware."

EFFECTS OF LIGHT.—Some curious opinions have been lately expressed by General Pleasonton in a paper read before the Agricultural Society of Philadelphia. The writer, who is an intelligent observer, details certain experiments made by him on the effects of blue, or rather violet, light on both vegetable and animal organisms. With respect to animal organisations his views are certainly unexpected. He holds violet light to have powerful remedial influences on weak constitutions. He details experiments made on sick and weak animals which were cured by being kept in confined places, in which a certain portion of the colourless ordinary glass had been replaced with violet—one-seventh of violet being the proportion. "Without undertaking," says Mr. Carcy Lea, "to express any opinion, I may simply say that his remarks are accompanied by the details of quite a striking set of experiments. The subject seems to deserve further investigation."

NEW PLASTIC MATERIAL.—*Les Mondes* gives a method in which very pure and very finely-pulverized phosphate of lime (bone ash) is made into a paste by means of collodion. After having become dry, this substance becomes very hard, and assumes an excellent polish.

THE STEREOSCOPE IN FRANCE.—The following story is told of the first introduction of the stereoscope to the savans of France. The Abbé Moigno took the instrument to Arago, and tried to interest him in it; but Arago unluckily had a defect of vision that made him see double, so that in looking into the stereoscope he saw only a medley of four pictures. The Abbé then went to Savart, but he was quite as incapable of appreciating the thing, for he had but one eye. Becquerel was next visited, but he was nearly blind, and consequently cared but little for the new optical toy. The Abbé, not discouraged, called next upon Poulett, of the Conservatoire des Arts et Metiers. He was a good deal interested in the description of the apparatus, but, unfortunately, he squinted, and therefore could see nothing in it but a blurred mixture of images. Under the circumstances, the wonder is that the stereoscope ever got fairly into France; but at the beginning of the year 1870 its manufacture had certainly reached a monetary value there of £50,000 per annum.

THE ECLIPSE PHOTOGRAPHS.—Referring to Mr. Winstanley's letter in *Nature*, which we recently quoted, Mr. Brothers writes as follows:—"It would have given me much pleasure to have shown Mr. Winstanley the original negatives of the photographs of the late eclipse of the sun if he had called on me to see them, and by so doing he would have avoided falling into

the mistakes which his letter contains. At the time when the last photograph was taken the sky was perfectly clear, and unless Mr. Winstanley is in possession of exclusive information he has no right to assume that the American photograph was not taken under equally favourable conditions. Some of my photographs (which Mr. Winstanley cannot have seen) were taken through the edges of a cloud, the whole of which could be covered by the hand when held with the arm extended; and there was a perfectly cloudless sky near the sun, excepting towards the east. The imperfection in my No. 5 picture, which Mr. Winstanley's experienced eye detects, arose from the shaking of the telescope, caused by the high wind blowing at the time. Probably a single gust during the eight seconds while the plate was exposed caused the mischief, and this defect would never have been seen but for the extremely actinic power of the red prominences, which leave their impression on the sensitive plate instantaneously. The moon's limb is perfectly sharp, excepting where the red prominences appear. Let it be clearly understood that this 'indifferent definition' refers to the moon's limb only; the details of the corona do not appear to have suffered; after the gusts of wind, the telescope has returned to its proper position; and Mr. Winstanley must know from experience that the image of an object giving off feeble light would not be materially injured by a slight blow given to a firmly mounted camera. Mr. Winstanley says that 'the identity of the coronal rifts in the Cadiz and Syracuse photographs is not satisfactorily conclusive.' Assertion is not proof. In *Nature* of March 9 I gave evidence which appeared to me to be conclusive (I need not here refer to the opinions of others who are equally satisfied), and up to the present time no counter-evidence has been produced. It is not for me to defend the American photograph; in due time we shall know all about how that was produced. But has Mr. Winstanley failed to notice that the light on the moon's disc does not extend all round and all over it, as it would do if caused by our atmosphere? It is chiefly on the east and west sides. We may expect the explanation of this defect when we hear how it happens that the corona in this photograph is cut off, instead of extending as in all the other photographs. I fail altogether to see the connection between the solar corona and a lunar halo; the phenomena bear no resemblance to each other. The solar corona comes close up to the perfectly black disc of the moon. I never saw a lunar halo close up to the moon's limb. When seen through a mist or in a 'sky burdened with innumerable clouds,' there can be no doubt that the lunar surface is obscured by the moisture in our atmosphere."

CARE OF FILTERING PAPER.—There is a cause of annoyance in the "dark room" which I do not remember to have seen spoken of in the sea of photographic matter I have waded through. I perchance have missed it. I never heard any gentleman in the profession speak of it, and hundreds also I know give the matter little or no attention. It causes a number of failures and much vexation. Words cannot be too forcible in attempting to attract attention to it. It is a little thing—but, oh! the greatness of the little. I allude to the manner in which filtering paper is kept by photographers—many at least tossed into a dusty drawer or cupboard, without a thought regarding the injurious effect of dust, which from the said paper gets into the chemical solutions. It is the habit of many good operators to break open a package of filtering paper, and, after taking what they require for immediate use, put the remainder on the shelf, sometimes folded, sometimes wide open, and sheets separated. The dark-room may be clean, but dust cannot be avoided. The photographic atelier and laboratory is a dusty place during working hours. Dust is the greatest foe of the art. Let us consider of what the dust peculiar to photographers' manipulating rooms consists of. We can say organic matter, hyposulphite of soda, nitrate, sulphuret and oxide of silver, cyanide of potassium, sulphate of iron, oxide of iron, &c. in very fine particles. If a sheet of filtering paper be spread open, and laid on the shelf of some photographic dark-rooms, enough dust, generated by running in and out, will accumulate thereon in one day to fog a dozen baths, and you'll scarcely see it. The coarse surface of filtering paper collects dust very easily. If anything connected with our business requires to be "wrapped in lavender," it is filtering paper.—**DAVID DUNCAN**, in *Philadelphia Photographer*.

To Correspondents.

CORNUBIA.—As chalk is insoluble in water, it is of comparatively little importance how much you use in the toning bath. No matter how much may be present, only so much as will neutralize the free hydrochloric acid in the chloride of gold will have any action, and this will be converted into chloride of calcium. The remainder of the chalk will remain undissolved and inert; hence the advice to use excess of chalk. Use a piece about the size of a pea for each grain of chloride of gold. 2. We do not know of any collodion in the market made expressly for photo-crayons, but any good collodion with at least a grain of bromide per ounce will answer well.

W. W.—It is not necessary to use carbonate of ammonia with the hypo in fixing negatives. 2. Plates which have received their preliminary coating of albumen should be kept in boxes; if kept exposed to the atmosphere they risk becoming injured. 3. Acetic acid assists in preserving albumen. 4. A trace of carbolic acid is the best possible addition to the albumen solution to preserve it. 5. We should prefer very dilute albumen with a little acetic acid. 6. There is no disadvantage in sensitizing any length of time in advance, provided discolouration of the paper does not ensue. 7. Strips of ordinary sheet zinc, an inch broad, resting against the edge of the dish, will answer. We prefer zinc. 8. Such accessories as a curtain need not be perfectly sharp, and are often less obtrusive by being a little out of focus; but judgment must be used in such matters. 9. The Victoria card is five inches by three and a-quarter inches; the print four and a-half by three inches. We have not seen an album. 10. We do not know. 11. Yes. 12. A day after mixing. 13. Yellow is the best colour for the interior of the dark room. 14. Much depends on the thickness of the varnish, the temperature of the plate, and whether a thick or thin coating of the varnish is desired. 15. Much depends on the collodion and the formula employed. With an alkaline iodide only, the collodion may be used in a few days, or sometimes earlier; with a cadmium iodizer more time should elapse. 16. The use of a newly mixed developer and insufficient acid will cause such a result. 17. In our practice we generally use as much sugar as iron. With the proportion of sugar named, the acid is insufficient. The action of the copper salt is restraining, and checks fog. 18. When nitrate of baryta is added to a solution of sulphate of iron its object is to form nitrate of iron. It is used for collodion positives, and gives a white image. 19. If you refer to the table of French weights and measures we have often published, both in the *News* and *Year-Books*, you will find that the developer contains about twenty-two grains of protosulphate of iron per ounce. The proportion of copper is not remarkable. 20. A thinner calico than that enclosed is not necessary, as, when you use blinds with a north light, you wish absolutely to limit the amount of light admitted, not to soften it merely. 21. Neither of the gentlemen publish. It is possible to get ten by eight pictures by the former at a guinea. We are uncertain whether you can purchase the latter at all.

H. B. (Carmarthen).—The defect in the prints is due to sulphur. It may arise from weakness or acidity in the hypo bath, or from some trace of acidity in the washing water, or from immersing the prints in washing water, and leaving them there without several rapid changes to remove the bulk of the hypo before leaving the prints to soak. Are you sure that a fresh solution of hypo is used every day? The prints are very suggestive of the use of old and exhausted hypo. We regret that we have not time for private correspondence on such subjects. Indeed, as a rule, all letters on photographic difficulties are allowed to accumulate until the day before going to press.

ENGADINA.—For portraits of dogs and children you require a rapid portrait lens. The lens you possess is intended for landscapes, architecture, and out-of-door work generally, but no portraits in the studio. A card portrait lens will suit your camera. Possibly you may get one for the price you name secondhand. Look in our advertising pages.

W. C. CRAFT.—Nothing is better for conferring keeping qualities on collodio-albumen plates than the gallic acid solution. We have not tried tea, and did not succeed with a bromide. 2. Pack the plates in a plate box, and cement a piece of thin gutta-percha or oiled silk round the opening of the lid. If the toning solution is alkaline, you may add it to the fixing bath without much fear.

N. D. P., or N. S. O.—If our correspondent will communicate with Mr. H. U. White, of St. Thomas's Square, Hackney, in relation to his landscape negatives, he may be able to make some arrangements in regard to them.

YOUNG PHOTO.—The stain appears to have been caused by contact with some foreign substance. When did the stain appear—after or before mounting?

R. TUDOR WILLIAMS.—Thanks. In our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 669.—June 30, 1871.

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ACCURACY IN MEASURING.—DROPS AND MINIMS.

It is scarcely necessary, in this day, to remark that in all the operations in photography accuracy is desirable. In dealing with agents of such delicacy that the balance of combinations is disturbed by a ray of light, it is manifest that accuracy of proportions in the various preparations is often of absolute necessity. In some cases, it is true, a little latitude is permissible, as in the strength of a developer, or even a nitrate bath, a few grains more or less are not of vital importance; but in preparations where a new compound is formed by the double decomposition of the agents brought into contact, accuracy in the proportions becomes imperative, as upon that depends the quantity of the new compound formed, and the excess or deficiency of any of the elements forming the compound. The emulsions of a silver salt in collodion formed by precipitating nitrate of silver held in solution by a haloid salt are cases in point. Success in working with collodio-chloride of silver depends upon precision in conditions. With excess of the soluble chloride used to precipitate the silver a compound is obtained which is comparatively insensitive, and yields a flat grey image. With very great excess of free nitrate of silver there is also some want of sensitiveness, and the image, though vigorous in quality, is, if on paper, generally somewhat sunken into the paper, from the permeation of the nitrate in absolute solution. The best conditions are obtained when an emulsion of chloride of silver and citrate of silver is obtained with a very slight excess of free nitrate. To obtain this nicety of conditions, it is evident that great precision is necessary in weighing and measuring the proportions. In the collodio-bromide of silver process still greater precision is necessary to secure perfect conditions. As our readers know, some controversy has been maintained, in relation to this process, as to whether the best results were obtained by soluble bromide or nitrate of silver in excess. Colonel Stuart Wortley, in his recent paper, whilst agreeing with Mr. Carey Lea on the importance of having nitrate of silver in excess, doubts whether, in the formula given, any free nitrate will remain; and, speaking of the operations of Mr. Henry Cooper, Jun., he expresses a conviction that he works with proportions so nearly balanced, that it is probable his preparation vibrates between excess of nitrate and excess of bromide, the description of the results indicating that first one and then the other alternately prevailed. It may not, probably, occur to many of our readers that unless a degree of accuracy and care are employed which few are prepared to exercise, they will have no certainty whatever of the precise proportions of the various salts which their completed mixture contains.

We are assuming that the combining proportions of the salts are accurately ascertained, and the purity of condition absolute. The uncertainty arises from another cause: we refer to the prevalent inaccuracy of the graduation on the various measure-glasses in use. As the various proportions used are, as a rule, ascertained by measured quantities of a standard solution, any inaccuracy in the measuring-glasses must lead to perpetual uncertainty. There is also another source of uncertainty to which a correspondent refers in a letter, from which we shall quote a portion here. After referring to some other matters, our correspondent says:—

“There is one point in which the careful and elaborate paper appears to me to be exceptionally loose and indefinite, and such indefiniteness may possibly lead him to affirm that Mr. Lea has no excess of free nitrate, contrary to that gentleman's statement. Col. Stuart Wortley, after giving in his formula a certain number of minims of acid, proceeds to state that as one or two minims are difficult to measure, he uses drops from a dropping-bottle, which always yields him drops of the same size. But as drops vary in size, unless the same or a similar dropping-bottle were used, absolute accuracy could not be obtained, and as a very slight excess of hydrochloric acid would precipitate a large proportion of silver, the balance would very soon be disturbed. As two drops from Col. Wortley's dropping-bottle are equivalent to three minims, the excess in this might materially affect the issue.”

It is probable that a careful experimentalist like Col. Wortley made all the necessary allowances in proportions when testing the formulæ of Mr. Carey Lea: but we quote the letter of our correspondent in illustration of another of the possible sources of error often overlooked. Drops, of all forms of measurement, constitute the most inexact, varying in quantity from twenty-four in a drachm to one hundred in a drachm. Drops vary in size, not only according to the density and fluidity of the liquid, and the size of the aperture from which they are permitted to fall, but also when the same fluid and the same aperture are employed, the variation arising from the position in which the dropping orifice is held. Alsop, whose minim-meter is the most trustworthy aid to measurement of small quantities, found that drops of sulphuric acid might be made to vary from twenty-four in a drachm to eighty-four drops in the same quantity. The use of an accurately graduated dropping-bottle is the best mode of securing certainty in the measurement of small quantities. Alsop's minim-meter consists of a small glass syringe or pipette terminating in a capillary aperture, with a well packed glass piston. The tube is carefully marked off into minims, and by keeping a stratum of air between the piston and the liquid, cleanliness is secured, and the drops can be delivered by a simple pressure of the piston more evenly and easily.

PHOTOGRAPHIC ASSISTANTS.

DEAR SIR,—Your correspondent Mr. D. Welch seems to have got hold of a very strange sort of assistant, but that is not a good reason for libelling the whole profession, employers and employed; for I think it is a libel on the employers to say they give good characters to get rid of their assistants.

I am a photographer, the son of a photographer, and have worked at the profession all my life, and yet, if I were asked in a hurry how many eight times fifteen were, I could not tell, and might spell "white" without the "h," and expect to make many mistakes before I finish this letter; yet I consider myself a good operator, and have usually asked and had 42s. per week wages.

I would give a bit of advice to my fellow assistants: do not say anything about a month's trial; you are only weekly servants at best, and if you do not like the situation, or they do not like you, a week's notice makes an end of the bargain, unless especially stipulated for, then let it come from the employers. As to asking just what you are worth, how are you to know? To one man who has a small business a salary of 30s. may be dear, to another with a larger business £2 2s. will be cheap. It is always a sore point what to ask. I myself have lost a situation by asking too little. I think the employers ought to advertise what they will give: they know best what they can afford.

As to the remedy being properly trained apprentices, can you, Mr. Editor, or anyone in the profession, tell me half-a-dozen men that have really served their time to the business? And is it necessary, when it is a profession that a man takes to out of (in most cases) a love of the art? And if he has no taste or pleasure in it he will soon find his level. We are not carpenters, bricklayers, or shoemakers, although there are some of the shining lights that have been little better.

How far may the errand boy go in the profession? The youth that was errand boy some years ago at a place where I worked, is now the head printer at one of the largest establishments in the three kingdoms, and receives rather more than £1 5s. per week. Is the fact of his having been an errand boy to bar him from ever becoming an operator, or setting up a studio of his own.

But really, Mr. Editor, if the question is to be agitated so as to set employers and employed against one another, why you had better close your columns on the subject; for where is the difference, with few exceptions, between the operator and master? As long as they study one another's interest we shall get on; but if it is to be class against class, as in some trades and professions, there will soon be a general breaking up, and there will be no assistants to be had—they will be all small masters. I do not see that either side have much to complain about; the assistants might be better, and the masters might be more business-like, especially in sending back specimens, testimonials, and answering applications when seeking assistants; but it will all come in time; the business is young yet; we are not any of us business men enough.

That part of Mr. Welch's letter cautioning albumenizers I will leave to the employers to refute if it is worth while. I can only say I never knew such a thing done.

Trusting you will find space for this long letter, I am, sir, yours respectfully,
A LITTLE PHOTO.

COPYRIGHT IN PORTRAITS.

SIR,—I am glad to see a letter from a *real* lawyer in your columns. Outside and interested readers may now expect reliable advice upon the question of copyright, apart from the mere theories of which they have heard so much.

Your correspondent Mr. Cunningham has worked hard for those charged with piracy, and has obtained by perseverance a certain amount of success.

The objection to a magisterial decision, which recently resulted in the Queen's Bench ordering a writ of *certiorari* to issue, can scarcely, however, be considered a "crazy phantom," as described by "A Lawyer," because it has set free the defendant to recommence her notorious practices. That is an unfortunate fact, the logic of which is indisputable.

The concluding paragraph of Mr. Cunningham's last letter contains a new and rather startling argument. If, as he contends, one shilling should be the limit of penalty, per copy, for piracy of card portraits, where would be the use of prosecuting? To undergo a large amount of trouble, pay a lawyer three

guineas, and then get one shilling instead of £5, would be a remedy worse than the disease, and he like the boy's experience of learning the alphabet, viz., that it was not worth while going through so much to get so little.

I have always had great confidence in Mr. Lewis's knowledge of the law, but do not altogether like his argument that a sitter is the author of his portrait. I am anxious to see how "A Lawyer" will crack "Enquirer's" nut, and hope he will crack a few more, and say something to make us feel a little more certain of our position.—I remain, sir, your humble servant,
A POOR PHOTOGRAPHER.

[Our correspondent mistakes. "A Lawyer" did not call the recent removal of a case into the Queen's Bench, or the grounds upon which the conviction was quashed, a "crazy phantom."—Ed.]

COPYRIGHT IN PORTRAITS.

SIR,—When, in my last letter, I mentioned that the argument that the sitting was a good consideration had been urged by Mr. Lewis, I did so merely to show that it had been used before. Mr. Lewis's nonsense that the sitter is the author of the work I am not likely seriously to cite as having legal weight, although a similar opinion has been expressed from the bench by Sir Thomas Gabriel: he held that the person who caused the work to be executed was the author thereof.

From your remarks upon my argument, I think the question of common law right has not been much considered by you. Every one has, by the common law, a right to prohibit the publication of his portrait without his consent, and that consent must be in writing. The Copyright Act gives copyright to authors of original works when it does not violate the rights of others. For instance, the drawings from which the illustrations of "Vanity Fair" are made are original works, and, *prima facie*, entitled to copyright; but as they violate the common law right of the persons represented, copyright could not be maintained. In the case of taking the photograph of a house without consent, the right to prohibit is incidental to the ownership of the property, and ownership prohibits any use of the property without consent. There is also another reason: in taking a view upon the land of another without consent, a trespass is committed, and no one can set up or take advantage of his own wrong. [Our readers must not take it for granted that our correspondent's law is beyond challenge.—Ed.]

In your note at the conclusion of my letter you say, "The law inflicts a penalty with a view to prevent crime." That may be true; but infringement of copyright is not a crime. If the amount of the penalty is not a measure of the wrong done, what is it? [The penalty is no measure of the wrong as a pecuniary question. Penalties are intended also to be preventive as well as punitive.—Ed.]

Your correspondent "A Lawyer" is evidently of opinion that "*ne sutor ultra crepidam*" is specially applicable to you. If I have left my last, it is to endeavour to repair, as far as practicable, the bad work of the lawyers. As in his opinion the report in Hansard of Sir R. Palmer's speech is inaccurate, perhaps he will kindly inform us what Sir Roundell did say. The words are given thus: "Next, the House of Lords had introduced an amendment requiring registration in all cases to *precede* the acquisition of copyright." Before the debates are finally printed, proof-sheets are sent to every member whose speech is reported, for the purpose of revision; and with regard to what is spoken in the Legislature Hansard is held to be an authority. That Sir R. Palmer, when he uttered those words, believed that the House of Lords had made an amendment requiring registration to precede the acquisition of copyright, and that the Lords intended such to be the effect of their clause, I have no doubt; but the words of the clause, without straining, will not bear that interpretation. As your correspondent has had exceptional opportunities of knowing what was really the intention of the framers of the Act, perhaps he will enlighten us. It is rather awkward, after several years, during which period many convictions have been made in the city of London, that the Court of Queen's Bench should by a decision virtually reverse them.—I am, sir, your obedient servant,
J. CUNNINGHAM.

DARK FOLIAGE AND DRY PLATES.

SIR,—In your recent notice to the dry-plate worker who was not able to bring out the foliage, you mentioned some of the causes of failure. The chief reason is, because he did not go at the right time of the day. To succeed with dry plates in such work, the photographer should go when the sun is striking on the foliage, and then fully expose, and use a weak developing solution to bring out any badly lighted subject.—I am, sir, yours obediently,
F. T.
Newry, Ireland.

Proceedings of Societies.

AMATEUR PHOTOGRAPHIC ASSOCIATION.

A COUNCIL MEETING of this society was held on the 22nd inst. the Right Hon. the Earl of Rosse in the chair. The minutes of the last meeting having been read and confirmed, the following members and subscribers were elected:—Sir John Seahright, bart.; Capt. H. B. Swiney; A. H. Longman, esq.; F. Adderley, esq.; Capt. J. B. C. Fox; Algernon Fletcher, esq.; N. Murray, esq.; Miss Luke, and — Settna, esq.

The SECRETARY then laid before the meeting the following prizes, which had been awarded at the previous meeting:—A silver goblet, for F. G. Lloyd, esq.; a ditto for F. S. Schwabe esq.; a walnut wood graphoscope, for Capt. Bankart; an oil painting, in frame, by C. Frisch, esq., for W. J. A. Grant, esq.; a ditto for Rav. T. Hervey; a large album, elegantly bound in morocco, for T. Higgin, esq.; a ditto for W. Baily, esq.; an album, elegantly bound in morocco, for J. W. Watling, esq.; a ditto for Capt. White; a ditto for F. P. Barlow, esq.; a ditto for J. Bevington, esq.; a ditto for W. H. Charnley, esq.; a ditto for Capt. Lewis; a ditto for B. Greene, esq.; an oil painting, in frame, by C. Frisch, esq., for R. Murray, esq.; a ditto for F. Beasley, esq.

The certificates of honorable mention as awarded at the previous meeting were then signed by the chairman.

The council expressed their approval of the prizes, especially of the paintings by Mr. Frisch, the one of Conway Castle being particularly admired.
A. J. MELHUSH, Hon. Sec.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION

THE usual monthly meeting of this association took place on Tuesday, the 27th inst., at the Free Library, William Brown Street, the Vice-President, Mr. A. COOKE, in the chair.

The minutes of the previous meeting were read and passed. Mr. J. W. H. WATLING exhibited a number of prints on Durand's sensitized paper, and reported that the paper printed quickly and toned well, leaving nothing to be desired.

Mr. W. H. WILSON remarked that the paper had evidently been greatly improved, as he found that it toned very quickly, which was not the case formerly.

The SECRETARY also exhibited prints taken on Durand's paper, and some carbon prints.

A letter was read from the Hon. Secretary of the Naturalists' Field Club, stating that the next excursion of the club would be to Caerwys, Vale of Clwyd, and suggesting several views and places of interest suitable for photographs, should any of the members of the association like to join the excursion.

Some discussion then took place on the collodio-bromide processes of Mr. M. Carey Lea and Col. Stuart Wortley, and it was hoped that some of the members would experiment, and write a paper on the comparative merits of the different formulae.

The meeting was shortly afterwards adjourned.

Talk in the Studio.

PRESS FOR COMEON MEDALLIONS.—Mr. S. Wolff, of King William Street, has just called our attention to a very ingenious and convenient little press, of German manufacture, for stamping cards into the convex form of the cameo medallion. It is cheap, efficient, and simple. It consists of a small screw press, into which is placed the block containing the die and counterpart. These consist of two blocks of hard wood hinged together. On one is the convex die, whilst fitting over it is the concave counterpart; but between the two is a brass plate, also hinged, with an aperture the size of the die, which en-

ables the operator to adjust the card to the exact position required for punching with the utmost ease and nicety. This done, the concave portion is brought down, which prevents movement, and a slight grip of the press produces the necessary embossing at once. The same press will serve for cards and cabinets; and we understand that dies and masks of suitable sizes are supplied.

THE GRAPHOGENIC APPARATUS.—The general tenor of the reports we hear of the practical working of this invention is very favourable. Some troubles have been found which a little perseverance and care quickly surmount. Lieut. Haslitt, after describing some minor difficulties, says:—"With regard to the working of the apparatus, I may give you my experience. Seeing it so highly recommended by you, I was induced to try it. At first I was disgusted. I broke plates in transferring them to and from the slide; I got stains in development, and very dirty hands. I persevered, however, and now I never damage a plate. I get clean development, and do not even soil my hands. I think it will turn out a success, and a great boon to the landscape photographer."

NEW REDUCING AGENT FOR NOBLE METALS.—It is alleged that chloral hydrate has been found valuable as a reducing agent, the noble metals being easily reduced by it in the presence of caustic potash or soda. When the solutions of gold, or of the metals of the platinum group, are treated with hydrate of chloral, warmed, and an excess of caustic soda added, and the whole boiled for a minute, a complete reduction of the metals takes place, probably in consequence of the liberation of some formic acid by the splitting up of the chloroform. In the case of silver salts the reduction is also complete, and chloride of silver is formed. Mercury salts are not acted upon. These properties of the hydrate of chloral suggest its possible application for metal plating on glass, and it may be found useful in recovering the metals from photographic waste, if no higher photographic use be found for it.

PRESERVING SENSITIVE PAPER.—A patent has been granted in America to Peter H. Murray, Portsmouth, Ohio, for "improvement in the modes of preparing paper for photographic purposes," which consists in the application of chlorine gas to sensitized paper for the purpose of rendering it more stable, and in the application of hydrogen gas for the purpose of rendering the paper, afore rendered insensitive by the action of chlorine, sensitive to the action of the solar rays. Paper treated in this way is said to keep sensitive for a long time without change of colour or loss of sensitiveness.

PHOTOGRAPHIC RECORDS OF METEOROLOGICAL CHANGES.—Describing the annual visitation of a number of scientific men to the Royal Observatory at Greenwich, the *English Mechanic* says, the meteorological department is "furnished with instruments of the most approved character, both for observing directly with the eye and for photographic registration. During the past year an improvement has been effected by throwing a beam of light upon the sheets receiving the various photographic curves two and a-half minutes before the occurrence of the hour. At two and a-half minutes after the hour a shade obstructs the light, stopping the effect after five minutes' exposure, the result being the photographic impression of hour lines upon the photographic sheets carrying the records of the three magnetometers and of the earth current galvanometers, by which much manual spacing and ruling of lines is avoided. The removal of all shades is produced by a single wire acted upon by a clock. The arrangements for obtaining a uniform temperature in the magnetic basement where the photographic instruments are deposited are such that the temperature is between 60° and 62° during the cooler half of the year; in the warmer it very seldom rises to 70°."

THE POISONOUS QUALITIES OF THE NEUTRAL AND THE ACID CHROMATE OF POTASH.—The *Photographic World* mentions that "a professor of the University of Charkow recently fell a victim to poisoning by neutral chromate of potash. M. Neese complains that up to the present time the poisonous qualities of the chromates are not perfectly understood, and proposes as an antidote the acetate of lead. Neese himself acknowledges, however, that the antidote may produce worse results than the poison itself, and requests toxicologists to point out an effectual remedy. The ignorance in regard to the poisonous qualities of this substance is, however, not so great as M. Neese supposes, for already in 1853, Jaillard, in the *Gazette des Hôpitaux*, called attention to the danger in using it. The physician must be

a piece of ground glass or tissue paper over them it will wonderfully assist the printing qualities. Slightly over-print, to allow a little for toning out. Never examine your prints in the white light, but remove them into your printing room. This is especially desirable for vignettes. As it is useless wasting gold on the surplus paper, I would advise cutting your prints before toning.

Lastly. The simplest and most straightforward toning bath is that which I have been using for this last few years. The formula stands thus:—

Pure acetate of soda	...	...	170 grains
Chloride of lime	...	...	4 "
Chloride of gold	...	...	8 "
Water (dist.)	...	...	40 ounces

This may be used at once, or after being kept. Wash the prints three separate times in rain or river water if obtainable; slightly warm the bath, and place the prints in face upwards. A point well worthy of notice is, that prints placed in the toning bath face downwards tone quicker and look duller than if placed upwards and turned uniformly. The slower the toning the more beautiful the result. Fix in hyposulphite of soda for ten minutes; then remove to the pans for their final washing.

To those gentlemen whose time and study has been the promotion of photography, this subject is doubtless too familiar: still, it being a subject of the first importance, I feel sure it will yet be read with interest. Should any amateur gentleman gather any information from these remarks, I at least shall feel I have contributed my mite to the advancement of this great work.

Chelmsford, June 27th, 1871.

PHOTOGRAPHY AT THE CORNWALL POLYTECHNIC EXHIBITION.

THE report of the Royal Cornwall Polytechnic Society for last year has just been issued. Details of the prizes awarded by the judges were published at the time of the exhibition; but the official report is only now issued. The portion devoted to photography will be read with interest.

The judges were: Messrs. W. Brooks, T. Hart, and W. N. Carne. The report proceeds as follows:—

"Although the exhibits this year in the photographic department are not quite so numerous as those of some former years, yet, on the whole, it is the opinion of the judges that the quality makes up for the quantity. Landscape views, portraits, and composition pictures, in the professional section of this department, are well represented by the productions of the most able photographers of the day, many of whom have received awards at various exhibitions, both at home and abroad, since our last exhibition. Owing to the great degree of perfection that photography has attained, the judges have with great difficulty awarded the prizes. For composition, the picture "Stolen Moments," by Mr. J. Hubbard, is specially noticeable. It is a work of a very high order; at first sight it makes an impression on the spectator that it is a photograph from an oil painting by one of the old masters; it is not so, however, but is produced from nature in three or four parts, and the whole combined to form an effective and artistic picture, which receives the first silver medal. The large pictures by Messrs. Robinson and Cherrill are also well worthy of notice, being the largest instantaneous pictures we have seen. The first silver medal is awarded to No. 381, as being on the whole the best. The portrait No. 362, by Col. Stuart Wortley, who, in his own peculiar style, stands alone in photographic portraiture, has obtained the first silver medal. Mr. Sanderson, of Manchester, contributes very fine and very large examples produced by the collodio-albumen dry plate process, which is very difficult; yet his pictures are quite up to wat-

plate photography in every respect. To No. 424 the second silver medal is awarded. In this department, also, a new feature is introduced by Mr. Courtenay, of London, and named by him the 'heliographic process.' By this process a copper-plate may be produced by photography and electricity, quite ready for the hands of the copper-plate printer, without being afterwards touched by the graver. To this is awarded a first bronze medal. Mr. Preston sends some very fine specimen portraits which are produced by a patent process named the 'photo-crayon;' the works in portraiture by Mr. Preston are known throughout the county. A first bronze medal is awarded to No. 345, by Mr. Netterville Briggs, of Leamington. Similar awards are made to No. 368, 'The Young Artist,' by Mr. Adam Diston, of Scotland; and to No. 131, a landscape, by Mr. Edwin Cockiu. The portraits by Messrs. Vandyke and Brown are highly commended for beauty of finish. In the amateur section of this department the productions of Capt. Paget and Lieut. Abney take the first prize, the second silver medal, for interiors at Pau Castle, in the south of France, which would not disgrace the hands of the greatest master of the photographic profession. A second bronze medal is awarded to No. 463, by Capt. Wm. Foster; and we must not forget to notice a charming portrait of a young lady, very artistically arranged, by Miss Georgina Halsted, evidently taken out of doors, a case in which it is very difficult to produce a pleasing effect."

The estimate here expressed will, doubtless, be generally endorsed by photographers. In speaking of the process by which Mr. Sanderson's fine large landscapes are produced, some exception will, probably, be taken to the dictum that the collodio-albumen process is "very difficult," as dry processes are generally chosen to get rid of some difficulties in field work.

Mr. Courtenay's heliographic process is described as follows:—

"The first part of this process consists in the preparation of a plate with a mixture of collodion and finely divided silic. The silic is best prepared by precipitating a solution of silicate of potash with an acid, and thoroughly washing the precipitate. This is then mixed with the collodion, and spread evenly on the surface of a plate of glass. A negative of the object to be engraved having been taken in the ordinary way, it is placed with the prepared plate in a copying frame, and a positive is produced on the prepared surface.

"The next part of the process is the preparation of a plate of glass with a surface composed of a mixture of parchment size, sugar, gum, and chromic acid. This having been done, the positive is placed upon it in a printing frame, so as to produce a matrix from which an electrotype plate may be made in the ordinary way.

"Sometimes it is desirable to make a metallic surface on the prepared gelatine before placing it in the electrotype bath. In this case *silver powder*, prepared by precipitating an acid solution of nitrate of silver with pure copper, is brushed over the matrix until an even metallic coating is deposited; the matrix being then placed in the bath, a deposit of copper is immediately formed on the silver.

"The copper-plates so prepared are taken from the bath, their edges scraped, certain portions of the 'lights' burnished, and the back filled up, when they may be printed from with printers' ink in the ordinary way."

WHERE TO GO WITH THE CAMERA.

BY A PRACTICAL MAN.

NORTH WALES.

The pioneer and pointer-out of places, scenes, and districts of interest to photographers might, after the manner of a waiter at some well-appointed hotel, present a carte with

special references to such picture spots as Alton Towers, Harrogate, and Knarlesboro', Ilkley and the old abbey of Bolton, the Isle of Wight, Scarborough, and Filey, Windermere and the lakes, Nottingham and Sherwood Forest, York, with its cathedral, river, and antiquities, and also something about Wales; so we take the latter at the same time, being well assured that Wales as it is, in many parts, is very different from Wales as it was. Improvements and science have gone hand in hand with giant strides. The engineer, the architect, the navvie, and the quarryman have here been at work, have made their mark, and Wales, North and South, can now, in addition to its wonderful natural advantages, boast of some of the most stupendous works of engineering skill ever executed by man. The Conway and Britannia tubular bridges are evidences of this.

The direct route is from London to Chester, and from there to Holyhead; together, some 263 miles. Holyhead is the most western point of Anglesea, and the great place of steam communication with Dublin, the steamers going some three times a day. The passage across is about sixty miles. The tourist and photographer, in making the journey direct to Holyhead, will pass much of interest, and many objects of note; but this must ever be the case when any particular point or place has to be reached. However, a call can generally be made on the road back, and the neglected waifs picked up and pictured.

One of the principal features in the Holyhead district is the Castle of Carnarvon, the birthplace of Edward II. The little town is very ancient, having been the only safe and permanent station possessed by the Romans in Wales. Outside the walls are some Druidic circles, and other vestiges of a by-gone age, the whole surrounded by the grand and impressive scenery of Snowdon. The circumference of the old castle and the castle yard is about a mile, with four round towers some seventy yards apart, the Eagle Tower and Queen's Gateway being the most imposing in appearance. From the top of the tower the view is most extensive, and particularly fine, embracing the Menai Straits, and opening up a most beautiful expanse of sea; the coast of Anglesea, with its hills and white villages; then Snowdon, in all its majestic grandeur and ruggedness, the extreme distance marked by the tall cliffs of Carreg-y-Llam; then Bangor, with its beautiful bay of Beaumaris. Several other places will be found bearing the same name, as "Bangor below the Wood," "Bangor the Great," all of which are noted and renowned for some special view, legend, or object of interest.

Wales has, in addition to its other numerous attractions, many fine pools or sheets of fresh water, known as "Llyn" (that is, a lake or loch); among the most remarkable is that of Llyn Idwal, of a most weird and desolate character, lying in a deep crater of gloom, desolation, and grandeur, the high bare rocks darkening and shadowing the deep clear water in a most effective and peculiar manner. Had these places been as accessible half a century back as at the present time, what a field they would have offered the great English Claude, J. M. W. Turner! What a further rich collection of art treasures would the nation now have to boast of! What a picture he would have made of the "Black Hole," as it is termed—an immense cliff rock, rising to the height of some 300 feet, down which rushes the surface water from the mountain above! This, with the great interbedded masses of grit and porphyry, forms a most magnificent picture, having on each side the stupendous cliffs "Y-Garn-Glyder-Vawr."

North Wales will be found particularly rich in the sort of subject that invariably makes good photographs, if well and judiciously managed; viz., old castles. We need only mention, to confirm this, the castles of Conway, Penrhyn, Beaumaris, and Flint; while for views and subjects of stupendous grandeur, let the photographer turn his attention to, and his camera at, Penmawn, Mawr, Ogwen Falls, the Penrhyn slate quarry, the cataract at Aber, and the interesting mountain view and bridge of Pan-y-pont.

There are scores of other subjects, and bits of great interest, that the looker-out for art food must select for himself. Enough has been stated to prove North Wales a most inviting locality; and as the general body of sight-seekers and well-to-do runabouts will probably be off to sup on the much-to-be-deplored horrors and ruins of unfortunate Paris, there will be a clearer and less interrupted field at home for the amateur and professional given to secure interesting mementoes of bygone times by the aid of the pencil of nature and the action of light.

GERMAN CORRESPONDENCE.

REPRODUCING NEGATIVES—IMPROVEMENTS IN ENLARGING—WOODEN DISHES—THE NEXT TRANSIT OF VENUS, AND PHOTOGRAPHY—THE EMPLOYMENT OF CARBONATE OF AMMONIA IN PRINTING.

DR. VOGEL, in his correspondence with our young and vigorous Philadelphia contemporary, the *Photographic World*, says:—

Great attention has been paid here lately to a number of reproduced negatives by Mr. Grasshoff. Prints made from these negatives could scarcely be distinguished from those made from the original plates; some of these negatives were three or four times larger than the originals. They were all made in the ordinary way. First, a transparency was made in the camera with transmitted light and by the wet process; a negative was taken in the same manner from the positive, and the only difference was, that before the negative as well as the positive a plate of green glass was placed. Such a plate exercises a very peculiar influence: it lessens the action of the transparent parts, while it does not interfere with the denser ones, and a longer exposure can be given to the plate in order to bring out the latter, without running the risk of over-exposure in the thinner parts. He obtained thus a negative of almost the same softness as the original.

When we consider that all our negatives are of glass, and liable to breakage, any process which enables us to multiply them faultlessly is of the highest value; so far insufficient attention has been bestowed on the reproduction of negatives.

The employment of coloured glasses is important also for enlargements. Very little is done here in this branch of photography; still we have a very skilful artist, a Mr. Schwarz, and I have often been astonished how he produces from inferior, hard—in short, in every way imperfect—negatives, splendid enlargements. The whole secret is that he also employs coloured glasses. He coats glass plates with a collodion which has been dyed greenish or yellowish by means of aniline, and places these plates in front of the negative which is to be enlarged. He even employs two or more films of different colours for the same picture. I saw, for instance, that in front of the bust of a man wearing a black coat, he placed a violet plate over the coat and a bluish-green one before the face. An entirely different relation between the tones is then produced, and the under-exposed coat of the negative, which in the enlargement would have produced a black spot, without details, gave with the coloured plate an excellent picture.

The illumination has, of course, to be so arranged that the edges of the coloured plates do not create disturbances, or produce spots on the negative. To obviate this, Mr. Schwarz places plates of ground-glass before the negative, and makes his enlargement by development.

When only a single coloured plate is employed, printing with development is no longer necessary, and we can work with direct sunlight.

In the selection of the coloured plates experience is necessary, as the suitable tint depends on the character of the negative.

Since Paris has been closed, a want has made itself felt here, as the well-known carton durci dishes of Dufournet

are no longer to be had. These dishes, which were brushed with an asphaltum varnish, were in general use for fixing and washing of prints. Now wooden dishes are employed for this purpose. They are made very cheap. Wooden boxes are varnished strongly with an oil varnish, and afterwards brushed over several times with an asphalt varnish; they are very useful. Many photographers make them themselves.

A scientific commission has lately assembled for the purpose of making preparations for the observation of the transit of Venus in 1874. The commission laid particular stress on the importance of photographic observations, and resolved to establish four or five stations for that purpose. Two of them will be located in the Antarctic Ocean; one on the barren Kerguelen Island, which is at present inhabited by penguins and seals only; the other on the Auckland Island, south of New Zealand. Another station will be placed on the Mauritius, one also at Muscat (Persian Gulf), and one at Yokohama (Japan). Each station will be provided with a telescope which, in the principal focus, gives an image of the sun of about one inch in diameter. The eye-piece will enlarge the image to about four inches in diameter.

Several experiments which have been made with different eye-pieces have demonstrated that most of them produce distortion. The celebrated optician, Schröder, in Hamburg, is now constructing an eye-piece which is to be free from this objection. Each station is to have four photographers, and this will be, perhaps, the grandest expedition which has employed the aid of photography for scientific purposes. Let us hope that our noble art will do its duty.

In my last letter I recommended a method of employing the carbonate of ammonia in the printing-frame, in place of fuming the paper with liquid ammonia. I wish to add, that in order to avoid the scattering of the salt in the printing-frames, it is best to place it in a square bag which corresponds in size with that of the printing-frame. The bag is made of cloth, the four sides being sewed together, leaving only a slit in the centre for filling it with the carbonate of ammonia (one ounce of the salt will be sufficient for the size of a whole sheet). The bag once filled will hold out for several days.

ON ALBUMEN SOFTENING AND LEAVING THE PAPER IN THE TONING BATH.

BY JOHN R. CLEMONS.*

The albumen softening and leaving the paper has never happened with me, but I have cases of the kind in the hands of others, and have investigated it, and have the opinion of others with whom it has happened. Some say that toning with too alkaline a bath, while others state with too much acid in the silver solution, will soften up the albumen and cause it to come off. This is partially the cause, but not the first step. If you take silver at thirty grains per ounce of water, and that with an excess of ammonia, then toning with too alkaline a bath, the albumen is so spongy and soft while in the moist state, that it is easily removed with the slightest rubbing of the finger, and the longer it remains in the toning bath, the less albumen you will have, if you have any; while in the same "batch" of prints there will be some to which the albumen still adheres; and the reason of this is, they were not so long in the toning solution. Now, if you take that same silver solution and add two (2) ounces of 95 per cent. alcohol to every ten or twelve ounces of the solution, you will readily find a very marked difference, even with the same toning bath. Whenever I have been called upon in reference to the albumen coming off from the paper, my first question is, "How have you made your silver solution?" The answer is:—

* *Photographer's Friend.*

"According to your formula."

"Well, how was that? Let me see if it was according to it."

"I lost the one I had, but I made it up the same all the time."

"Well, let me hear how you made it all the time."

"Why, I made it thirty grains strong, and made it ammonia nitrate by pouring off one-third, and precipitating and redissolving, then adding to the remaining two-thirds, and taking up the reformed oxide with nitric acid, and so forth."

"Well, what next?"

"That is all that is to be done, except filter, float, and fume."

"Is that according to my formula?"

"I believe it is, as near as I can recollect."

"Well, my dear fellow, you are wide from the mark."

"Why, have you a new formula?"

"No, nor never had one like the one you have just given; unless it was some twelve years ago, when one was used like it for plain salted paper."

"Well, how is yours made, then?"

"Why, pour off one-sixth (while you pour off two-thirds); and I always add alcohol, and you have not mentioned it."

"Oh! I used it for awhile, but I thought it was of no use. What do you use it for?"

"Why, when in working weak silver it assists in coagulating the albumen, while if you were working a strong silver solution, say fifty or sixty grains to the ounce of water, it would not be of much use; and if all would pay attention to this one matter—make your silver according to the formula given. My formula is:—

SILVER BATH.

For cold weather.

Water	12 ounces
Nitrate of silver	500 grains
Alcohol, 95 per cent.	1 ounce

Dissolve the silver in the water, and separate one ounce, and to it add aqua ammonia until the silver is precipitated and redissolved. Then add to it the remaining eleven ounces, and clear it up with nitric acid, C. P., after which add the alcohol; filter, and it is ready for use.

Float the paper one minute and a-half. The above silver is equally suitable for my plain arrowroot salted paper, but it should be swabbed on with a tuft of cotton. If you float it upon the solution it is apt to foul the silver.

Fume five minutes with strong aqua ammonia, and the plain paper also, if necessary.

The strength of the silver bath should be varied according to the weather—strengthened in cold and reduced in hot weather; the following being about right:—

When the thermometer reaches 80° to 100°, use the bath eighteen to twenty grains strong; 60° to 80°, twenty-five grains strong; 50° to 60°, thirty grains strong. If colder, forty-five to fifty grains. The weaker the bath the more alcohol will be required to coagulate the albumen, and *vice versa*.

In damp weather (hot or cold) the paper should be thoroughly dried by heat before silvering, otherwise it will print red, and tone very slowly, if at all satisfactorily.

The ammonia should always be strong enough to fume in five minutes, and, when weakened by evaporation, should be strengthened, otherwise the paper will absorb moisture to such an extent as to cause it to lose its brilliancy and to print red. The prints should be well washed of all the free nitrate of silver before toning, otherwise they will turn yellow with age.

GOLD SOLUTION.

Gold	15 grains
Water	8 ounces

TONING.

Water	32 ounces
Acetate of soda	60 grains
Table salt	60 "
Gold solution	2 ounces

Gold to tone in about ten minutes.

The gold solution should be carefully neutralized with bicarbonate of soda before mixing with the above bath. This bath should be prepared a few hours before use. It can be used indefinitely by strengthening as wanted.

FIXING BATH.

Water	32 ounces
Hyposulphite of soda	5 "
Carbonate of ammonia	1 ounce

Do not use washing soda in the toning bath when you have weak silver. Then there will be no "come off" in the toning bath. By fuming less time, say five instead of fifteen minutes, the albumen is not so likely to come off.

CYANIDE FOR RETOUCHING.

A CORRESPONDENT of the *Photographic World*, R. J. McLanghen, makes a curious suggestion, which, if tried, will require extreme caution. He says:—

"Did any of you ever try the experiment of retouching card photographs with cyanide? Some days ago, while colouring some photographs, I accidentally let fall a drop of carmine upon the face of one of my best pictures. Of course the picture was spoiled, and I did not attempt to finish it. After I got through my work, I thought I would try what effect cyanide would have upon the carmine stain. I mounted the photograph, and after it had dried, I took a fine-pointed brush dipped in a strong solution of cyanide, and lightly touched the stained part, when, much to my gratification, the stain wholly disappeared, leaving the spot much whiter than before. I conceived the idea of retouching all the photographs where the lights needed strengthening, and the shadows softened, and after a little practice succeeded in giving my photographs any desired shade. Of course this must be done before mounting the pictures, and they must be subjected to a thorough washing afterwards, to remove all traces of the cyanide; the effect is, I think, permanent, and the advantage is, if you spoil a print, you do not spoil the negative, as many good ones are spoiled, by an awkward stroke of the pencil. I find this process invaluable, also, in retouching ferrotypes, and have secured much better results than I ever could by Mr. Bell's process of "darkening" them with iodine and cyanide. For instance, when you have a picture of a light-haired and light-eyed person, you all know how difficult it is to get the eyes to show as brilliantly as you wish. Just touch the eyes with the solution after the picture dries, and wash it off quickly, dry again, and if not sufficiently dark, touch again, and wash and dry as before. Now touch the light places in the hair and beard, wash as before, and see how it improves the appearance of even your best ferrotype. This process has been of more value to me, since I discovered it, than all the other improvements in ferrotyping that I am acquainted with put together.

"This may not be new to a great many of you, but I guess there are some who have not tried it."

DIRECTIONS FOR MOUNTING PHOTOGRAPHS.

BY ALEXANDER HENDERSON.*

VERY many photographs are now sold unmounted, and injurious substances are often used to mount them afterwards. As the destruction of the print is sure if any acid or mouldy paste, &c., is used, I publish the following on a slip, and give it to my customers:—

* *Photographic World*.

I recommend amateurs to use Cox's or Nelson's gelatine. A little is steeped in cool water for an hour, the unabsorbed water being drained off. Place the now swollen gelatine in a clean glue-pot, filling the outer pot with boiling water, and when it is dissolved, it will be about the proper consistency for use with a house-painter's three-quarter or one-inch flat bristle brush. A glue-pot costs about thirty cents.

In gluing the print, hold it face down, quite steady, with the fingers spread to prevent it from curling up, and brush the solution all over the back, crossing the brush lines in different directions.

Do not use too much gelatine. Try two or three times with waste paper, and if not right, add water or gelatine as required.

It is better to let the glue set slightly before putting the proof on its place; when this is done, cover it with clean blotting-paper, and rub firmly all over with some smooth instrument, such as the handle of a paper-knife.

If starch is preferred, use it cold, and strained through very clean linen cambric or flannel, washed without soap; spread it evenly and carefully.

Care and cleanliness are absolutely necessary; many prints are spoiled by using sour or stale solutions in mounting. Starch should never be used unless the mounting board is thick. Never use mucilage, gum, or flour paste.

SAVING AND REDUCING WASTES—IODIZING COLLODION.

BY H. L. BINGHAM.*

I HAVE seen several processes published, but do not think the one I communicate has ever been, at least in any photographic journal. The saving and reducing of silver wastes of every description, to the photographer, is of considerable importance; and when compassed within the means of every photographer to do so, with but little expense, it strikes me that his interest will be much advanced in the method I describe.

I burn my paper wastes to a fine ash; then digest with nitric acid, with a slight portion of water. After the silver has well dissolved (which will require several hours, with occasional stirring with a glass rod), then add sufficient water, and let settle well; then decant or draw off with a syphon into a large bottle with a quite strong solution of salt water. To convert into chloride of silver, add more water to the silver, and decant again as before, repeating as often as necessary to wash out all soluble silver, each time using caution to see the silver is all converted into chloride. The chloride can be allowed to settle, and the water decanted, and by repeating the salt and water with silver, a large quantity of chloride can be precipitated in one bottle. It is well to repeat the nitric acid on the residue of the ash, to be sure to get all the silver dissolved; after getting all your silver wastes converted into chloride, and well washed through several waters, to free it from fine salt, then put the mass into a large porcelain evaporating dish, and drain; after well settling all the water off possible, then cut up strips of zinc, and set up edgewise, and let stand for a day or two to convert the chloride into metallic silver; there should be pieces of zinc about every half inch apart throughout the chloride; after the chloride has been well converted into metallic silver, take out what zinc remains, then digest with sulphuric acid, to dissolve the zinc, which can easily be told by adding a small quantity of acid after effervescing has ceased, and should there be no more indication of zinc, you can be sure all is dissolved. Now wash the remaining precipitate well with soft water (a dozen or fifteen waters will be none too much) to thoroughly get rid of the zinc; all that remains is to dissolve the silver with nitric acid, and draw off into or filter into a bottle, then add more water, and decant, &c., until you wash out all the silver. I usually add more nitric

Photographic World.

is formed almost upon the very surface of the collodion; if properly manipulated the collodion will still retain hold of the film, which will not be removed by washing, although when dry it is very easily rubbed off. This film is, when fumed with iodine, very sensitive to light; the yellowish-red or brown colour of the film becomes by turn red, green, lilac, blue, and finally assumes a transparent greyish white tint.

That it is simply a mechanical separation of the particles, and not a chemical change, that induces the iodide of silver film to assume these different colours, is demonstrated most clearly by the fact that under similar circumstances, without any action of light, iodide and bromide of silver films can be made to exhibit colours of a similar kind. If the precipitation of iodide of silver upon the collodion film is hastened as much as possible by causing the freshly coated collodion plate to dry by breathing, so that a more aqueous solution of the iodine salt is formed before the plate is put into the silver bath, the film will appear on drying to possess a beautiful rose-red, or bluish tone, when viewed as a transparency. The same colour is obtained with an ordinary photographic plate, if the silver solution is allowed to evaporate slowly from its surface, and it is afterwards washed and dried before time has been given for the formation of dry stains; the collodion employed for the purpose must be of a character to yield a thick spongy film. If pressed, or rubbed, or coated with varnish, the blue colour of the film again passes to a yellow; in the same way, by warming it in a wet condition, the red or blue tint is destroyed.

The mechanical change of the iodide of silver only occurs in those colours of the spectrum which act upon iodide of silver photographically; light, therefore, which has passed through a film of iodide of silver (rendered insensitive) is, on this account, without effect.

This behaviour of iodide of silver may be utilized for the production of photographic pictures, which I may designate mechanical iodide of silver pictures, the positive produced by printing under a negative being, when viewed by transmitted light, of a brown tint. By continued exposure this dark brown colour is gradually changed, after many modifications, into a light bluish-white tone, the dark shadows becoming brighter, so that under a negative with out half tone we obtain at last another perfect negative. An experiment of this kind is best conducted with an iodide of silver film prepared upon collodion in the manner above indicated.

If it happens that when the picture comes out of the printing frame the image is still a weak one, and the film does not possess the full depth of colour, increased vigour may be obtained, and the print intensified, by exposure for some time in full, but not intense, daylight. The continued action of the light, as Becquerel has termed a similar effect upon the photographic image, cannot be considered by any means a phenomenon of peculiar importance, as it is easily explained by what has been said of the commencing action of light upon a sensitive film. That Becquerel's observations have a distinct bearing upon this subject is seen from the fact that a marked continuous action was observed upon the affected portions of the film when weakened sunlight (through red light) was thrown upon the plate, while the unaffected parts were also, to a certain degree, attacked; the image became fogged.

By fumigation with sulphurous acid, or washing with iodine-absorbent substances, these pictures are pretty well proof against light. They are best protected by varnishing. The film of varnish acts, however, merely as an envelope which prevents the further separation of the iodide of silver particles by means of the light. For the same reason, iodide of silver in the ordinary iodide of silver collodion film is less susceptible to physical change. Hyposulphite of soda dissolves iodide of silver which has been acted upon mechanically by light, as also unaltered iodide.

(To be continued.)

Correspondence.

APPRENTICES AND PHOTOGRAPHERS' ASSISTANTS. —ARTISTIC PRINTING.

DEAR SIR,—I believe efficient photographic assistants, such as could be trusted for honesty and integrity, might be obtained if due care were taken and enquiry made as to the position and ability of the late employers.

The number of photographers is "legion," and it is quite observable that many heads of establishments would have done well to pass through a term of apprenticeship before taking a position for which they are unqualified. It is no wonder, then, a boy such as Mr. Welch states, no better than a city Arab, taken by such an employer, and passing through a mechanical process (such as might prove sufficient training for an organ grinder) after a few months, or perhaps years, should pass himself (perhaps unconscious to the contrary) as an efficient assistant. And yet I have seen boys who, having been first employed about the most menial work, and advanced step by step, would do credit to themselves and employers, either in the dark room or the printing department.

I believe no talented photographer would advance a boy unless he saw that the necessary ability as to taste, &c., were possessed by him.

I have made it an especial duty, in the houses where I had the superintendence, and where lads have been engaged, to carefully explain work as it was done, giving the why and the wherefore; and have seen the boys remain for years in one establishment, and afterwards take respectable situations, giving the greatest satisfaction.

Discipline, combined with kindness, on the part of principals of photographic establishments, would have the effect of the retentive and faithful services of many lads. A case as example. Some years ago a poor lad addressed me in the street of a seaport town, asking me if we had an opening for a boy at the establishment I then managed. After consultation with my principal, an opening was made, and I set the lad to work. Many times I thought I should have to give up teaching him, on account of his awkwardness; but eventually, with a great deal of trouble, I taught him to mount prints, &c., and after two years' drill had the satisfaction of seeing his usefulness fully repaying his employer. I also received my reward, upon my removal to another sphere of labour, in the hearty "May God bless you!"—which earnest wish of his has seemed to follow me ever since. I believe did photographers generally act in this way, encouraging lads as they advanced, and remunerating them accordingly, very few would have to advertise for assistants, or stand the risk of getting such an unprincipled pretender as Mr. Welch did. I am no believer in caste; many a lad, though but an errand boy at first, may possess a mind which, under proper cultivation of our beautiful art, would enable him to rise to the highest position among photographers. Abundant cases might be given of men born in higher position, and with the means to commence with, whose silver spoon gradually faded or melted from their mouths; and, on the other hand, many who have been taken from the rough quarry of humanity have, by industry and study of their art, made their way to independency, and are now enjoying the fruit of their honest labour.

By all means let photographers receive boys only as apprentices; they could then train them to the work, and would save themselves the trouble of constant search after suitable assistants.

A word on Fritz Luckhardt's method of masking to obtain pictorial effect. Presses are generally used now by printers which hold only the negative, without a glass, in the press. A negative touched, therefore, as recommended, and placed in such a press, would in wet weather be labour in vain, for the least shower overtaking the printer before he could collect his presses under shelter, the work of hours would be destroyed. Also the negative would have to be printed in the shade, or continually turned round (especially this time of the year), to evade the outlines of the touching on the proof. I find the best plan is to keep a small condenser at hand, and if any drapery, &c., requires to be accelerated, I allow the sunlight to fall through the condenser on such part for a few seconds, and by this means have the printing under perfect control.

Apologising for the space taken up, I beg to remain, yours respectfully,
J. SCHMIDT.

The ordinary arrangement of the printing is by a glass and a lens.

But it is necessary that the projection of the end of the camera should be projecting upwards... The lens is placed in a tube... The object is to project the image of the object... The lens is placed in a tube... The object is to project the image of the object...

STEREOSCOPIC APPARATUS

There is nothing of more real importance in the photographic apparatus than the way in which the camera is supported... The camera is supported by a tripod... The camera is supported by a tripod...

When there is any motion of the camera... The camera is supported by a tripod... The camera is supported by a tripod...

There is a camera called the 'camera lucida'... It is used for drawing... It is used for drawing...



There is a camera called the 'camera lucida'... It is used for drawing... It is used for drawing...

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make a difference in their working that will be very apparent. They should not be neglected, however, stormy day or not, till they get so dusty as to interfere with their working. After the lenses, have a general clearing up of the room. With a wet cloth or sponge wipe every place where dust may lodge, clear off every shelf, table, or corner where rubbish may collect, and put everything necessary in its proper place, and those that are not needed here, find a place for somewhere else. Occupied in this way, the stormy day proves one of the most satisfying and profitable of all the week."

SOME FURTHER REMARKS ON THE COLLODIO-BROMIDE PROCESS.

BY COLONEL STUART WORTLEY.

THE interesting leader by the Editor of the PHOTOGRAPHIC NEWS in last week's issue induces me to offer these further remarks on the collodio-bromide process.

It is well that it should be clearly pointed out what are the differences between what we may now consider the three formulæ for working the process, with Mr. Carey Lea's proposal to acidify the collodion with *aqua regia*. His original formula was published on the 1st April, 1870, and his second formula, a great improvement on the other, on the 30th December in the same year. The proportions of bromide and silver in these two formulæ stand as follows: In the first, 6 grains of bromide to 8 grains of silver; and in the second, 6 grains of bromide to 10 of silver; whereas in my process I use 6 (or even fewer) grains of bromide to 16 grains of nitrate of silver.

Now the great sensitiveness which is obtained by the use of collodio-bromide as I work it is solely due to this saturation of the collodion with free nitrate of silver, and the exquisite softness and detail that is obtained in the negatives is equal to what is obtained by the ordinary wet process.

In the Editor's leader of last week, he intimates that I consider the brown tint of negatives prepared with insufficient free nitrate to be a certain indication of imperfect conditions; but I wish to make it clear that I do not go the length of saying that it is a sign of imperfect conditions in the working of the collodio-bromide process: I only say that those workers who are obtaining that colour of negative are not developing the process in its perfect stage; and till they obtain a negative in which the green colour conferred by the large excess of free nitrate is unmistakable, they have no idea how delicate, sensitive, and beautiful a process it is. Again, I should not go so far as to say it is a sign of imperfect conditions, because there are cases in which the method of working the collodio-bromide process with an excess of bromide may be found advantageous. For instance, in copying engravings, where the power of obtaining hardness is an advantage; and notably in the case of transparencies, where the extreme sensitiveness conferred by the great excess of free nitrate is not required, and is, in fact, undesirable, and where the green colour would be less pretty than one of the shades of brown obtained when bromide is in excess. In fact, for transparencies, the collodio-bromide with excess of bromide is of great value, because any colour, from a bright orange to a deep rich brown, can be obtained with absolute certainty by varying the proportion of bromide, and using a standard sensitizer of silver of from 10 to 12 grains to the ounce; but as the process worked with the collodion saturated with an excess of free nitrate, according to my method, is at least three times as sensitive as the other, and gives far more delicacy of detail and harmony in the picture, it is obviously the process to be used by any one wishing to take negatives.

I may here call attention to the fact that those who wish to use the process wet do not require to put any preservative on the film: the sensitive collodion is simply poured

on the glass, washed, as soon as set, either in a dish or under a tap, till the water runs smoothly off; drained for a minute or two, and exposed at once in the camera, giving the same exposure as to a wet collodion plate, and bearing in mind that the omission of a preservative makes it desirable that more bromide should be used in the developer in proportion to the ammonia than when the plates are used dry. Under ordinary circumstances, one part of each of the solutions mentioned in my paper will be about right.

In developing the dry collodio-bromide plates, I think it desirable that they should be soaked well (say for a couple of or three minutes) in the plain pyrogallic solution before adding the bromide and the carbonate. It renders the film more permeable to the developer, and the development is more rapidly accomplished. Where extra sensitiveness is required, it is advantageous to commence the development by steeping the plates in a mixture of methylated alcohol and common water warmed to about 120°, and then developing in the usual way; or this may be varied by steeping the plates in the alcohol and water mixture cold, and using hot water to mix with the pyrogallic acid in the development.

There is one more point I wish to call attention to: this process, with my saturation of free nitrate, does not give a very creamy film, and it is wise to have the non-actinic backing of some considerable density. Should, however, the film be obviously too thin, the remedy is to thicken the plain collodion, and not in any way to alter the proportions of bromide and silver. Probably, considerably less ether will be required than the quantity proposed by me in my article, as those proportions give me a very thin collodion for use with large plates, and would probably be somewhat thin for plates of a small size.

I am now making a series of experiments on the proportions of the preservative mixture, and of which I will forward you details.

FLOATING, PRINTING, AND TONING.

BY C. E. W.

PRINTING is doubtless one of the most important branches of photography. Yet too frequently it is left to the care of inexperienced hands, and even boys whose love for anything but the art above mentioned, and who, being too young to understand or appreciate it, leave the prints to take care of themselves while they attend to other things. They cannot, therefore, give it that attention that it requires. Printing cannot be too carefully watched, seeing that the light is ever changing, and that a few seconds is sufficient to spoil a batch of prints. My object is to give a few simple hints on the above-named processes.

Firstly. Floating, in the eyes of many, is but a simple process, to which little or no care need be given: but I venture to remind you that this is a great mistake. In printing a large portrait, and on examination, you find sundry air-bubbles across the face, or some other important part of the photograph. Is it not then you regret not having taken sufficient care in floating your paper? All these may be obviated by paying attention to the following rule: That your silver bath is the right strength, pure, and well filtered; floating the paper no longer than the given time (most papers require from three and a-half to four minutes); lastly, by holding the paper by the two lower corners, sliding it carefully over the side of the dish, guiding it into the bath with the right hand, you will, by so doing, get rid of all imperfections. When your bath gets discoloured, a little kaolin will rectify that. When the paper is thoroughly dry, lay it between the leaves of a book, with a weight on the top, ready for printing.

Secondly. Printing should be done in the shade. Should any of your negatives be under-exposed, I find by laying

very careful in the employment of the bichromate of potash: a dose of 0.25 gramme was sufficient to kill medium-sized dogs in from two to six days. Jaillard himself took 0.12 gramme, and observed with small doses dangerous symptoms. Most of the organic substances, particularly the hydrates of carbon—such as sugar, alcohol, and the organic acids—decompose the chromic acid into oxide of chrom. This is particularly the case with tartaric acid, which Frederking has proposed as an antidote against poisoning with chromic acid. The decomposition of tartaric acid, unless it is very much diluted, takes place in about one and a-half minutes, chromate of potash and carbonic acid being formed. It will still be necessary to try this antidote on living beings."

SALTS OF GOLD.—The results of extended researches into the properties and compounds of gold have been published by Mr. Pratt, of Bordeaux. He states that chemically pure gold can be prepared in the form of sponge; that there exists a liquid chloride superior to the per-chloride, and that salts can be made from the sub-oxides and binoxide. He succeeded in making a fluoride of gold, from which he prepared fluorine in the form of a yellowish gas similar to chlorine. The preparation of spongy gold is accomplished by saturating a solution containing ten per cent. of chloride of gold with pulverized carbonate of potash, and for each equivalent of gold salt he adds an equivalent of a saturated solution of the same carbonate. He then treats the filtered liquid with five equivalents of pulverized oxalic acid, added in small quantities at a time, and boils the liquid for ten minutes. The gold is reduced to a state of an extremely fine powder, and the grains agglomerate and form a spongy mass without metallic lustre, but convertible by the hammer into solid ingots. Mr. Pratt also claims to have prepared the carbonate of gold.—*English Mechanic*.

To Correspondents.

J. B.—It is possible, with skill and painstaking, to obtain good results in studios of very different forms; but in our experience and observation no form gives so much trouble in obtaining good results as that in which direct front light constitutes an important element, and none yields good results with so much uniformity and so little trouble as the ridge-roof with a principal north light. If you can build in any fashion and have an uninterrupted north light, we should have no hesitation in recommending you to adopt the ridge-roof form. The following proportions for a room will be found useful:—About twenty-eight or thirty feet long, twelve or fourteen feet wide, eight feet at the eaves, and fourteen feet at the ridge; very little or no glass in south side; none in either end; six feet at each end of north, side, and roof opaque, the remainder glass coming within two feet of the ground. To avoid the direct light of the vertical sun in summer, the ridge may be out of the middle, making the south slope of the roof wider than the north. Such a room will permit you to work at either end, and so take either side of the face of the sitter. A studio with a large front light, and side-light such as you mention, might be made to give good results, but would require constant arrangement of the blinds and curtains, unless you used one of M. Adam-Salomon's above backgrounds.

W. W.—The developer you quote will probably contain sufficient acid and other restraining agents for summer use. 2. The copper salt and the sugar will not interfere with each other. 3. We have not tried it, but see no reason why it should not answer well.

T. L. HOWE.—The address of Mr. Grubb is Dublin. Our answer to this question, unfortunately, stood over last week.

F. W.—Your experience has been unfortunate. Has it arisen from any lack of care or patience? We cannot speak of extended personal experience; but general reports are satisfactory. The difficulty of coating plates with collodion in the open air is common to every method of working wet collodion in the field, and can only be met by contrivance to suit circumstances. We have often found the shelter of a friendly tree serve us well in such case, or a house, or barn, or hedge; or, failing these, an umbrella may be useful. The dark slide should be wiped out each time. In using the developing tray we were able to see something of the progress of development, especially when the dark cloth is thrown over the head and top of the tray. The brass screws are all, or should be, coated with varnish, and ought not to cause the developer to decompose. Have you followed formula carefully? See the opinion of another gentleman in an adjoining column, and try again.

LIEUT. HASLITT.—From your description of the mishap it appears almost certain that a leakage must have occurred in the well bath of the apparatus; but surely it will be traceable. If there is no outward sign at present, refill with water, and watch for the leakage. It is scarcely likely that it has occurred through any defect in the india-rubber, unless there is a definite crack or rent. Possibly some joint of the woodwork may have parted. If you find the place, a little shellac varnish or marine glue will probably efficiently repair the injury. But we should not in any case counsel the keeping of the silver solution in the bath when not in use. From any bath of that character of construction it is better to restore the solution to a bottle on concluding work. Thanks for your statement of experience with the apparatus, which is interesting.

A. CONSTANT SUBSCRIBER.—By the term "skiu negatives," we presume you mean negatives transferred from the glass, and supported on a film of collodion or gelatine. There are various modes of effecting the transfer, all of which we have described. The details are too long to repeat in this column, but you will find various methods described in our back volumes and Year-Books. In our last Year-Book you will find full details on p. 62. As a rule, the negatives are better not varnished for the purpose.

NINE YEARS' SUBSCRIBER.—The plates simply require to be placed in a dish of distilled water for a few moments before applying the alkaline developer. For large plates a greater proportion of ether would be added, for two reasons: first, the larger the plate the more fluid the collodion should be to run easily over it; and second, the larger the surface the greater the evaporation of ether. The address of Messrs Hopkin and Williams is New Cavendish Street, London.

J. TURNLEY.—The use of a dilute albumen solution as a preliminary coating for the collodion plate is not found to injure the bath. It is probable that some contamination might result from the use of a thick coating of an albumen.

E. D. S.—The powdery foggy deposit which may be rubbed off the surface with cotton wool or the finger is generally due to the condition of the developer, although it may arise from other causes. The use of a newly-mixed developer will often cause it when other conditions are suitable. The same developer used two or three days after mixture will give plates quite free from it. Sometimes too much light in the dark room will cause it; sometimes prolonged development will cause it; sometimes organic matter will cause it; very often impure acetic acid will cause it; some samples of acetic acid contain traces of an empyreumatic oil, which generally causes this kind of fog. Fortunately, this loose fog shows very little after varnishing, and interferes little with printing. 2. Silver stains on opal glass are very persistent. First apply a strong tincture of iodine and rub well with a strong solution of cyanide. Or, if the glass have a ground or "smoothed" surface, place a little very fine emery powder on the stain, place another piece of glass over the powder, and rub with a circular motion until the stain is removed. Mr. Forrest, of Liverpool, will supply the suitable emery powder for the purpose by post.

TYPO.—We have described several methods of transferring collodion pictures to paper, and also the best modes of producing them; but the details occupy too much space to permit of repetition in this column. You will find an article on the best mode of transferring in the News for August 6, 1859. The various modes described for producing photo-crayons are suitable for securing the best pictures for this work. A two-grain pyro developer containing one grain of citric acid and twenty minims of acetic acid answers well.

J. W. (Bristol).—The exact colour of the background for collodion positives is somewhat a matter of taste. We prefer a tolerably dark grey. The distemper colour already applied, which is now peeling, should be washed off before applying another coating. To prevent peeling, use the mixture of whitening and leuc-black not quite so thick, and add a little less size to the mixture. 2. About forty grains of gum-dammar in an ounce of benzole will make a suitable varnish.

NEMO.—The advertiser is in London. An announcement appears in our advertising columns with further particulars.

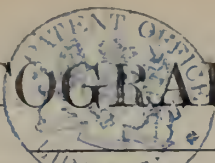
ENQUIRER.—The best modern book on the practice of photography is Dr. Vogel's Hand-Book, just issued in America. We have recommended our publisher to write for a supply, and they are expected very shortly.

Some reviews and other articles in type are compelled to stand over for lack of space.

Several Correspondents in our next.

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15, Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.



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THE AMERICAN PHOTOGRAPHIC ASSOCIATION.

THE annual convention of the National Photographic Association of the United States, just held at Philadelphia, presents an illustration of *esprit de corps* which is without parallel amongst photographers in any part of the Old World. The Association, although but three years old, appears to have acquired a degree of vitality, of cohesion, and of importance truly surprising. Hundreds of photographers, from cities thousands of miles apart, gather together to discuss the questions which pertain to the well-being and progress of their art and profession, their meetings extending over a week. The occasion is one which manifestly possesses public interest, and excites public attention. We have not yet received any official report, but we have before us—for which we are indebted to the courtesy of Messrs. E. and H. T. Anthony—the reports, given in the daily press of Philadelphia, of the meetings, lectures, and exhibitions, extending over nearly thirty columns of the different papers. Each year's meeting seems to indicate unquestionable progress and increased stability in the Association. We have before stated some of the objects of the Association; here is an answer, given by the President, Abraham Bogardus, in the course of his annual address, to the question, What has the Association so far effected?

"To such as ignorantly ask, 'What good has the Association done?' I answer, it has given us an opportunity to compare our work with each other; it has made the most selfish man amongst us admit that others could do good work as well as he; it has created a desire in every member to improve; it has, through its members, been the means of crushing some of the most outrageous and unjust patents that ever burdened a profession; it has brought us in closer relations with the photographers of Europe; it has given a tone of dignity to the profession, enabling us all to feel proud of our calling, for who does not remember when we were almost ashamed to acknowledge the craft? At this live gathering—this splendid exhibition—who is not proud to be a member of the National Photographers' Association of the United States? It has made us all study, will make us study more, and when we study we progress."

We have before asked the question, Is it possible to establish any such confederacy of photographers in this country? And, if possible, is it desirable? The aim of the Association is much more comprehensive than that of any of our societies, although it includes some of the same objects. English photographic societies confine themselves to the discussion of photography as science and art; the Association does this also, but it regards the science and art in relation to the interests of those who devote them-

selves to the profession or trade. Questions which legitimately come under the consideration of the Association could have no place in the discussions of any of our societies. The consideration of prices and trade usage, the opposition to unfair patents, the establishment of a system of relief, the discussion of a system of apprenticeship, and other questions interesting to photographers as a community, but not necessarily touching photography as a science or art, are matters which come under the attention of the Association, but which our societies necessarily, from their constitution, ignore. That some means of discussing these subjects and coming to a mutual understanding thereon would be of service to English photographers we cannot well doubt, but we must confess we scarcely see the probability of such an organization being formed. Part of the work of the Association is already effected by existing societies. Photography as art and science is freely discussed, exhibitions are held, and a weekly press affords the readiest possible means of ventilating subjects of every form of interest to the photographic community, and hence an association with the aims we have mentioned, although in many respects desirable, is not of pressing necessity. Nevertheless, the matter is one well worth consideration. Every year which passes, rapidly changes the aspect of photography in many respects. It is steadily passing out of the experimental stage of its history into the settled condition of a recognized profession or trade, and new phases of interest require fresh conditions and fresh arrangements. We shall keep the American Association and its proceedings before our readers from time to time, and we invite the attention of thoughtful readers to the consideration of the possibilities such proceedings may suggest.

PERMANENCY IN PHOTOGRAPHS.

THE question of permanency in relation to photographs has been so much discussed, and the stigma of non-permanency so often imputed, that a feeling of jealous sensitiveness has arisen in the breasts of many lovers of the art, which renders them keenly alive to the danger of misconception or fallacious notions on the subject, and a degree of bitterness has not unfrequently been introduced into discussions relating thereto. One point will, however, be conceded on all hands, namely, that in all comments on the subject of permanency, the term should be properly defined and properly understood. Permanency, it should be remembered, does not mean indestructibility. A thing is permanent, in the common acceptance of the term, which does not, from internal and inherent causes, decay; and it is no impeachment of its permanency if it be not proof against the action of destructive agencies to which, under

the ordinary circumstances of its being, it would never be submitted. An impression in printers' ink from an engraving is a tolerably permanent thing, but it might be wiped out with a piece of rag dipped in turpentine. A water colour drawing or an ivory miniature might be sponged out with water. A design engraved on brass or marble might be removed by a strong acid. But the possibility of destruction is no impeachment of the permanency of the impressions or designs. It appears necessary to state these truisms because misconceptions on the subject not unfrequently come under our notice. It is not long since an exultant statement appeared in one of the continental journals pointing out that the "permanent" impressions of Herr Albert were destroyed when sponged with water. We have just received a letter from a correspondent who points to a similar fact in relation to heliotype prints, and although no especially unfair comment or argument is entered into, the conclusion to which the letter points is really unfair. The letter is as follows:—

"BABY, AND 'THE ART IN ITS INFANCY.'

"SIR,—I have just returned from a visit to the International Exhibition, and nothing there delighted me more than some very pleasing printing experiments—photographs, as I was informed, printed in permanent ink. Of course I purchased several proofs (they are sold as they are struck off at sixpence each), and brought the same down into the country, where I have been showing them to admiring friends, and loudly predicting the speedy downfall of silver prints.

"Now here comes the distressing part of the affair: for whilst we were discussing the many advantages accruing from really permanent works of art, baby, who tests everything by taste, having secured a print for his own special eating, astonished the circle by sucking off the greater portion of a beautiful figure representing 'Love,' and which now simply represents a 'smudge.' I send you the 'smudge,' and any explanation you can offer I shall receive with thanks and in unquestioning faith, merely remarking that the treatment which reduced the heliotype to a 'smudge' would not have injured an ordinary carte-de-visite.—I am, dear sir, yours very truly, L. O. KNOXBS."

The "smudge" enclosed consists of two emblematical figures, representing "Love" and "Chastity." Love is nearly erased, and Chastity is sadly besmirched and sullied; but, after all, there is nothing which detracts from the permanency of the prints in this fact. They are printed on a faced or enamelled paper, the surface of which, when moistened, is easily rubbed up. This paper is chosen at times because the fine surface gives additional delicacy to the impressions. It is, perhaps, scarcely wise to use such paper; but if the prints are put to the recognized use of such pictures, and kept with the ordinary care accorded to a water colour drawing, they will be found absolutely permanent. Baby's test of sucking is not quite the touchstone of permanency. Everything must be tried by its legitimate test, and subjected to the conditions under which it is required to remain perfect. By the use of fallacious tests the most absurd conclusions may be attained. An oil painting may be sponged out with a little benzole, which would not injure the most imperfectly produced photographic print; but would any one claim a greater permanency for the latter than the former on this account? The real stigma of photography has been the non-permanency of its works when kept under the ordinary conditions suitable to their purpose and character: change and decay from inherent causes, not from outward destructive agencies, have been but too prevalent. The aim of those who love the art should be to get rid of this stigma by every means which can be rendered available. The character for permanency of silver prints is hardly aided by any imperfection in the quality of prints by other processes claiming permanency, but if it were so, this imperfection should be ascer-

tained by legitimate tests rather than their failure to bear accidental conditions foreign to the purpose to which the prints should be applied.

GUM, GUM AND GALLIC ACID, AND ALKALINE GUM SOLUTIONS FOR DRY PLATES.

MR. RUSSELL MANNERS GORDON favours us with some interesting details of the results of an experimental batch of plates prepared last November and exposed recently. They were prepared with a syrup of gum and sugar alone, in different proportions of gum and sugar, with gallic acid, and of gum and sugar with the addition of an alkali. In reference to the latter, Mr. Gordon writes to us that the use of alkaline gum, which some photographers seem inclined to favour at present, "is sure to bring them to grief." Mr. Gordon says:—

"From innumerable experiments I have made with dry plates, I have invariably found alkaline development to be so great a leveller that, when freshly prepared, they can, with almost any organifer (by careful and patient development), be made to work nearly with the same rapidity, the principal difference being in the time occupied by the development, and in the colour and quality of the resulting negative. It is a better plan, and one which I think will, in the long run, be found to save both trouble and disappointment, not to expose experimental plates when fresh, but to keep them several months before use.

Having for some time past adopted this plan, I lately exposed a batch of plates prepared last November as follows, and with the following results, which may, perhaps, interest those who feel inclined to use alkaline gum this summer. (Five grains of white sugar-candy were added to each ounce of all the following mixtures):—

No. 1.—Gum	5 grains
Water	1 ounce
Gallic acid	3 grains
No. 2.—Gum	20 grains
Water	1 ounce
Gallic acid	3 grains
No. 3.—Gum	20 grains
Water	1 ounce
No. 4.—Gum	40 grains
Water	1 ounce
No. 5.—Gum	40 grains
Water	1 ounce
Gallic acid	3 grains
No. 6.—Gum	40 grains
Soda (bicarbonate)	3 grains
Water	1 ounce

NB.—This mixture becomes milky, and remains so, throwing down a fine white precipitate.

No. 7.—Gum	40 grains
Water	1 ounce
Liquor ammonia	2 drops

Remains quite bright, but darkens in colour.

No. 1, from insufficiency of gum, even with the assistance of the gallic acid, fogged.

No. 2 remained perfectly bright.

No. 3 very slightly fogged.

No. 4 perfectly bright, and a trace more sensitive than No. 3.

No. 5 equally bright, as sensitive, and a little more intense than plate 4.

No. 6 one mass of fog.

No. 7 equally bad.

The above only verifies my previous experience that the preservation of the plates greatly depends on the amount of gum present on the film. Twenty grains of gum to the ounce requires the assistance of the gallic acid to ensure keeping qualities, while with forty grains of gum you can, if you like, work with perfect safety without it.

Alkaline gum, as in plates 6 and 7, will not do after long keeping.

I may also add that I have invariably found the addition of any portion of tannin with the gum greatly against the adhesion of the film, even when using a substratum; and if, to obviate this, the gum be finally washed off, although the result with freshly prepared plates is quite as perfect as if left on, keeping qualities are sure to suffer in proportion to the amount of gum so removed.

These organifiers were used with a bromo-iodized collodion, excited with usual forty-grain bath, but I see no reason why their action should not be more or less the same if employed with collodio-bromide plates.

I should like to know if any of your readers have gone through these experiments, and if so with what result, as there appears a singular difficulty in getting two experimentalists in matters photographic to agree.

Critical Notices.

HAND-BOOK OF THE PRACTICE AND ART OF PHOTOGRAPHY. By Dr. HERMANN VOGEL. Translated by EDWARD MOELLING. (Philadelphia: Benerman and Wilson.)

WE have no hesitation in saying that Dr. Vogel's handbook of photography is the most comprehensive, practical, and altogether valuable work of the kind which has been published in connection with the art. In this country, the birth-place of photography, and the country *par excellence* of photographic periodical literature, there have been few books of any pretension to comprehensive or exhaustive treatment of the art. Excellent elementary manuals we have in abundance, but no complete or even extensive works. Hardwich's "Photographic Chemistry," good as it is in many respects, is of little value as a practical guide. Sutton's "Photographic Dictionary," useful as a book of reference, makes no pretension to be anything more. Lake Price's "Photographic Manipulation," a good book so far as it goes, deals with the practice of the ordinary processes, and nothing more. The most comprehensive we have is, probably, Hughes's shilling manual; but such a work is limited by the very conditions of its purpose as a cheap elementary book. In Dr. Vogel's book the aim is to comprehend tolerably full details of everything which can interest a photographer in relation to the theory and practice of photography both as a science and an art. The work commences with a fully illustrated chapter on the construction and arrangement of studios, and the lighting of the sitter. Next the tools of the photographer are considered, and a comparative description of the construction and action of the various lenses and of cameras is given. The manufacture and preparation of collodion, nitrate baths, developers, varnishes, and other matters connected with the production of the negative, follows. This is succeeded by admirably clear instructions for various manipulations. Then comes a very excellent chapter or section devoted to "the care of apparatus and elements," which is full of excellent hints. The various methods of printing are treated at great length, and succeeded by carbon printing, development printing, collodio-chloride printing, camera printing in collodion and transfer, printing on glass and porcelain, reproducing negatives, copying, enlarging by different methods, micro-photography, stereoscopic work, landscape work, reproductions, &c. A series of chapters on photographic art and composition, with copious engraved illustrations, follow, and the work concludes with an appendix containing instructions for light-truck and photo-relief printing, chapters on reduction of residues, on other practical subjects, and on the various sources of error producing defects. The work throughout is singularly clear and explicit, and is illustrated with something like two hundred wood-engravings. The only drawback to our

pleasure in noticing it arises from the fact that at the present moment it is not published in this country; but we believe arrangements have been made for a supply, of which due notice will be given to our readers.

HAND-BOOK TO MONMOUTH, Illustrated by Photographs. (Monmouth: R. WAUGH.)

AN excellent guide through some lovely scenes. The Wye scenery is well-known to be of great beauty, and the historic associations are full of interest. Some capital photographic illustrations by Mr. R. Tudor Williams add much to the value of the book.

AMERICAN CORRESPONDENCE.

THE NATIONAL EXHIBITION.—NEW USES OF PHOTOGRAPHY BY GOVERNMENT.

The National Exhibition.—The third annual convention and exhibition of the National Photographic Association of the United States has just closed in our city, and the whole procedure was a grand photographic success. The meetings of the Association were characterized by harmony and good feeling, and a most practical turn was given to them by the constant intervention of an address, a paper, or a discussion on some of the departments of picture making. The general routine business of the Association would be transacted for (say) an hour, and then the rules would be suspended to give way to some one who was willing and ready to give information on practical subjects. Such a plan interested all, and it worked admirably. Men who came thousands of miles to be present in order to learn something, were thus gratified and repaid, while those nearer at home, having the interests of the Association at large at heart, were also given the best attention by our worthy and beloved president, Bogardus. As I shall send you an early copy of the proceedings, you will have opportunity to present as much of the same to your readers as you may see best. The meetings of six or eight hundred photographers together from all parts of this vast country, and including the dominions of your beloved Queen, is a grand affair, and one does not wrong greatly in calling it a "jubilee."

Five years ago, if a photographer found some little "dodge" that appeared advantageous to him, he would forthwith put his gallery in charge of an assistant, and proceed to travel about among the craft and "peddle out" his secrets for exorbitant sums. This is now all broken up, and now we see our Bogarduses, our Blacks, our Kents, our Bakers, and others, standing up in the meetings of our Association, and giving freely of their stores, so that all who will may learn from them. In this country such a state of affairs is a "day of jubilee," and so we call it. An annual recurrence is doing a wonderful amount of good, which is plainly visible in the quality of work displayed at the exhibition just closed. There are hundreds more good photographers in the land than there were a year ago, and those who were good a year ago are now better, as the careful observer will see by examining their productions. More care is exercised and pains taken to secure pictorial effect. The light, the backgrounds, the figure, are all more studiously managed, and the resulting effects you can readily imagine. The average character of the work exhibited was first-class, and I am now willing to say that American photography in the line of portraiture is equal to any in the world. This I could not claim two years ago. At our Boston Exhibition in 1869, some cabinet photographs were exhibited by two foreign artists that made some of our earnest photographers sick with envy. Those same pictures were hung in our late exhibition. Compared with the work now made by our best artists they are as flat and expressionless as our work was compared with them two years ago.

They are the best evidence to me of how rapidly American photographers have advanced, overcoming all difficulties, ferreting out all the little secrets and appliances, and producing work equal to the best. Congratulate us!

The foreign display, although not very large, was varied and interesting; I greatly regretted not seeing more from England. Our live, enterprising, and excellent friends, Messrs. Robinson and Cherrill, were well represented, of course; they always are. The marine views and their compositions attracted very great attention, and the admiration of every one. They have no rivals in this country, and their productions are always fresh to us. Long may they live to uphold the fame of our beloved art. One picture only was sent by Mr. Hubbard, namely, his "Stolen Moments;" it is, as you know, an exquisite little gem, full of feeling, and showing great patience in its production. Such men as Mr. Hubbard are doing much to break down the opposition to the claims of photography as an art. Mr. Diston also sent five or six of his little compositions, and they also attracted a great deal of notice and admiration; they are capital. Mr. Netterville Briggs exhibited some Salomon style of pictures, which are very fine in pose, lighting, and general manipulation, two or three of them being particularly fine. I did not forget the picture of Brighton Church, by Messrs. W. W. Law and Son; it interested many here, and that aside from its being a good picture. I regret that we did not hear from more of your co-workers in England; I hope another year that they will not be so backward. I would like to see more affiliation between the photographers of your country and mine, for I believe it would be productive of good all around.

There was a good deal of disappointment over your not being present with us during our week of jubilee. I had led a number to expect you, and I can only add that they were much disappointed, and that you do not know how much you have lost. Try to break away from the NEWS next year, and meet us in St. Louis, to which place we have adjourned until 1872. A standing welcome awaits you.

New Uses of Photography by Government.—Photography is used by our Government in two or three novel yet useful ways, which I must tell you of. A good deal of loss has been sustained by the Pension Bureau, on account of frauds perpetrated by dishonest applicants for pensions. For example, a party would receive his claims at the General Office at Washington, and then quickly apply again at some agency in the larger cities, very often with success. Now his "little game" is blocked. Each day the pages of the receipt books at all the offices are photographed, and copies transmitted to each office; then, when the defrauder presents his second claim, photography confronts him with his own signature, and the Government is secured.

Another use is made of photography by the Customs Department. When goods arrive from abroad in New York for merchants in other cities, they are placed in bonded railway cars, and locked with the "photographic lock" of the Customs House. The lock itself is nothing more than an ordinary padlock, which is provided with an arrangement by which a small piece of glass an inch square is passed over the key-hole, and held in place by a small spring, which cannot be reached without breaking the glass itself. By no possible exercise of ingenuity can the lock be picked or opened without breaking this piece of glass. Here comes in the value of photography. A large sheet of glass, red on one side, is prepared in New York, by marking it off into squares of the proper size. On each square is marked a number in figures and irregular spots in red, the rest of the red surface being cut away with hydrofluoric acid. One of these sheets cannot be duplicated. The Government photographer receives them at Washington, and makes three photographs of them, which give perfect facsimiles of the figures and spots on the glass, and then both glass and photographs are cut into

small squares corresponding to each other, and packed in boxes, each square of glass having with it three copies on paper. These are forwarded to the officers who will use them. The officer at New York, for instance, whose duty it is, locks the doors of the car containing bonded goods, places the glass square over the key-hole, and forwards the photograph of the same to the officer at Philadelphia or elsewhere whose duty it is to receive the goods. If, on the arrival of the car, the lock has been disturbed, the inspector is at once aware of it, and the company transporting is liable in bonds required previously. This is an ingenious and practical application of photography to the mechanical arts, and suggests numerous other applications of the art to the safe keeping of valuables, and even the detection of crime, in interference with property, when the progress made shall have rendered automatic photography practical, which is already possible. The photographer for the Treasury Department is now engaged in preparing the seals for the new locks, to be used by that department in the transportation of merchandise in bond, and in such other cases where the protection they afford will be necessary. I will try to forward you one soon. Thus photography is winning its way, and daily growing more and more indispensable.

I had several other matters to tell you of, but must defer them until my next.—Truly yours,

Philadelphia, June 15th, 1871. EDWARD L. WILSON.

PHOTOGRAPHY IN THE NORTH OF EUROPE.

(FROM OUR OWN CORRESPONDENT.)

June 27th, 1871.

COPENHAGEN in forty-eight hours from London is certainly quick travelling, even in these days of rapid locomotion; and when I, moreover, tell you that for the two days the journey has lasted I have slept comfortably between the sheets each night, for at least half a-dozen hours, it cannot be asserted that the voyage is made at the cost of exceeding fatigue and exertion. It was only on the morning of the day before yesterday that I was strolling about the city, just as business was commencing, and purchased a morning paper and a box of fuses at the corner of the bank, and now I am sitting under the shadow almost of the Round Tower of Copenhagen, of which Hans Christian Anderson makes mention in his delightful fairy tales. Who has not read the story of "The Ugly Duck," or "The Tinder-box," or the other wonderful tales with which the prince of storytellers has for the past fifty years interested children, both young and old, not only of his native country, but of the whole civilized world? If anything lends romance to the Danish capital, it is the fact of its being the residence of the great Danish poet, for somehow the town itself seems invested with the imaginary scenes we have read about, and one can point to the actual spots and localities where all the strange events happened. The prison in which the poor soldier (in the "Tinder box") was confined, and where he was visited by the dog that had eyes as large as the Round Tower of Copenhagen; the palace or abode of the beautiful princess (whom the soldier, of course, afterwards married); these, and many other things, may be identified, and afford, of course, undeniable proof of the truth of Anderson's fictions.

But I must return to more practical matters. To those interested in a trip to Denmark or Norway, and who do not love the sea to that theoretical extent participated in by all true Britons, I would say, go round by Ostend, Cologne, and Altona, and, with the expenditure of an extra sovereign or so, it is possible to reach Copenhagen in a couple of days without trouble. Sleep the first night at Cologne, and the next night in crossing from Kiel to Zealand, for there are capital berths on board the mail steamer, and the Great and Little Belts being pretty well land-locked, there is little chance of a rough passage across. My way to Norway may

be pursued either by taking steamer to Christiana direct, or by passing over to the Continent again at Malmö, and travelling by rail on the way to Stockholm, near which city there is a junction for Christiana. The railway to the latter town was opened but a fortnight since, so we arrive just time enough to avail ourselves of the new route.

Our way to Copenhagen led right across Zealand, the principal island of Denmark, and a good idea could, therefore, be formed of the nature of the country. The verdant meadows and fresh green foliage remind one much of English scenery, or more particularly, perhaps, of Irish landscape, and are an agreeable variation after the monotonous continental panoramas through which we passed on our way here. The climate is evidently more backward than our own, for bright yellow laburnum blossoms, together with clusters of red may, are seen frequently on the roadside, and the grass in the meadows is as yet scarcely suitable for haymaking. The country is very flat, and if it were not for the existence of numerous beech forests scattered at intervals over the island, and picturesque lakes and tarns, the country would be far from pleasing to the eye. This, perhaps, I feel all the more as I am keeping my eyes open for suitable subjects for the camera, which will serve hereafter as some reminiscence of my tour.

I do not know whether I shall bore your readers if I proceed to describe my little outfit as a travelling photographer, for I am but an inexperienced landscape operator, and my arrangements, therefore, while new to myself, very probably possess little of novelty to some of my brother workers. I should mention, by the way, that my photographic labours are of a purely amateur nature, and in every way subservient to my chief object, that of travelling on foot through some of the prettier spots of Norway. The baggage of myself and fellow travellers is, therefore, strictly limited to what we can personally carry *with comfort*, and under these circumstances a photographic outfit of any notable dimensions it would be impossible to transport. Indeed, it was only by jealously cutting down every superfluous ounce that the matter was rendered in any way practicable, and I may safely state that the total weight of my camera, lens, dark slides, and dry plates (upwards of three dozen), including cases and packing, is certainly under six pounds; and as this will be carried by three persons, and distributed in belts, &c., over the body, I do not think the extra weight will be felt appreciably, even when it comes to severe marching. Other instruments, such as a pocket barometer, compass, tools, &c., are in our possession, but these have, of course, nothing to do with photography, and do not, moreover, weigh in all a quarter of a pound.

My camera is a quarter-plate instrument of Meagher's, made specially light and compact for the purpose, and provided with two dark slides, each of which contains a couple of plates. As a proof of the zephyr-like character of this apparatus I may mention that the whole of it weighs but twenty ounces, and is carried in a leather case which may be slung over the shoulder like an opera glass. My lens is Dallmeyer's 1AA wide-angle instrument, which fits my waistcoat pocket exactly, and of the presence of which I am scarcely conscious; and of my barometer, which is but a trifle larger, I may say the same. As regards the transport of dry plates, that is a problem, as we all know, very difficult to solve, and I only trust I may have got over it successfully. Acting upon the advice of Mr. Russell Manners Gordon, I employed a method of packing which has, I believe, been often adopted with good effect. Along the margin of a piece of silk ribbon about half an inch in breadth, and the length of the plate, are pasted two narrow strips of cardboard, which leave between them a width of uncovered silk material. In this way a kind of hinge is formed which, when placed round the top and bottom edges of each plate, or, rather, every other plate, prevents the surfaces from touching. My plates are packed in fours, in yellow paper, fastened by rubber rings, the packets being, moreover, enveloped in a double layer of tinfoil and brown

paper. Two small tin boxes enveloped in leather, and bearing some resemblance to a cartouche box, receive the plates, the boxes being slipped through a leathern belt, and thus carried in a firm and steady manner. I have relied principally upon the twofold envelope of tinfoil to exclude damp, and trust my confidence in this material will not be misplaced.

As regards dry plates, my stock consists of twenty Liverpool dry plates, in the virtue of which I have implicit faith, and some dozen of collodio-bromides hastily prepared after the perusal of Col. Stuart Wortley's excellent paper on the subject. I say hastily, because the whole batch was finished only on the afternoon prior to my departure, and as the test plates then tried gave great satisfaction, I did not hesitate to complete my stock with sensitive films of this kind. I hope to make my first exposure to-morrow morning, with the Town Hall for my model, and am only mistrustful upon the subject of the weather, which just now is very miserable.

As regards professional photography in Copenhagen, there is very little to tell. Not one single example of landscape or architectural photography of a local nature have I seen during the whole of my wanderings, and, with the exception of two or three portraitists of middling capacity, there are few worthy representatives of the art. Peterson, the royal photographer, is the great man, and shows some very good work; but Hansen appears to be the most successful artist in the town. Some very fine cabinet pictures and groups of the royal family of Denmark and of our Princess of Wales are exceedingly creditable, and exhibit talent which might readily be improved and cultivated if demands upon photographers were more abundant. But the truth is, that Copenhagen, although the capital of a power of some rank, is but a town of little pretension, and cannot even manage to keep a theatre going all the year round. Consisting, as it does, of some half-a-dozen islands and the fag end of a continental promontory, it lacks that cohesion which seems necessary to the development of great and important cities.

PRACTICAL PHOTOGRAPHY.

BY J. H. KENT.*

I HAVE, in compliance with the request of your worthy president, prepared this brief paper as the very small mite I am able to contribute to the large quantity of matter furnished by wiser and more experienced heads.

During the five years that I have been engaged in photography I have learned a few things—perhaps a few that have been overlooked by some of you—and you may be interested in listening to these trifles.

Many of you are veterans in the picture business, your efforts dating back to the time when real shadow pictures were first produced in the shape of the old Daguerreotype. Doubtless some of you, too, built your own apparatus, camera and all, and have kept pace with all the improvements in picture making up to the present time. To such of you, what one dare say who has so recently been initiated must seem of small account. It would, indeed, be presumptuous in me to attempt to instruct any of you in the matter of managing the chemistry or mechanical details of your business. In fact, it seems to me that this part of photography is and has always been in advance of the artistic, and that photographers generally, when they have made a clean, sharp, and well-defined negative, have been satisfied to let the customer go, providing he made no objection to the picture and was willing to take it.

Now, while clearness and good definition are things of great importance, and go far towards making up the picture, they are only the means of producing it, and not the picture itself. That should be something superior and beyond this, even as the artist, while he labours at his canvas, has more regard to the artistic effect than the smoothness with which he lays on his colours. The pose,

* Read before the National Photographic Association at Philadelphia.

the lighting, the expression, and the truthfulness of the likeness are the all-important things to be considered and attended to, while the photography is only the adjunct and means by which the result is attained. A likeness should be something more than a mere map or diagram of the face, and while in some cases the public are quite satisfied with such results, we should be unwilling, even if our customers are pleased and willing to pay their money, to give them any but such work as will not only prove entirely satisfactory, but be a credit to ourselves, and thus a source of future revenue.

It is also true, if we studied only our pecuniary advantages, we should find it greatly to our profit to always secure the very best thing that can be made, even if at the time it seems at a loss. Remembering that each card sent out is an advertisement for good or evil, and that sooner or later the public will learn to discriminate between what is good and that which is bad, we shall find the extra pains taken a good investment. I think photographers too apt to underrate the ability of the people to judge of their work. We know that those who have succeeded best in business are the ones most deserving of success from having brought the greatest amount of energy and skill into requisition in making a superior class of work, and that the public are not slow in finding out where they will secure the best results, and manifesting a willingness to pay a fair price for the same. I can hardly think there are any belonging to our Association who would degrade the business by putting the price down to about nothing because a competitor has done so. Persons who do this are those who would care too little for the advancement of the art to be interested in our society: so I doubt if we have any of that class among us; and though we must meet them in one way or another, let us never do it on their own ground. Rather, when they go down, let us go up, and as we advance the price let us also advance the standard of our work, never making a picture for less than we can afford, and do our best on it. Better do half the business at double the price, thus giving ourselves less labour, fewer vexations, and more profit.

It is not possible that the man who does cheap, poor work will succeed, while he who does a superior kind shall fail, and it is hardly possible that one can take more pains than will be to his advantage in the end. My own experience has taught me that the best negatives are those from which the profits are derived, while from the poor ones nothing is made, at least in duplicate orders, unless the subject has chanced to go where photographs are never taken. Then let me repeat that we should always endeavour to elevate the art to that dignity and importance which it deserves, and demand for our labours such compensation as will enable us to put forth our best efforts in all cases. Of course there will be degrees of excellence and differences of location, so that all cannot charge the same for work; and while it would be as impossible to reach uniformity in price as in quality, still there is no necessity that any one having the least fitness for his profession should do himself and the craft the injustice of lowering the estimate in which photography is held by putting the price so ruinously low that he can hardly eke out an existence.

Of late much has been said and written in regard to artistic posing. This subject cannot be given too much thought and study. In every person's makeup there is a choice of presentation, and in most every one's physiognomy some strong ruling characteristic. It is a matter of artistic taste wholly how best to dispose of these. It pleasing to the eye, and not exaggerated in life, it gives them prominence in the picture. Whatever is desirable and pleasing make useful to the camera. Have the accessories and mechanical part of picture making so entirely under command as to subserve the purposes of art—thus enabling the sitter to be taken in any attitude or angle suited to his requirements. A perfect likeness is not always, nor often, a good picture. In fact, we should give little heed to literal resemblances, and aim for the beautiful; study to repress the real that is objection-

able, and develop the ideal. It is quite astonishing how much can be achieved in this direction on a small capital. In no age have the masters been content with reproducing. They create, or rather sublimate material till there is suggested what we would be, and the possibilities of the "human face divine" are in a measure realized.

Being a worker and not a theorizer, I fully appreciate the difficulties involved in these injunctions. Nevertheless, I repeat, strive for continual advancement in this neglected branch of photography. The human family are much alike. One article of their faith is a dread of having their picture taken. Our first effort, therefore, is to make the art alluring by good work and courteous attention, so as to drive from the public mind the foolish whim that we are as much to be shunned as the dentist. The majority of my sitters assure me in the most confidential manner that they would as soon have a tooth drawn as a picture taken. It takes tact and time and talk and patience to uproot this hereditary and deeply-settled humbug. At the outset convince the sitter that the operation is quite delightful, and endeavour to sustain this fact by making it so, never ourselves making a serious matter of it. The little moment when it comes to keeping still should be beguiled in various ways. Talk to them in a way that will tend to keep them quiet, and at the same time animate the expression and prevent that fixed look of the eyes so apt to come; also, watch any change that comes over the countenance, and endeavour to prevent it. You will find very few annoyed by this, and there will seldom be any movement. The sitter never does as well left to himself and silence. The time seems much longer to him, and he loses faith in his appearance and position.

And now a few words in regard to my experience in picture making. During the time that I have been in the business I have always attended to my own sittings, and have ways peculiar to myself of doing it; and whatever success I have met with has been from the constant study and attention given to this important part of the business. I do not claim that my ways are superior to those of anybody else, but my experience has been of considerable benefit to me, and you may be interested to know how I manage. I am able with my method to obtain the desired effect of light and shadow very readily and with but little labour, thus enabling me to accomplish a sitting in the shortest possible time, a thing quite desirable when you have a good number to make. I have a very large operating room, and also a large light (18 by 24 feet), consisting of a top and side light of northern exposure. The side light runs to within about a foot of the floor, and is covered with two sets of curtains, one of white and the other of blue muslin, sliding upon wires, so that either or both may be used at pleasure.

The top light is arranged as follows: Underneath, and at right angles with it, and running entirely across the room, from the point where the side and top light intersect, a frame work has been built and divided off into three sections. These sections are each fitted with a track upon which other frames are laid running upon rollers and balanced by pulleys and weights, so that by a touch they can be run on or off the light in a moment, and will stay at any point where left. These sliding frames are first covered with ordinary mosquito netting, and over this is carefully laid a covering of white tracing paper, prepared with a coating of white wax and turpentine. This shuts out all direct rays, and gives a beautiful soft white light.

Now, when I have seated my subject under the light, as I may do at any point in the room, and having placed the camera and background in position, I have a stick or rod about twelve feet long, made very light for the purpose, and, standing at the camera talking to my sitter, I open or close the screens at any point I may desire with this rod; at the same time, and in the same manner, with the stick, lightening or darkening the background without leaving my position at the camera.

I would here state that my backgrounds are made with two frames—one inside the other, similar to the side-screens commonly used, only while the screens are hung in the centre, the ground is hung from the bottom of the frame, so that the top can easily be tipped back or forward, as I require it to be light or dark.

The stick has a hook at the end, so that I am able to push the ground back or pull it front, and also pull the top over or push it back until I get the exact shade I wish. This arrangement of light and grounds saves a great many steps, besides allowing me to watch the effect of light and background from the camera, which is the point, of course, from which the picture is seen. You will readily appreciate the advantage of this manner of lighting over any other where you are obliged to leave your camera and go to a distant part of the room to arrange screens.

I have also found that, even with this careful arrangement, there are many points at which the light is too strong or the shadow too weak, and the effect may be improved. In order to accomplish this, I have resorted to the use of another rod, upon the end of which is a very light frame about three feet square, covered with tissue paper. This frame is held in the hand during the exposure, shutting off the light here, and throwing it on there, until I get as nearly as possible what is needed.

At first you might suppose this treatment would cause the subject to move, but I have found it quite the contrary. In fact, I think it preferable to the deathly silence that usually prevails during the sitting, and often gives a much better expression than otherwise would be secured, and, as I said previously, I have found it requires much less time to obtain the desired effect than it does where stationary screens must be adjusted previous to the exposure.

I suppose I would hardly be able to secure a patent upon this simple arrangement for managing the light; at least, I shall not endeavour to, or object to its being tried by any of you who may desire to test it.

SOME CONSIDERATIONS TOUCHING THE INCREASED FACILITIES FOR REPRODUCING WORKS OF ART.

BY CHARLES BURTON.*

WHEN art was at its zenith in Greece and Italy, but very limited means existed for copying and extending the knowledge and influence of works of art. Painting by replicas, line engraving, and etching; and statues only by the rude method of copying in marble, guided by box and plumb-line, and by casting in metal; all methods requiring a considerable expenditure of both time and capital. Now we have, besides the time-consuming and slow process of line engraving, mezzo-tint, stipple, wood, lithography, zincography, chromo-lithography, oleography, photography, electrotype, Woodburytype, autotype, and heliotype, various other means which have been partially tried and not found completely successful. Whilst for the reproduction of sculpture we have not only the elegant and simple pointing-machine to facilitate copying in marble, but a wonderful and varied means of reproduction by our skill in metals, by plaster of Paris, cements, parian, china, and by electrotyping; means which more or less reduce the cost of reproduction, and bring transcripts of favourite works within the compass not only of moderate but even humble circumstances. The enterprise and skill which have been exhibited in the invention and perfecting of various new methods must certainly indicate a constantly increasing demand for transcripts of works of art and an approaching world-wide love for the beautiful, or it would not be worth inventors' while to expend so much labour and capital upon them.

The powers of all the usual methods of engraving are too well known to need any comment in this place. It is to the

photographic processes, direct and indirect, to which we may expectantly turn, and about which we may speculate; for it is from these methods of reproducing the forms of works of art alone that publishers can look forward with any reasonable prospect of obtaining a publishing power to meet any widely increasing demand for transcripts of the grand and the beautiful—and pay! That such expectations would be reasonable there cannot be the slightest doubt, and would be the sooner realized if publishers had more foresight than to persist in clinging to old forms and restricted circulation. If they would only avail themselves of the new means being perfected to their hands, we believe they would find that so far from doing away with the established line and mezzo-tint, that in end this policy would lead to a larger demand even for these expensive forms of reproduction, just as the increased demand for electrotyped articles has increased the desire and demand of the wealthy to have nothing but silver and gold plate at their tables. It will probably be a long time before the desire to have that which is most rare and expensive, and therefore less commonly attainable, is extinguished. The art firms of Pall Mall, Waterloo Place, and King Street may lay this to their *photograph* troubled hearts.

There is, however, always one danger to be apprehended and guarded against in having recourse to mechanical methods which tend to diminish the necessity for human thought and labour, viz., that they do away in some measure with the necessity to think and act with vigour, to make men less self-helpful and independent beings, to diminish that natural force of activity and will in all departments of manufacture and art, to dull the senses, the understanding, and industry of men; just as we find that where nature is most favourable in climate and prodigal in the production of human subsistence, men are more indolent than in northern latitudes, whose cultivation requires robust mental and physical energy. But, as we have already stated, we believe that the carbon and heliotype processes will give new life even to that most labourious and difficult of all methods for reproducing the forms of works of art—line engraving.

Photography and its allied processes appear to be destined to do for painting what plaster of Paris has long enabled us to do for sculpture, or to reproduce copies *ad libitum* at a very small cost; and we may form some notion of the latent power which exists for appreciating art by observing, no matter how wide our exploration of this great city, or other towns of the kingdom, that some form of beauty will be housed and accorded the place of honour, even though it be but of almost valueless and brittle plaster. One drawback to plaster of Paris reproductions is their brittleness, and the one great drawback to absolute photographs is their evanescence. But the autotype and heliotype processes, without sacrificing photographic fidelity, rush to the rescue, and promise permanence at even a reduced price. That this promised permanence is a fact, and not the mere romancing of interested adventurers, is proved by the tests to which the carbon processes were submitted at the British Museum, and which resulted in reproductions by these means being received into its collections, a confidence never accorded by the authorities to photography pure and simple. The reproductions by the carbon processes are very beautiful, but they involve the necessity of mounting, which, if not a drawback in framing, is certainly so with regard to their fitness for book illustrations, and is also some slight additional tax on the cost of reproduction. But the heliotype impressions are in printer's ink, the plate passing under an ink roller and through a printing press; this is an important advantage, for it removes the necessity and inconvenience of mounting as well as an element of cost. In both processes we may have noticed that they are not at all times and in all cases equally successful; and both methods may either require a longer experience to render the results certain under all possible varying conditions, or a judicious discrimination in their application and use only

* *Art.*

to the reproduction of works of art whose conditions are best adapted to their special virtues. There is, however, one general element of success which deserves to be noted, viz., that these newly invented processes are almost invariably successful in rendering works of art of the highest order, and in which fine form and design are conspicuous qualities. To no kind of art do these processes take so kindly as the finest works of the great masters. These new processes would appear to have a divinely ordained limitation, as if to prevent these facile means of reproducing art from being applied to base uses, and to point the direction which art should take, if it is to be worthy of reproduction and wide dissemination. And if this be well and thoroughly comprehended, we may venture to prophesy that these new methods for multiplying works of art will form no unimportant corrective to the defects of the English school of painting and sculpture, and add fresh motives to those which are already raising them to that loftier position which they should occupy in the world of art.

PECULIARITIES OF FACES.

BY ROLAND VANWEIKE.

MR. ROLAND VANWEIKE, in a recent number of our Philadelphia contemporary, gives his pupil, "Mr. Focus," some hints on dealing with the faces of various sitters. We condense some of the hints. Focus having asked how he should act in selecting the best view of a face, his mentor replies:—

The best view, in every case, Focus, cannot be had by any rule that may be laid down, or by any instruction I may give you; but the facility that will enable you to arrive at it the most readily is only acquired by study and experience; yet I hope in this lesson to give you a few hints that will assist you somewhat in practice.

"Well, every little helps, and I may learn some things that it would take me a long time to discover alone."

That is very true, Focus, and there is many a hard working photographer to-day that is plodding along under difficulties, and working at disadvantage, who would make rapid strides of improvement if a little light were given him by some good friend, or he studied a little more closely the photographic literature of the day. The peculiarities of faces are what we want to consider, and may be summed up somewhat as follows:—Thin face with high cheek-bones; retreating forehead and prominent nose; crooked nose—generally two noses; pug nose; turn-up nose; large mouth; large ears; staring eyes; weak and squinting eyes; cross eyes; sunken eyes; very light eyes with sunburnt face; retreating chin; long neck. These are some of the more prominent peculiarities we meet with, that require special treatment.

"What do you mean by special treatment?"

Why, treatment that is peculiarly applicable to a certain subject, and not adapted to certain others. For instance, take a thin face, hollow cheeks, with high cheek-bones, and you will see the effect of different positions. Sit such a subject with what we call about a three-quarter view of the face, and mark the effect. . . . The hollow of the cheek is defined almost to exaggeration, giving particular prominence to the cheek-bone and the angular line of the lower jaw and chin. This view we should say was decidedly unfavourable. Now, a view one way or the other from this will be better adapted to the subject. Sometimes towards the profile gives rather too much prominence to the nose and chin, though there are many faces of this character in which those members are less conspicuous, that take this view better than any other. Now turn this face well to the front—not so much, however, as to give prominence to the farther ear—and see how much more favourable a view we have than any of the others. The hollow cheek is quite lost on the shadow side, the outline being caught on the

more regular part of the face in a line drawn between the cheek and ear. The prominences of the nose and chin are softened, and the deep set eyes, that before were almost lost in shadow, are wonderfully improved.

"Why, I didn't think a little change in the position would make all that difference."

Well, you see it is so, and you see also how necessary it is that great care should be taken in selecting the best view. We see many faces of this kind, that at first glance seem to be made up of angles and hard lines; but when we come to move around the subject, we soon discover a particular view that seems to blend the refractory lines, and gives a contour of the head and face that is really pleasing compared with any other view we can find.

"But I should think it would take too much time to study out the best points in a sitter when you are in a hurry."

We should try and get along, Focus, without hurrying; or, however fast you may work, try and not appear to your sitter to be hurrying. But there is generally time enough for our purpose, after we become a little educated to it, if we make good use of it. From the moment you put your eyes on your subject, do not cease to speculate until you have decided which is the best view and light to place him in. The latter point is to be decided first; and the first glance you get at your subject will settle this. You first see whether he has a thin or a round face, whether light or dark complexion. Then, while you are placing the chair, arranging the position, and locating the camera, you have an opportunity of going all round the subject, and catching views from all points.

"Well, that keeps a fellow's thoughts busy as well as his hands."

That's it, Focus, precisely; the photographer that goes ahead keeps his wits at work, and his brains will accomplish more than his hands. This is not a mere mechanical work, that follows a plan by rule and line, and proceeds with precision to a certain result, but its changes are as infinite as the types of the human face or the forms of the pebbles on the sea-shore, and the photographer that is not on the alert to take advantage of these will find his failures count up more numerous than his successes.

"Why, I thought learning to make pictures was about the same as learning any trade."

Some parts of the work are, but when you come to this very important part of it, it needs something more than the mechanical knowledge; it needs quick perception, taste, and enthusiasm. A photographer may place a piece of statuary under his skylight, in any position it happens to be set down, draw a focus on it, and, without any care about the arrangement of light, make negatives of it all day; there would be nothing artistic about that, it would be merely a mechanical operation; and this is the way many operators have worked in making sittings from life: all sorts of subjects, with every peculiarity of face and complexion, were sat in the same place and in the same light all day long, without any attempt at change or variety. But as the operator who puts his whole soul into his work, and is never satisfied fully with anything he does, but strives to do better, would study a piece of statuary, bring out its best points, and make it a work of art, so would he do with every living subject, making every picture express a purpose of his, and demonstrate the work of an artist's hand rather than the operations of a fixed machine. A love for anything will excite enthusiasm, enthusiasm will excite effort, and effort, especially in this direction, will cultivate taste. If a man or boy attempts the study or practice of anything to make it a business or profession, and finds he has no love for it, he had better leave it at once, and seek something more congenial.

"How is it about faces that haven't the peculiarities you speak about?"

Those are the ones you can try your genius on. A person with well-formed head and regular features can be placed in almost any position, and give harmony and grace.

A CHEAP AND USEFUL DIPPER.

BY A. D. WILES.*

I SEND you a form of wooden dipper I have made, and found very useful; and I do not know but I ought to tell my brethren how to make them for themselves, as you will see it is of simple form, and of wood. Where silver wire can be got of the proper size, it can be used without flattening, for supports for the plate. Where it cannot be obtained (which is the case in most small towns), all that is necessary is an old Spanish shilling (English sixpence) cut into four strips with a cold chisel; the strips from the centre, being rolled in a common card-press to the desired thickness and length, are easily fastened to the rod by pins cut from the side strips from the old coin. Any photographer can make one, and they never lose a plate.

If the dip-rod I sent you is not in use, I would like to have it hung up at the exhibition, with instructions how to make them attached to it, so that all may construct rods for themselves who choose to. The thing looks too simple to require instructions, but many will not know how to get the springs, and go on with the old dip-rod when they might have a better.



ON THE CHEMICAL AND MECHANICAL CHANGES UNDERGONE BY SILVER HALOID SALTS WHEN ACTED UPON BY LIGHT.

BY DR. SCHULTZ SELLAC.†

It is worthy of remark that the physical change of the haloid salts of silver, or disassociation of the molecules, is strongest when the chemical change or separation of the atoms in the molecules is least. By similar mechanical separation by means of light, which till now has only been observed in red arsenic, may possibly take place in other substances which are sensitive to light.

It is now necessary to decide whether the mechanical change brought about by light upon the haloid silver salt plays an important role in the ordinary photographic process. By sufficient exposure in the camera or under a photographic negative, a visible image may be produced upon a sensitive Daguerre type plate, or upon a chloride-bromide and iodide of silver collodion plate treated with nitrate of silver solution. A picture is, under equal conditions, by far the most intensely brought out upon chloride of silver, less upon bromide, and least upon the iodide of silver; the iodide of silver picture also appears in the presence of other iodine absorbent substances. The particularly energetic action of the chloride of tin, however, which Dr. H. Vogel first observed, is due to the production of chloride of silver, which is formed by being acted upon by the tin compound, because, perhaps, of the chloride it contains, and which, as above mentioned, darkens more intensely in the light.

This image is essentially different from the mechanical image in the fact that the solarized portions have partially lost their solubility in hyposulphite of soda, so that the picture may in this way be fixed. Upon the Daguerre-type plate the fixed picture appears of a dark brown by reflected light, and of a whitish colour when viewed by

transmitted rays. Upon the iodide of silver collodion film the fixed image is of a greenish grey by reflected light, but violet when seen as a transparency; upon bromide of silver collodion the picture has the same appearance; and upon chloride of silver collodion it is yellowish-grey by reflected, and yellowish-brown by transmitted light.

The substance composing this image is not a modification of iodide of silver, as Moser has assumed, being much poorer in iodine than that compound; it is, indeed, a sub-iodide of silver. No chemical analysis of the material has yet been made, but the following experiment yields abundant proof of this assumption. If a silver surface upon glass is iodized superficially in such a manner that there still remains a thin substratum of metallic silver, it is possible to obtain an image upon this film, and fix the same with hyposulphite of soda. In those places where the light has acted vigorously, the substratum of silver has disappeared almost entirely, so that not only a picture of sub-iodide of silver is to be seen upon the silver surface, but the same is also visible if the glass plate is looked upon from the back, the surface of silver where it has been thinned reflecting less light than where it is intact. The isolated iodide of silver gives up, therefore, iodine, which combines with the metallic silver.

This image, which may, therefore, be designated as a chemical production, shows also, after the removal of the unchanged iodide of silver by means of hyposulphite of soda, the photographic attraction of silver and mercurial atoms, as Schnauss was the first to point out. Strongest, however, is this photographic attraction after a short exposure when the picture is still invisible or too weak to be perceived with the eye. The chemical image is changed by excess of iodine into iodide of silver, which is soluble in hyposulphite of soda; its colour disappears, and it loses in that way at once its photographic property. The mechanical iodide of silver picture is produced by the actual presence of an excess of iodine, and cannot be destroyed by its means; neither does it exhibit, after treatment with nitrate of silver solution, photographic qualities. The chemical image produced upon an iodide of silver collodion image, moist with silver solution, by exposure under a negative, does not disappear altogether on treatment with an iodine solution, and a mechanical change of the iodide of silver by means of light has, therefore, taken place; this is particularly the case when the iodide of silver, by evaporation of the nitrate of silver solution surrounding it, has assumed a red or bluish tint.

It seems to me to be proved, therefore, that on exposure to light a slight mechanical change takes place beyond the chemical change in silver haloid salts when in a photographically sensitive state, but that the photographic development process is essentially connected with chemical decomposition; an exceedingly thin superficial film of sub-iodide, sub-bromide, and sub-chloride of silver has the peculiar power of attracting silver and mercury particles.

The power of attracting silver and mercury particles is possessed also by the so-called films of "impurities" upon the photographic plate; photographically, however, it is by chemical action only that the silver haloid salts exercise this quality, for in the practice of wet plate photography I have never observed the same with any other silver salt decomposable by light. On the contrary, it is shown by my experiments that the iodized or bromized copper plate also possesses the photographic development power for mercurial vapour; the prepared copper plate, in the same way as the Daguerre silver plate after exposure to light, yields a chemical picture, which may be fixed. This important observation was, I find, already made by Kratochwila, but seems to have passed unappreciated, and to have been forgotten. Perhaps several others of the metallic haloid salts exhibit this property; the more convenient wet photographic process cannot,

* *Photographic World*.

† Continued from p. 308.

however, in most cases, be applied, because of the solubility of the compounds.

The results of this investigation may be thus enumerated.

1. Chloride, bromide, and iodide of silver, are by light dissociated; the degree of dissociation in chlorine and bromine is but small, and in iodine exceedingly minute.

2. When the chemical decomposition of the haloid salts of silver is hindered by the presence of free chlorine, bromine, and iodine, the former are subject to a mechanical separation on exposure to light; in the presence of chlorine, bromine, and iodine absorbing substances, the change is small, and by coating with shellac it is prevented. Only the violet and blue of the spectrum exert an action upon the film.

3. By the more minute separation of the iodide of silver film there appears by transmitted light a series of colours produced by the reflection of the rays.

4. Without the action of light even, iodide of silver upon collodion may be obtained in states of fine division exhibiting these coloured phenomena.

5. The behaviour of iodide of silver in the presence of an excess of iodine may be made available for the production of photographic pictures, which may be termed mechanical iodide of silver images. These are soluble in hyposulphite of soda.

6. The chemical iodide of silver pictures produced upon an iodide of silver film moistened with nitrate of silver solution, or upon a structure of metallic silver, consists in the insulated portions, of sub-iodide of silver, which is insoluble in hyposulphite of soda. The chemical iodide of silver image possesses also, after the removal of the soluble iodide of silver, the property of being photographically developed, a quality which the mechanical print does not exhibit.

7. The photographic development process is essentially connected with chemical decomposition; an exceedingly thin surface of sub-iodide, sub-bromide, and sub-chloride of silver possesses peculiar attractive power for particles of silver and mercury.

8. A photographic developing power for quicksilver is also exhibited by copper haloid salts upon a copper basis.

In conclusion, I have to thank Dr. Vogel for his courtesy in allowing me the use of his studio attached to the Industrial College for the prosecution of these researches.

Correspondence.

COLLODIO-BROMIDE.—GREEN TINT WITH EXCESS OF BROMIDE.

DEAR SIR,—I am much interested in all details respecting the collodio-bromide process, as, of all dry processes, it is the one which has given me the most satisfactory results. I have given a trial to most of the suggestions which have from time to time been proposed for improving it, and have till now come to the conclusion that (at all events, to secure the greatest certainty) a slight excess of bromide in the collodion was needful. Be this as it may, I wish to call your attention to the fact that the green-coloured negatives can be obtained by the sensitive collodion containing an excess of bromide as well as with one containing an excess of silver. A friend and myself, having plates prepared from the same batch of sensitive collodion, on comparing our respective negatives, were surprised to find that his were of the green colour, whilst mine were of a rich chocolate. He had exposed his plates some six times longer than I had mine; he had added a ten-grain solution of bromide of potassium to his alkaline developer instead of a one-grain solution; he had developed with carbonate of ammonia, and I with "liquor ammonia." I therefore presume that it is not necessary to have an excess of silver to produce this green colour. The advantage of green-coloured negatives appears to me doubtful, as I find it is more easy to judge of the density of a chocolate-coloured negative than of a green.

As our present military requirements are such as to render the introduction of an easy, good, and certain dry process necessary, I shall test Col. Wortley's method with every care. I cannot but think that should the keeping qualities of the plates be equal to the certainty and rapidity of exposure, that he will have solved a difficulty of no small measure for me.—I am, dear sir, yours faithfully, W. DE W. ABNEY, Lieut., R.E.

DRY PLATES.

SIR,—Your correspondent "F. T." must have misunderstood the question I put to the NEWS a few weeks since. I have never found any trouble with dry plates in bringing out dark foliage; but when, unfortunately, there is a white house in the same picture, I cannot time the exposure so as to do justice to both.—Your obedient servant, J. S.

Proceedings of Societies.

THE NATIONAL PHOTOGRAPHIC ASSOCIATION, U.S.

THE third annual convention of the American National Photographic Association was opened on the 7th June in Philadelphia, under the presidency of Mr. A. BOGARDUS, of New York, the meetings continuing for a week. The proceedings appear to have consisted of a happy mixture of business and pleasure: discussions on the science and art aspects of photography, alternated by attention to professional and commercial considerations. A very fine exhibition of photographs was open during the time, and the evenings were devoted to lectures on subjects connected with the art. Nearly a thousand members were in attendance. During the week a journal entitled the *N. P. A. Record* was issued daily, as a guide to visitors, and a chronicle of matters connected with the convention.

On the opening day, addresses of welcome, various letters, and reports were read. Mr. BLACK gave some account of his negative bath with nitric acid, which continued to be successful, giving quicker and softer pictures than the ordinary bath. The report of the trustees of the Relief Fund was read. Various addresses were delivered, and in the evening Mr. Black gave a fine magic lantern exhibition.

After the proceedings of the opening day, various routine proceedings received attention, and the reports of various committees were read. The committee on the progress of photography—consisting of Messrs. J. C. Browne, G. H. Loomis, J. M. Blake, J. H. Fitzgibbon, Prof. Towler, Dr. H. Vogel, and G. Wharton Simpson—presented reports, the substance of which we shall give next week.

J. H. KENT then read a paper on "Practical Photography," which will be found on another page. Other business discussions, and other practical papers and discussions, followed, some of which will appear in our next. The officers for next year were then elected, and stand as follows:—

President—Abraham Bogardus, of New York.

Vice-Presidents—J. F. Rydor, of Cleveland; Alois Gardner, of Washington; Mr. Hall, of Illinois; J. H. Kent, of New York; Mr. Revol, of Massachusetts; Mr. Fennimore, of Philadelphia; E. J. Wernel, of Maine; W. L. Wilder, of New Hampshire; Mr. Peireo, of Vermont; Mr. Miller, of Rhode Island; Mr. Bundy, of Connecticut; Mr. Reed, of New Jersey; Mr. Holmes, of Delaware; Mr. Buzy, of Baltimore; Mr. Gray, of Bloomington, Illinois; Mr. Tharp, of Bucyrus, Ohio; Mr. Anderson, of Richmond; Mr. Hull, of West Virginia; Mr. Van Osdel, of North Carolina; Mr. Cook, of South Carolina; Mr. Moetz, of Georgia; Mr. Lakin, of Alabama; Mr. Ketter, of Indiana; Mr. Hall, of Michigan; Mr. Webster, of Kentucky; Mr. Sherman, of Wisconsin; E. K. Curtiss, of Wisconsin; Mr. Wiggins, of Minnesota; Mr. Jackson, of Nebraska; Mr. Blessings, of Louisiana; Mr. French, of Tennessee; Mr. Rulofson, of California; Mr. Hildard, of Texas; and Mr. Henry, of Kansas.

Permanent Secretary—E. I. Wilson, of Philadelphia.

Treasurer—Albert Moore, of Philadelphia.

Executive Committee—V. M. Wilcox, W. J. Adams, W. H. Rhoads, A. Hesler, and J. Carbutt.

Committee on Progress of Photography—W. J. Baker, H. Y. Anthony, J. C. Browne, and T. Carbutt.

Corresponding Members (Committee on Progress)—E. Anderson, Dr. H. Vogel of Berlin, G. Wharton Simpson, London.

In the evening, Prof. MORTON gave a lecture on the eye and the camera.

On the following day a number of objects of interest were brought before members.

President BOGARDUS exhibited to the members a camera thirty years old, which had been used when Daguerre first gave the process to the French government. It had been sent to the convention by Dr. Dickinson, of Philadelphia, from whom it was procured by G. W. Chester, of this city.

Mr. M. A. Root exhibited the first Daguerreotype ever taken in Pennsylvania. It was made by Jos. Saxton, then employed in the Mint. It was taken with a cigar box for a camera in November or December, 1829, on the same day that the Daguerreotype process arrived in this country.

A steel-plate Daguerreotype was also shown, executed in 1841, by Wm. G. Mason, Paul, Beebe, and others. Also copies of photographs taken from Daguerreotypes in 1842. Also a picture taken on silk by Mr. Southworth, of Boston, which had been presented to the speaker in 1854 or 1855.

Mr. Root also presented a number of interesting memorials of the early history of the art, and stated that they would be deposited in the archives of the Pennsylvania Historical Society.

J. CARBUTT, of Philadelphia, gave notice of a resolution to appoint as an officer of the association a curator, who should take charge of the memorials, and have them exhibited at each annual meeting of the Association. Laid over under the rule.

The PRESIDENT then delivered an admirable annual address, after which the report of the committee on apprenticeship was discussed. The next place of meeting was then considered, and decided for St. Louis, on the 7th of May, 1872.

The medals offered by Messrs. Scovill and Holmes for the two greatest improvements were then awarded; the first to Mr. L. G. Bigelow for his background and curtain, and the second to Mr. H. G. Anthony for the introduction of alum into the printing bath. More practical papers followed, one by Mr. Trask, on the construction of a Skylight, and another by Mr. Clute, on Photographic Excellence.

The evening was devoted to Mr. Black's magnificent magic lantern display.

The next day's proceedings opened with more relics and curiosities. Mr. M. A. Root showed several pictures made in 1841, 1842, 1843, one of which, taken by John Johnson, polished by Samuel Van Loan, being a portrait of himself, etched in by a chemical process; also one of Johnson and Van Loan when in London, in 1842. Also, one by Baird, the man who first took Daguerreotypes in London. Several made by artificial light in Boston were shown, being a picture of John H. Whipple, in 1842. He said that Samuel Van Loan was the oldest manipulator in the profession. He also showed two pictures taken twenty-five years ago. One of Edward Everett was shown. A Daguerreotype made in 1844, in St. Louis, was exhibited, being a picture of Cushman, the engraver. Also, a picture of Thomas Buchanan Read. Various other curious and antique pictures were shown.

After some other matters, a subject of very general interest to photographers was introduced, namely, the rates of insurance on photographic establishments.

Mr. J. C. ELROD, of Louisville, said he wished to denounce a fraud, by which owners of property required from photographers a higher rate of rent than from any other class of men, on the ground that there was danger of fire from the presence of chemicals. This was not true. Underwriters had examined the photographers' rooms, and had decided on more than one occasion that there was no more danger than elsewhere.

If any of you have had to remove your gallery, and having gotten one, applying to the landlord for a room, you would probably be told: "No, sir! That will increase my insurance." That is a fraud; there is no respectable gallery that's not as secure from fire as is any insurance company. But you are written down as hazardous. They say the solar camera might come to a spark, and they make us carry all the extra insurance. I think we can remedy this by thinking over it during the year. Can we not start a National Photographic Mutual Insurance Company, and let these landlords slide? Since the foundation of the world we have had three galleries burnt down in Louisville. There is no danger of any respectable gallery burning down, and I have ceased to take risks. Go

home and tell your insurance agents this, and when the landlord tells you he cannot let you have his room unless you pay an exorbitant rate of insurance, we will say: "My dear sir, we will insure you." Let every man be a committee to bring fire statistics.

Mr. LOMAS, of Watkins, New York, told of a case in point where he had applied for a room over a dry goods house. The proprietor told him that he could not have it, since in the building were \$80,000 worth of dry goods.

Mr. TRASK, of Philadelphia, said that two fires in small galleries had increased their insurance one and a half per cent. They had been told that they had combustibles in their galleries. Let us settle this point. I don't think there is anything in my gallery that will ignite without a match.

Mr. FITZGIBBON said that the rate in St. Louis was two per cent.

Mr. BOGARDUS spoke of a case where he wanted to get a room over a stock of silk mantillas. He got it at \$400 a year rent, and then the man told him that the insurance increase had made the rent of the building \$800 a year more, and when the lease was up I paid \$2,500 rent.

Mr. HERTZOG said that he would suggest, in connection, a committee appointed to examine into the matter, as to what kind of a company would be the best.

Mr. BAKER, of Buffalo, moved that a committee of three be appointed to report upon the subject of insurance at the next annual meeting, and also as to the organization of a mutual insurance company. Agreed to.

The PRESIDENT appointed Messrs. Elrod of Louisville, Truxell of Brooklyn, and Perkins of Baltimore.

This day being that on which a statue to Morse, the electrician, was inaugurated, a telegram was addressed to Mr. Morse from the Association. Mr. Morse, it was said, was the first person who produced a portrait by photography.

Other business discussions followed, and then came the farewell.

President BOGARDUS, in closing the session, said: I feel that we have had a good session, and the hour has arrived when we must say farewell. We have talked better than ever on photography, and have had more papers read on the practice of the art than ever. Strangers have expressed themselves pleased with our exhibition, and the usefulness of our institution has been proven. Some have said they did not learn anything. It was a well-known fact that if you pour water on a live plant it grows, but pour the same water on a dead plant and it only makes it rot faster. I had a man say to me that his paper turned black in twenty minutes in spite of all he could do, and yet when this very subject was illustrated, he was away visiting the lunatic asylum in some other place. If the members had learned nothing, it was their own fault. He remembered the two men who got into their boat and rowed hard all night, but when the day broke they had made no progress, because they had neglected to take up their anchor. So with those who had not been instructed by these meetings they were attempting to progress without taking up the anchor. With many thanks for the courtesy extended to me, and more than ever assured of the success of the Association, gentlemen, I bid you good-bye.

Talk in the Studio.

PROTECTING PRINTS TO SECURE PERMANENCY.—Referring to a recent correspondence in our pages on impermeable paper as a means of securing permanency, Mr. H. T. Anthony remarks, in the *Bulletin*:—"The image on paper, being a compound of silver and organic matter, is necessarily more liable to change by the absorption of destructive gases by the paper than the negative, which, being upon impermeable glass, and covered with impermeable varnish, escapes all decomposing action. To bring the print as nearly as possible to the condition of the negative (as we cannot get paper impervious to moisture), the mount should be as solid and impermeable as possible, and then the surface should be varnished. This is the plan we adopt with our stereoscopic pictures, and we never hear complaints of their fading. We had, at one time, a great deal of trouble with yellowish whites; but all that has ceased, and we can confidently say that our stereo pictures are as durable as negatives on glass. It would be a desideratum to have a mount impermeable to moisture for all photographic work."

PHOTOGRAPHY AND CRIME.—The photographing of criminals is a feature retained in the Lord Chancellor's Bill for the more effectual prevention of crime which repeals the Act of 1869, and substitutes more stringent clauses. A licence-holder will be required to give notice to the chief officer of police of the district whenever he changes his residence, whether he goes into a new or remains in the old police district; and every male licence-holder must report himself to such chief officer of police once a month, personally or by letter, as the officer shall direct. A clause authorizes the photographing of all prisoners convicted of crime.

CORRECTING THE BATH.—If you don't believe it, try it. If your bath is out of order (I mean the negative bath), add one drop of muriatic acid to every twenty ounces of bath solution. Stir the chloride (which is formed on the adding of the acid) for several minutes, and let it stand about one hour, then filter, and you will have a splendid working bath. It also improves a new bath, giving most brilliant negatives. Sure thing.—J. H. HALLENBECK, in *Photographic Times*.

THE GOVERNMENT AND INVENTORS.—The Committee of the Society of Arts appointed to examine the relations between Government and inventors have come to the conclusion that reasonable grounds exist for dissatisfaction as to the treatment which the latter have received. The committee have examined many witnesses, and they passed a resolution to the effect that "the present system of dealing with inventors is unmethodical and unsatisfactory, and the one obvious defect of the present system is the want of a suitable record of the invention submitted, and of the proceedings taken therein." The committee think that a report upon each invention should be presented by suitable persons, independent of the public department using it, and of the inventor—*Globe*.

To Correspondents.

* * * **TO OUR READERS.**—Owing to the turning of a forme in preparing for the printing machine last week, several pages of the PHOTOGRAPHIC NEWS were misplaced, as the majority of our readers will already have seen. With this week's issue we give the eight pages in a corrected position. Our readers will please cancel the erring eight pages, and substitute for them the corrected pages which are issued with the present number.

E. T. S.—Transparencies on opal glass may be produced in two ways: one by direct printing in the pressure-frame, using collodio-chloride of silver, and the other by means of camera printing on wet collodion. If the first method be used, an edging of albumen or varnish should be applied round the glass, which is then coated with collodio-chloride. When this is dry, print, and tone with a weak gold bath. You will find details in our YEAR-BOOK. If camera printing be preferred, the plate is coated with a good collodion and excited in the usual way; the negative is placed in the aperture of a proper box or camera, and the ordinary mode of producing transparencies followed. The toning may be effected with gold as in the eburneum process, or by mercury and hypo. You will find valuable hints on pp. 76 and 83 of our last YEAR-BOOK, or you will find a detailed article on producing transparencies on p. 73 of our YEAR-BOOK for 1868.

R. MALER.—There is considerable latitude and considerable difference between the thickness of the wood used by different makers in cameras. A whole-plate camera need not, we think, have the wood thicker than one-third of an inch, and the others half an inch or a little more. The focal length will vary with the character of the lens employed, but the whole-plate should extend from 8 inches to about 12 inches. The 12-inch camera should extend from 12 inches to 18 inches, and the 18 by 16 should extend from 16 to 26 or 30 inches. With some lenses even longer extensions than we have mentioned would be required.

EASTERN CORRESPONDENT.—The YEAR-BOOKS have been duly sent. The amount due from you to the end of the present year will be £2 18s. 11d. Thanks. We shall have pleasure in seeing the examples, and hearing from you.

W. H. J.—We should recommend you, in trying Col. Stuart's formula, to follow it throughout. If you have the bromized collodion already prepared by Mr. Cooper's formula, you can dilute it with plain collodion. If, however, you wish to experiment, prepare the collodio-bromide by Mr. Cooper's formula, and then add about ten grains of nitrate of silver in excess to each ounce.

J. W. (Bristol).—Sugar should not be used in developer for positives. It is only for negatives that we recommend it. You must bear in mind that there is a great difference between the good qualities of positives and negatives. In the latter the lights are only required to be dense, and the deposit is better of a dark colour than of a light colour, whilst in positives a deposit of pure silvery white is of vital consequence. Your nitrate bath for positives may contain from ten to twenty minims of nitric acid in a pint. Your exposure must be shorter than for negatives, and the development more rapid. The developer you quote will answer very well, and it may be used with advantage when it has been mixed for a week or two. The use of an alabasterine solution, or anything intended to bleach the image, would not help you unless you first get a good picture. It is difficult to determine the precise cause of your failure without seeing a specimen. If you put one in a case and forward it to us by post, it is very likely that we shall be able to assist you. In making the varnish you mention, it is better to allow it to stand to settle, and then pour off the clear portion. Filtering paper soon clogs up. You will probably find on trying that it answers satisfactorily.

T. R.—There are various modes of preparing an albumenized print for water colours; but some artists work without any preparation. A coating of dilute ox-gall will answer; very thin parchment size will answer. Newman's shilling manual on colouring photographs will give you full instructions.

J. B.—It is a great pity you cannot build with a side to the north, but failing that, your principal side-light must face eastwards, as the morning sun will generally have passed round to the south before much work is done. The dimensions are pretty good. We should, under the circumstances, build an ordinary ridge-roof room with glass on both sides and roof, and thick white blinds easily adjusted (running on rods will probably answer best); about five or six feet opaque at each end of both sides and roof; all the rest glass except about two feet at the bottom of each side. Glass undoubtedly undergoes change from exposure to sunlight, some samples more so than others. As regards that you have had in use, the only plan is to examine it, and ascertain if it obstructs the passage of light. Get a piece of ordinary crown or sheet glass, and compare it with your old sample.

A LITTLE PHOTO.—Our rule is always to eliminate as far as possible all personalities from correspondence, no matter from whom received. We do not know or recognize any distinction in subscribers, whether employers or employed; we aim to serve the interests of all. In advocating proper instruction in every detail of the business, the interests of operators are quite as much, or more, involved than those of employers. You may rely upon the interests of all being impartially maintained in anything we advocate.

AMERICAN READER.—The address of Mr. Briggs is Leemington; that of Mr. Croughton is 14, Albion Road, Hammersmith, London. We do not know those of the other gentlemen mentioned, but will try to ascertain.

CAPTAIN TURTON.—The addition of nitrate of baryta to the sulphate of iron solution is to produce nitrate of iron by double decomposition, nitrate of iron remaining in solution, and sulphate of baryta being precipitated. Positives developed by means of nitrate of iron have a bright white silvery deposit. There is no increased risk whatever of lack of permanency, some of the earliest and finest collodion positives ever produced having been so developed, and are perfect at this day. The formula is as follows:—

Nitrate of baryta (powdered)...	...	1 ounce
Nitric acid .....	...	2 drachms
Water .....	...	10 ounces

Dissolve; and then take—

Protosulphate of iron...	...	1½ ounces
Water .....	...	6 "

Dissolve, and add to the first solution. Filter to get rid of the white precipitate, and keep carefully corked. When fresh and in good condition, it is of a green tint, but turns brown and loses developing power when long kept; in such case a little fresh protosulphate may be added. Collodion positives whitened with bichloride of mercury are tolerably permanent if properly managed. The image should be vigorous to commence with, and not over-exposed; and the mercury solution should be kept on the plate plenty of time, and then well washed off. It is not necessary to varnish such pictures; but they should be kept under glass. We have some perfectly good which have been done twelve or fifteen years. Many of the Russian photographs are very fine. In using carbon tissue, we always employ a little French chalk, which effectually prevents the tissue sticking to the negative.

A "LAWYER'S" letter too late: in our next.

Several Correspondents in our next.

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15 Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.



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THE TRAINING OF ASSISTANTS.

THE report of a committee of the American National Photographic Association, appointed at the last annual meeting to consider the propriety of establishing a system of apprenticeship, the details of which appear in another page, discountenances the idea of apprenticeship as unsuited to a people used to the free institutions which flourish under a republican government. The committee believe that parents born and educated under such institutions will hesitate to sign away their children's liberty; and further, they believe that boys bound for a term of years will be likely to take less interest in their duties than they will when they know that the retention of their services and continuation of their tuition must of necessity depend upon their good behaviour. In place of apprenticeship they recommend a system of studentship, the standard period for which shall be three years; or, if commenced before a youth is seventeen, the period shall continue until he is twenty years of age. This term of instruction completed, it is recommended that the student shall receive a diploma, stating the period of study, the branches in which he excels, and the moral character he has manifested during his novitiate. Some other details will be found in the report, to which we refer the reader.

On the whole, we think that such a system of studentship as that proposed would answer every purpose of apprenticeship, and would prove a material boon to the profession, both assistants and employers; and hence it is scarcely worth while to discuss the somewhat illogical objection which the committee urge against apprenticeship, otherwise it might easily be shown that in apprenticeship there is no further sacrifice of liberty than is involved in every social or commercial compact. No compact of any kind can be entered into without the establishment of obligation on both sides to do something, and the necessity of doing anything at once involves the sacrifice of a certain amount of liberty. As a rule, the shortest contract upon which any kind of service is entered upon involves the surrender of liberty for a week under some kind of forfeiture. In higher classes of service a month's contract becomes a necessity, and in others three, six, or twelve months. In fact, the simple act of living under any government involves a compact implying more or less sacrifice of liberty, the subject agreeing to avoid all acts which may injure the state or his fellow-subjects, as one of the conditions upon which he is admitted to the protection of the laws. An apprenticeship is merely a compact of service for a certain period in return for tuition and opportunity to acquire skill in a certain trade or profession. Without some definite compact securing the ser-

vice to the employer, he would have little interest in imparting instruction. The obligation on the part of the employer to teach in return for service which is involved in apprenticeship is, when properly carried out, of immense advantage both to the individual assistant and to the whole community of assistants, as raising their status and increasing their value.

In the course of studentship proposed by this committee a close approximation to apprenticeship is attained, but the bond between the student and teacher is one based upon mutual self-interest, rather than upon legal obligation. If well carried out, the results of both systems will be similar, whilst the possession of a diploma signed by a trustworthy authority, setting forth period of instruction, age at the date of the diploma, special qualifications and accomplishments, social and moral habits, and characteristics of the student, cannot fail to be of material service to him in securing engagements; and such vouchers of fitness, if honestly given by capable men, must prove an immense aid to employers in determining their selections from several applicants. The report of the committee concludes by recommending the establishment of a photographic academy for the better education of photographers and the higher development of the photographic art. The value of a good photographic academy in which photographic chemistry, art as applicable to photography, and the general practice of all branches of photography could be taught by efficient professors, cannot be doubted; in this country, however, we fear that the possibility of making such an establishment self-supporting would be a very remote one; what may be done by our more enterprising brethren in the States we cannot at present determine. The report to which we refer constitutes, of course, recommendation only, and the subject is considered so important that action therein has been postponed until the next year's meeting of the Association at St. Louis.

The future of the practitioners of the art is a matter of as vital importance in this country as in the United States, and hence any course of action which is adopted after due deliberation by a large representative body of photographers there, is worthy of grave consideration here. One of the very natural questions which will occur at the outset of any such consideration will be to this effect: If a certain number of the coming operators are to be provided with special educational advantages, and provided with diplomas or certificates, will not all the older operators who commenced their career at any earlier date be placed at a serious disadvantage in competing with certificated hands for engagements? We think not necessarily, certainly not in relation to capable men. Every process of improvement will, of course, in some degree militate against the incompetent; but amongst operators of fair capability the possession of longer experience will gener-

rally be at least an equivalent for the regular course of study to which the diploma testifies.

The establishment of proper and recognized relations between the employer and the employed becomes every year a matter of more urgent importance. We do not believe that at present any seriously unsatisfactory relations are generally prevalent; but the correspondence which has of late appeared in our columns on the subject suggests that there is, in many cases, room for improvement in these relations. The fact that there is no system of apprenticeship or training by which an operator can be absolutely qualified for the practice of his profession, nor in virtue of which the possession of due qualifications can be certified, is regarded by employers as an evil. Assistants, on the other hand, in some cases, report that the absence of such certified qualifications is equally true of employers who have risen to eminence and wealth, as it is of the lowliest operator. As we have before remarked, the position of photography and photographers has been anomalous in this respect. With very few exceptions, photographers up to this time have "picked up" their knowledge of the art, and have come from their farms, from their merchandises, or from their handicrafts to the practice of photography professionally, with just such qualifications as they could acquire from reading, observation, and experiment. Where great skill, business aptitude, the possession of capital, or a combination of these qualifications, has been found, photography has generally been found a profitable enterprise. Where some of these qualifications have been wanting, the success has been much more limited. For the first score of years in which photography as a profession had an existence, its representatives consisted entirely of those who had acquired their skill in it by self-education. Within the last dozen years a generation of operators has arisen, many of whom have acquired their knowledge of the art in the establishment of a professional photographer; not, it is true, by any regular tuition, but simply by observation and occasional practice in the department after another. Some whom we have known to enter the business as errand-boys, plate-cleaners, or boys-of-all-work, have become very capable photographers and respectable and successful men, whilst others with the same chances, but less taste, ability, or industry, have entered the lists of operators with scarcely a single qualification for the work. A proper system of training, with a voucher or certificate, would do much to save the profession from such parasites, who, being willing to work for little remuneration, compete unfairly with the qualified operator, and, at the same time, lower the general status of the practitioners of the art.

If the status and qualifications of operators were raised, the best men to the profession, no matter how they attained their skill, would always keep the foremost position, whilst the incapables would find some other occupation more to their advantage. A higher rate of remuneration could be paid without loss, and employers as well as employed would be gainers. A really skilled operator ought to be worth a much higher rate of wages than a worker in the majority of the handicrafts simply requiring mechanical skill; but we fear that he very rarely receives such remuneration. The question of education and training amongst assistants, whether by a system of apprenticeship or stipendship, and the acquisition of diplomas or certificates of qualification, are essentially questions of interest to the employer, as the establishment of some such system must tend to improve the position, both pecuniary and social, of the operator.

THE COLLUDO-BROMIDE PROCESS

A few days ago we accepted the courteous invitation of Col. Stuart Wortley, in company of several other gentlemen, to witness the testing of a series of his collu-

do-bromide plates. Unfortunately, the prevalence of the deepest gloom in place of sunlight, and constant rain, frustrated against any absolute or satisfactory comparative estimate of the rapidity of the process; but with a light which would have been utterly useless with the majority of dry processes, and of very doubtful value with wet collodion, detail was obtained in dark foliage in shadow in immediate contact with a light coloured house in the open, justice being done to both. The quality of the negatives was unquestionably fine, soft, and delicate, much resembling that of wet plates, but with the greenish smoky tint which Col. Wortley mentions as the indication of good conditions and excess of nitrate in the collu-do-bromide emulsion, and which photographers know to be a most valuable printing colour. One fact was especially noticeable: the great latitude these plates seemed to permit in the process of alkaline development, an operation generally requiring great precision in formula. Commencing with a solution of plain pyro, and continuing until an image appeared, the minimum amount was then added almost at random, with beneficial effect in securing detail and vigour, and no risk of injury. Whilst the weather rendered the trial incomplete in many respects, it was sufficient to prove a number of very unusually excellent qualities in the plates. Many of our readers will be glad to learn that Col. Wortley, in answer to many applications, contemplates preparing these plates for the public, and supplying them commercially, a boon which will be of inestimable value to many photographers who have had little experience in such manipulations, and will, if properly serviceable in these-saying to the ablest hands. The ready courtesy with which Col. Stuart Wortley has at all times afforded information in reference to his mode of working, and the high standard of excellence which has distinguished all his work, give an especial value to plates prepared by himself by his own process, as the photographer will possess the double advantage of working with plates the nature and preparation of which are known to him, and of possessing the practical guarantee which is derivable from Col. Wortley's great skill and high reputation, that the plates with which he works are trustworthy.

NITRIC ACID IN THE NEGATIVE BATH.

On another page we find the discussion amongst the members of the National Photographic Association in America on Mr. Black's negative bath with a large proportion of nitric acid, and we call the especial attention of our experimental readers to the startling facts enunciated.

The experience of Mr. Black is so thoroughly at variance with all the received tenets of the collodion process, that it requires perfect confidence in the high character of the authority to receive without doubt the facts he describes. Mr. Black is, however, a photographer of very great skill, extensive experience, and trustworthy character, and hence his testimony possesses weight, and deserves consideration. He has now, he tells us, used the bath for six months with increasing satisfaction. The proportion of nitric acid is at the rate of from five to ten ounces to every sixteen ounces of citrate of silver. Four or six ounces are usually added, but when the results are not quite satisfactory with this proportion, he keeps on adding nitric acid until the plates "work soft and quick"—a result at times only attained by adding as much as ten ounces of nitric acid to each pound of citrate of silver.

A very notable and unexpected retarding power of nitric acid, a mechanical difficulty naturally suggested itself to us, as it did to some of the members present at the Convention. The action of an acid bath invariably has a tendency to loosen the film from the glass, and we have known on occasions when, working a bath with two or three minims of nitric acid to the ounce, it has been difficult with a rough collodion to work dry the plate without the dissolving off the glass into the bath, and with ten minims to the

ounce the difficulty must be materially increased. But Mr. Black gets over this difficulty by using an albumenized glass which removes all trouble. If his experience be corroborated by that of others, and a fifteen grain silver bath with a very large proportion of nitric acid be found to give softer negatives with shorter exposure than a neutral bath, the process is evidently one of great importance, and well worthy of careful test by all practical photographers.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

AMERICAN NATIONAL PHOTOGRAPHIC ASSOCIATION—LUCKHARDT'S MODE OF SECURING PICTORIAL EFFECT—CYANIDE FOR RETOUCHING—NEW DRY PROCESSES—PHOTOGRAPHS OF WAR HORRORS—THE WEATHER.

THE most important photographic event of the last month was unquestionably the meeting—or convention, I should say, in speaking of an American institution—of the United States National Photographic Association in Philadelphia. The possibility of such a meeting is a great fact in the history of photography. Here were nearly a thousand photographers from every part of the extensive territory of the Stars and Stripes gathered together for a week's intercourse and consideration of every point which, during twelve months, had occurred to them as of interest in connection with their profession. And then the mode in which they glide from one style of business to another is at once amusing and instructive. When attention to the routine business of the Association begins to flag, the President postpones it for awhile, and invites discussion on a practical subject; and there is nothing a photographer so dearly loves to discuss as a "process," as was manifested at this meeting. The avidity with which Mr. Black's information about his nitric acid bath seems to have been devoured is a noteworthy illustration of how nearly photographers are allied to the Athenians of old, whose distinguishing characteristic was their anxiety to hear or tell some new thing. After discussing a process, the means for defeating some iniquitous patent affecting photographers absorbed attention. Business matters of all kinds were at times laid aside to listen to sweet music, or to listen to an eloquent oration. Some portions of the address of Mr. Bell, the permanent lawyer of the Association, were singularly eloquent, and should you not give his address *in extenso*, I should be glad if you will permit me to give the following brief extracts:—

The artist, as he stretches his canvas on the easel, and applies the first stroke of the brush, feels his enraptured soul fired with a divine inspiration as the rude material glows with the reflective beauty of the yet to be developed picture. The sculptor, as he plies the chisel to the unseemly block, hears sweet music in the chippings, for each stroke of the mallet is to his ear the freeing of an imprisoned angel, that from creation's dawn has been locked in the cold embrace of marble. And thus the photographer, in the faces and forms before him, and in the objects of nature about him, and even before the lens of his camera is set to receive the earliest impressions of his subject, sees in imagination the well-defined photograph, the beautiful and artistic effects which add to the charm and value of the work about to be developed.

The aspiring photographer after knowledge in his art feels, in each truth that flashes on his mind, the constant and increasing growth of the soul within. Herein lies the mainspring to all successful action in your great department of labour. The photographer must be a man of large soul and self-reliance; to him faith is the unseen bridge which he must cross to gain distinction beyond the mystic ladder up which he must climb before he can reach life's highest destiny. If he stands idly at the base, he may catch the gleam of "fine photographic effects" and immortal fame, but he can never possess the art of accomplishing them. The bright dreams of youth, the airy castles of manhood, will fade away, and be lost amid the lowering clouds of bitter disappointments in seeking after perfection in your art; but, with faith and courage to sustain you, the dreams of to-day will be woven into the golden realities of to-morrow, while the airy castles which have floated before ambitious vision shall be but reflections of that enduring temple where fame sits enthroned amid eternal powers.

Go on, then, in your work; make the aim of your Association a

high one. Remember that as each individual has the moulding of his own character, so every organization—yea! every nation—has the formation of its own future. The laws which apply to the one act with equal force on the other; for, after all, your Association is but individuals in a collective capacity, so that whatever characterizes a society or nation is seen to find reflection in the laws and objects which govern them.

Your objects of relief, of mutual exchange of each other's views respecting the same art and work, your protecting the weak from being trodden down by imposing foes, your sublime determination to elevate the art, in a natural sense to make it common, yet dignified—good, better, best—yet within the means and embrace of every one; to adorn it; to even elevate instead of diminishing its increasing strength and conceded beauty. Beware of disunion among you. Let your councils be at all times harmonious. Let no frets, no fears, no jealousies, no enmities, ever enter in and disturb your relations to each other, and to your mother organization. On the other hand, be firm in doing right, faithful in the discharge of your every duty.

All honour to those who formed the Association. All honour to those who, through its infancy, gave it a liberal and manifest support. The past is secure, the present is a grand success, and the future is radiant with hope and promise.

American photographers will, I fancy, echo Mr. Bell's expressions of honour to the founders of the Association, and amongst the most active of these, if I am not mistaken, is your excellent correspondent, Mr. E. L. Wilson, whose ubiquitous energy must be highly esteemed by all interested in our art in America.

In reading the description by Herr Luckhardt of his method of masking negatives to modify the pictorial effect, I was struck by its resemblance to a method described some years ago by Mr. Blanchard in your pages; but, if I remember the details correctly, Mr. Blanchard's was a more efficient method, because affording more complete facility for modifying the character of the picture. Instead of applying a pigment directly to the back of the negative, he attached to its back a piece of transparent tissue paper, and then, with orange chrome, stopped out such parts in such degree as were required for modifying the light and shade. It will readily be seen that using a pigment on the paper affords much greater scope for modified effect than can possibly be secured by working on the glass.

Speaking of modifying the negative reminds me of the communication from an American correspondent you recently published, mentioning the use of cyanide for retouching prints. I have years ago used cyanide for removing stains from prints, and also securing a tolerably even background in a print from a poor, stained negative. For anything like fine touching, I think it would be found very difficult to employ cyanide on a print, on account of its tendency to run and be absorbed by the paper. The best mode of checking this tendency to run consists in adding gum-arabic to the cyanide, and making a moderately thick solution of gum. This use of gum has a twofold benefit: it prevents the solution running or spreading, and it makes the operation of the cyanide a little less actinic, thus giving the operator more control. Although, when it becomes absolutely necessary to make the best of a bad print, cyanide may be used, I do not regard its use on prints as a matter of much value, or one that will be much used. For negative retouching a good deal may be done with it in skilful hands. Used with gum it may be employed either to get broad masses of shade, or to secure fine points of black in the print, by sharp touches in the negative. Great certainty of hand and rapidity are necessary, the negative being rapidly flushed with water to remove the cyanide after the result is produced.

It is not a little curious to an old photographer, with strong proclivities in favour of the wet process, to watch the succession of dry processes which year after year are advocated with unflagging zeal. There is one essential change, however, manifest in the dry processes which now obtain. In the old time acid conditions were all prevalent. The old chloro-iodo-albumen bath was largely

charged with acetic acid; the preservatives were often acid, and the developer acid. Now alkaline conditions prevail more or less at every stage; and, without a doubt, a great accession of sensitiveness appears to be the result. I am unable from personal experience to offer an opinion as to whether the collodio-bromide process as modified by Col. Stuart Wortley will compass all that is claimed for it; but, so far as I can glean from the opinions of trustworthy friends, it is a dry process of unusual excellence and simplicity.

I find in the *Echo* a capital notice of some photographs of the havoc which war has wrought on man and man's works in Paris, and as the notice commences with the propitiatory acknowledgment that photographic studies can no longer be denied a place amongst things belonging to the art-world, I shall, with your permission, make one or two extracts. Referring to the photographs which are exhibited in Cornhill the writer says:—

The pictures, indeed, give one a more complete idea of that havoc than could be obtained by a sight of the ruined buildings themselves, because here we get in many cases a representation of what such buildings were before the fire had done its work, side by side with a faithful reproduction of them in their present mutilated condition. There are some curious features noticeable in connection with those ruined buildings. One of these is the extent to which the mischief done affects the horizontal rather than the perpendicular portion of the different edifices, roofs and floors being utterly destroyed, while great masses of wall still remain standing. Another striking point is the escape from destruction of all sorts of frail objects, while structures of prodigious strength and resisting force are crumbled to atoms. Lamp-posts, in the midst of a very chaos of debris, remain standing. Uninjured Venetian blinds are seen attached to broken walls. Small trees have escaped quite unhurt. Fragile newspapers nearly so, with the well-known advertisements intact on their windows—the puff of the Chocolat-Colonial Company, that of the proprietor of the celebrated Eau des Carmes, a military tailor's *affiche*, proclaiming his readiness to provide uniforms for the Garde Mobile, and illustrated with a representation of two tight-waisted officers of the corps.

But more interesting than even the representation of the havoc wrought by raging fire or bursting shell are the photographs of living—and sometimes dead—humanity which are exhibited in this collection. There is an admirable large portrait of Archbishop Darbois, a mild, prepossessing old man, with patient heroism in his face; another, less attractive, of Monseigneur Surat, who suffered with him; Thiers, a snug, comfortable personage to look at—a great man, but one of those Frenchmen who look quite incomplete without a napkin tucked under their chins. Here, also, are several of the more noted Communists: Rochefort, Cecilia, Assi—the last the best-looking of the lot—and many more. Among these photographs, to which the superior interest of their being the representations of ruined human beings, instead of ruined walls and roofs, attaches, are several groups of Communists and others photographed in the midst of the strange battle-field in which they were found. One of the most remarkable of these is a collection of a dozen or so of dead bodies, all killed, as it would seem, at a single blow, and heaped on upon another in terrible confusion; one is lying propped against a tree as if asleep, another propped in turn against him, having apparently leaned his head in his death agony on his friend's shoulder. Most of the dead are lying on their backs with tranquil up-turned faces, some, however, with limbs drawn up, as in pain, and hands clutching at their clothes, as if hoping, by throwing their coats open, to draw a last breath more freely. One of these group-pictures shows us a row of Communists standing on and about the fallen Vendôme Column. They are of all conditions. One looks like a respectable man, grey-headed, dressed in shabby bourgeois costume, with a white neckcloth, a tall hat, and a face tanned with stave work. Near him a woman, not at all tamed, unpicturesque in get up, with a cruel, canning expression in her small sunken eyes and tight, straight mouth. Two men are apparently pledging themselves to some cure, grasping each other by the hand demonstratively; a couple of children—sullenly unconscious of what is going on—occupy the front rank. Silly boys—one waving what looks like a wooden sword—are not wanting, nor pseudo-heroes striking attitude, and looking ferocious. It is a squalid scene, invested, however, with a grim fascination of its own; for this is called the "Fatal Photograph" and has received that name because of its having led to the identification of so many of the persons who figure in it, and to their subsequent execution. This is, perhaps, the most striking picture in the collection; but all are good.

Unfortunately for those who delight in the study of the grim horrors in the ghastly catalogue, there comes the reminder that sham scenes of havoc, manufactured and photographed to gratify morbid tastes, have been issued,

and such interest as belongs to sad reality is marred by the doubt which may occur as to the genuineness of the portrayals. Photographs of ruined buildings and public monuments can scarcely be sophisticated, but as regards war victims, the observer is never sure that he is not expending his sympathy on *poses plastiques*.

With great reticence I have avoided the topic of the weather, and a gleam of sunshine has just burst forth to reward me for abstaining from bad language. If many photographers do not find their way into the *Gazette* as bankrupts before the year expires it will be highly creditable to their prudence and economy, for I imagine that few of them can have cleared expenses up to this period of the year. I heartily hope that a better time will come, however, before winter sets in permanently.

PHOTOGRAPHY IN THE NORTH OF EUROPE.

(FROM OUR OWN CORRESPONDENT.)

Christiana, 30th June.

From Copenhagen to Christiana there is a railway which has been opened throughout within the last three weeks, so that it is now possible to reach the Norwegian capital by land in a day and a half. A steamer ferries passengers over from Denmark to the Swedish main land at Malmo, and thence the trains run direct to Christiana. Under these circumstances, nothing would seem easier than to reach the Norwegian frontier, but, practically, the journey is a difficult one; that is to say, unless one has no objection to pay away £3 or £4 in express trains. The railway journey between the two capitals cannot be performed in less time than four days, and this, for a distance of some five hundred miles only, is certainly a long time. It is only by going sometimes by express and sometimes by ordinary train that the distance can be got over by an economical traveller in two days and a half. The time is not, however, thrown away. Indeed, if the arrangements had been made with a special view of affording tourists an insight into the lovely country through which the line passes, a more satisfactory plan of proceeding could scarcely have been hit upon. At the minor stations there were intervals of waiting, varying from ten minutes to half an hour, and sometimes amounting to even more; and during this time a stroll in the neighbourhood was generally practicable. At Jonkoping, famous for its match factories and charming lake and mountain scenery, passengers pass the night, and go on again leisurely at ten the next morning. At Carlstadt, by the side of the Wenern lake (by far the largest inland lake in Europe), passengers again halt for the night, so that when time is not a very important object, this manner of travelling is exceedingly agreeable.

At the Jonkoping station, or hotel, where we rested, our quarters were simply palatial, consisting of a suite of three rooms furnished in the most elegant style. So impressed was I with the magnificence of the apartment when I woke up at sunrise, that I at once proceeded to take an interior view, setting up my camera, and exposing the plate while I enjoyed another snooze, and capping the lens again, on getting up, some two hours afterwards. Both in Sweden and in Norway Government looks after public accommodation, and the inns—the only houses on the route, very often—are turned into stations, and periodically inspected by proper officials.

By the way, I must just mention a point in regard to my camera-stand, which I have not yet referred to. It is impossible almost for a photographer to travel without a proper stand, and, at the same time, a long unwieldy tripod is a great nuisance on foot journeys. In my case, three stout alpine staves (belonging to our party) formed the stand and these were to be fastened together by the usual brass clamp. The latter had, however, been made so exceedingly heavy, that all hope of carrying it was at once abandoned, it being decided to construct a lighter one of wood *en route*.

Accordingly, one day of our railway journey the guard was feed, and the carriage at once turned into a carpenter's shop, a plentiful supply of wood being obtained during the lengthened stoppages. But when the wooden clamp was finished, it was found, albeit of the most ingenious and complicated construction, that it was very far from being practical. Our inventive faculties were, therefore, again set into action, and at last one of our party suggested the conversion of the lid of a tin biscuit box into the desired article. The body of the box being preserved to be used hereafter as a saucepan or kettle for our tour. Accordingly, our carpenter's shop was forthwith transformed into a tin factory, and within an hour or so we had fashioned a very respectable sort of makeshift, suitable to our purpose.

During an hour's wait at Falkoping I secured a characteristic view of a group of wooden huts near the town. Again at Svarta, while the engine took in water, I opened the carriage door, and, by placing the camera on the seat, obtained a nice little sketch of lake and forest scenery with an exposure of three minutes. The Amot Lake was leisurely photographed during a half-hour's rest, the wondering natives gathering round the while to watch our doings, and regarding us much in the light of wizards, or other uncanny folk.

One of the finest views we have yet seen is that from the king's palace at Christiania, and which embraces a large portion of the Christiania Fjord. Unfortunately, my two plate boxes contained nothing but exposed plates, and I was unable, therefore, to secure this beautiful landscape; on my return, however, to the capital, I hope to have another opportunity.

The town has two or three fair portraitists: Kundsén exhibits some capital portraits of large size, and Klem and Bjornsted are scarcely less successful in their work. Not one single landscape photograph of Norway or elsewhere was to be seen in the shops, their place being partially taken by some reproductions of engravings and lithographed views, printed so as to appear to the uninitiated similar to photographs of carte-de-visite size.

In making my arrangements as a dry-plate photographer, I had innocently thought to change my plates at night, transferring them from my packets to the dark slides, and *vice versa*. Unfortunately, over here there happens to be no night at all (you can see to read during the whole of the twenty-four hours), so I am reduced to some curious straits to effect the desired change, having no other dark cloth with me than my black neck-handkerchief. With this, however, and a couple of red flannel shirts for a screen, I managed to carry on my manipulations very well, the biscuit box aforesaid coming in very handy likewise.

We start to-day on our pedestrian excursion, taking boat as far as Hamar, and thence strike out by the northern route to Bergen, to visit the far-famed fjords in that neighbourhood. I will send you some further notes at the first opportunity, but postal communication is not very rapid or regular upon the less beaten tracks.

Grandalen, June 2, 1871.

I find that if I do not send this on now there will be no other post for a week. I have just taken a very promising landscape photograph, at midnight, of a Norwegian hut, lit up both by the moonshine and sunlight; the nights are, as I have said, so light that one can easily read throughout the twenty-four hours.

APPRENTICESHIP IN PHOTOGRAPHY.

The following is the report of the committee of the National Photographic Association, U.S., appointed last year to report to the convention just closed:—

Your committee, appointed at your last convention, held in Cleveland, Ohio, to consider a plan for the better regulation of apprenticeship, and report the same at this convention,

have attended to their duties, and respectfully submit the following:—

We believe that a regular system of studentship will greatly aid in the future development of photography, and recommend the convention to give the subject its immediate attention.

We believe that bound apprenticeship will be injurious to the future progress of our art, and respectfully submit to you the following reasons:—

First. Bound apprenticeship is very unpopular with all classes in our country, and parents born and educated under our free institutions will hesitate to sign away their children's liberty.

Second. Boys bound out for a term of years cannot take the same interest in their employers' business as they would if they knew that they were obliged to make their services valuable to retain their situations. Therefore, we recommend a system that will place in part the responsibility on the student's believing that it will encourage young men to do their duty, and thereby endeavour to make their services valuable.

I. Three years should be the standard time for studentship, and all boys under seventeen years of age should serve until they are twenty years old, at the expiration of which time they shall be furnished with their diplomas of studentship. These diplomas should be issued by this Association in blank form and filled out by the employers, setting forth the number of years served, what branches he excels in, his age at date of diploma, and moral character while employed. This shall serve as his honourable discharge and his recommendation to any member of this Association.

II. Any student leaving his employer before the expiration of his time, and obtaining his honourable discharge, setting forth the reasons for his discharge, and giving his age at that date and qualification as above stated, should be entitled to the privilege to make application to any member of this Association, and engage to serve the balance of his time, and receive from him his diploma as above stated.

III. Any student leaving his employer without his honourable discharge shall be considered dishonoured and unworthy of the confidence or employment of any member of this Association.

IV. All applicants should come well recommended and first taken on trial, and, if found acceptable, the parents or guardian should be furnished with the above rules, and informed of your intention to strictly adhere to them.

V. Owing to the great difference in expense of living in different localities, we find it difficult to fix a price on students' labour, but recommend low wages the first year, and to increase their pay as their services become valuable.

Before closing, we feel it our duty to call your attention to the importance of establishing a photographic academy for the better education of photographers, and the higher development of the photographic art. We believe such an institution is much needed, and, if properly conducted, will place our art in the high ranks it now merits. Much can be said in favour of this subject, but it is not our wish to extend here our arguments, but to call your attention to its great importance, and ask of you a favourable consideration

A. K. P. TRASK, Phila., Pa.
J. H. FITZGIBBON,
DANIEL H. BENDANON,
E. DECKER,
J. B. WEBSTER.

The report was discussed at some length, but was finally received and adopted; but the action was immediately regretted, as too precipitate.

Mr. Webster said that action had been taken too hastily. The paper should have been considered more carefully.

Mr. Fennimore saw no provision in the report for the defence of the employer.

A motion made to postpone the consideration of the report until the next meeting was agreed to.

Mr. Webster thought the action that had been taken in postponement was what was needed. Twelve months gave the members time to consider its provisions carefully.

PROGRESS OF PHOTOGRAPHY IN AMERICA.

BY J. C. BROWNE.*

GENTLEMEN: The Committee on the Progress of Photography, appointed at the last meeting of the Association, would respectfully report:

Although your committee have not the pleasure of including in their report any discoveries of great importance to the advancement of the art of photography during the last year, yet steady progress has taken place in many of its departments. In portrait photography a more careful study of the principles of the art is manifest in the arrangement and lighting of the picture. Improvement in the Rembrandt and composition style of portraits is very marked, the pictorial effect of those pictures being greatly due to careful attention to light and background. As an advance in that direction, we call attention to several new backgrounds that have been recently introduced; also, to a new material, designed to take the place of expensive silk curtains, or, indeed, any form of photographic drapery.

The magic lantern is becoming more popular each year, and with its advance comes an increased demand for first-class positives of interesting subjects for exhibition. Many are experimenting with both the wet and dry process, to ascertain which produces the best and most reliable results, and we look forward to the coming exhibition of lantern slides before the National Photographic Association to demonstrate which is the superior process, and at the same time prove that this department is not behindhand. The magic lantern is now used most extensively to illustrate public lectures upon all subjects, and contributes largely to instruct and amuse the home circle. Photographers do not appear to realise how easily glass positives can be produced, and what a revenue may be derived from the sale of really fine subjects.

Great as was the improvement in solar work exhibited at the meeting of the Association at Cleveland, we feel satisfied that this most valuable branch of photography will be well represented in Philadelphia. Photographers have learned that to produce a fine enlargement the negative must be first-class, or the picture will be unsatisfactory. Much has been written on this subject, and as a result the average number of negatives now offered for solar enlargement are better suited for the purpose than was the case last year, fewer negatives are spoiled by the use of sulphuret of potassium, and more skill and attention are shown in their development.

This year we shall not have the honour of Dr. Vogel's bodily presence among us, but attached to this report will be found a very full and interesting communication from him upon the progress of photography in Germany, which shows that he is truly with us in spirit. A very valuable paper, by G. Wharton Simpson, editor of the *PHOTOGRAPHIC NEWS*, is also appended to this report, giving an account of the progress of photography in England.

The Woodbury and Albert processes in this country report progress, but various difficulties have occurred to delay their practical usefulness. Owing to the fracture of the press used in the Woodbury process (constructed in France), much time has been lost in its development in America; but a powerful new press (made in New York) has just been finished, which ere long will speak for itself. Before another year passes it may be reasonably hoped that both of the above-mentioned processes will have fine results to show, and offer an opportunity for comparison.

* Report of the Committee of Progress, read before the National Photographic Association, U.S.

From photo-lithography applied to the reproduction of drawings, engravings, &c., we find much of practical use and improvement.

The subject of apprenticeship, or a school for a thorough course of photographic instruction, is manifestly of great importance, and we trust it will receive the consideration that it justly merits. The good effects of a moderate retouching of the negative by skilful hands is, in many cases, very apparent, but the tendency is to overdo the matter and produce pictures of wonderful finish, from which much of the original likeness has departed. Aim to accomplish the effect desired by as little stippling as is possible over those portions of the negative that require it most.

It is gratifying for your committee to report that the manufacturers of mounting cards in this country are paying more attention to supplying photographers with a purer article of paper upon which to mount their prints than was formerly sold for that purpose; the variety and quality of tinted and ornamental mounting-boards has also increased and improved during the past year.

The Victoria card is growing rapidly in favour both in Europe and America; its advantages over the carte-visite are being properly recognised.

There is one department of our art that, we regret to say, does not show the improvement that its importance justifies. Landscape photography in America does not occupy the position that it should, and we earnestly entreat photographers to pay more attention to this subject. In Europe landscape photography is fully on a par with portrait work, and is very remunerative; both stereoscopic and large pictures are eagerly sought for at all places. There is, undoubtedly, a reason for this, inasmuch that in Europe there are more really fine subjects suitable for out-door work than in America. We have fine scenery, embracing mountains, rivers, lakes, and waterfalls, but we lack the exquisite pictorial effect of the quaint old buildings, bridges, and fine specimens of landscape gardening that are so constantly to be met with in Great Britain, Germany, France, and Italy. Much of the scenery of America is unique; for example, the magnificent Yosemite Valley and Falls of Niagara; but, without wishing to underrate our fair country, we are deficient in the bits that go so far in making a charming landscape picture. While this may account in some measure for the exquisite beauty of out-door foreign photographs, and add largely to their demand, yet there is more to be considered than the question of old buildings, picturesque bridges, &c. The simple truth of the matter is that at present we cannot successfully compete in execution with the best foreign landscape photographers. The quicker, then, those interested in this subject apply themselves attentively to out-door manipulation and pictorial effect, the better will it be for the credit of photography in America.

Portrait photography is advancing rapidly, and although we have much to learn, yet each year witnesses a decided advance. Landscape photographers, be not behind your brother artists, but put your united shoulders to the wheel and obtain a like success.

The report was received and ordered to be filed.

DISCUSSION ON MR. BLACK'S NEGATIVE BATH WITH NITRIC ACID,

WE subjoin the statement of Mr. Black, at the National Photographic Convention in Philadelphia, in reference to his negative bath, in which a large proportion of nitric acid is used, and the discussion which followed:—

Mr. J. W. Black ascended the platform amid great applause, and said: Gentlemen, I suppose our worthy President wants I should describe to you the novel kind of bath which I have been using. You all know, perhaps, how little of the silver used goes to make the picture. Thirty or forty grains to the ounce are employed, and yet but a

little is actually consumed in making the photograph. I have often used a bath when it got down to ten or fifteen grains, and produced some of the best pictures I ever made. The bath a little old works better. By working the plate rapidly in the bath we succeed in making better pictures than if the bath were new. I make a solution of nitrate of silver, fifteen grains to the ounce. To the pound of crystals I add four to six ounces nitric acid C.P. I make my collodion always of good body. Excite with iodide of ammonium. No soluble chloride, but a very little ether. My man has changed from chloride to bromide, and has worked it for weeks without my detecting it. I make the collodion of strong body, and excite as much as it will bear. I can hardly give you an exact formula.

In using a bath of fifteen grains you have got to be a little more careful of your proportions. If you have a bath of about forty grains, two or more grains of salt either way do not make it observable, but come down to closer proportions and you have got to be more careful. Develop as usual; rather stronger development works quicker; this works a soft, even, close deposit, and in every respect you could hardly tell the difference between a plate sensitized with this weak bath and a stronger one; the colour is nearly the same, a little more translucent, otherwise almost identical. I have brought on a few pictures just made in that bath, and these will give you a little idea of how it works. Some of my Boston friends have been in my dark closet and seen it work. I put four ounces to the pound in the bath; if I find my picture is coming out hard, I keep adding nitric acid until it works soft and quick, and it has that result always. [Mr. Black exhibited some samples made by this process.] And I work as high as ten ounces of nitric acid to the pound. With so much acid it does not do to allow the plate to remain long in the bath; it coats quick. With about four to six ounces, I work it as I would any ordinary bath; it is more economical, I think. I work my pictures quicker than I can with a neutral bath, or one slightly acid. By adding acid you can get every gradation, from hard and strong to flat.

A Voice.—Can you use an old strong bath?

Mr. Black.—There is only one objection to that. You have got in it the saturated iodide of silver, which you know is bad. You can work it just as well, though, by working rapidly; any long exposure will make it look sandy. I have taken half of an old bath and added new bath, so as to bring it up to fifteen grains to the ounce. After the bath has worked a little while, it works better with me. I work this as low as eight grains to the ounce successfully. To my surprise, I have worked this fifteen-grain bath about as long as I used to work the thirty or forty-grain bath.

Question.—What effect has a long exposure on the plate?

Mr. B.—It works flat. A plate wants to be coated neither too long nor too short a time.

Q.—Must the plate be used very soon after coating?

Mr. B.—Not very soon.

Q.—If the plate were exposed fifteen or twenty minutes after coating, would it work flat?

Mr. B.—Rather so; that is, it would not work with the vigour it would if it were exposed sooner. I think that is so with all baths.

Q.—I am speaking now of long exposures with a small aperture.

Mr. B.—I have used it with the ordinary success; in some cases, exposed as long as half-an-hour.

Mr. Youngman.—How do you ascertain the strength of your bath?

Mr. B.—The bath in the first place is made by weighing the silver. We usually take a pound of silver, and make up a quantity at fifteen grains to the ounce, testing with the hydrometer. If I add new bath, I make the solution so that it will aggregate fifteen grains to the ounce. I take half my old bath, and strengthen it up and use for printing

such portion as I reject of the old bath. I do that simply as a means of economy.

Q.—Use it with an acid?

Mr. B.—I use it with ammonia. Add just ammonia enough to make the silver slightly neutral.

Q.—I would like to ask how long you have worked this bath?

Mr. B.—For some five or six months. I have been making pictures with that formula ever since the test was taken in Boston, with now and then trying bromide as an experiment, and my man has time and again used collodion—once with bromide and once with chloride—without my detecting it. If I use bromide, in exciting, for this acid bath, I use no more than sixteen grains of silver to the ounce, but I use all the iodide. I can make the collodion carry and work smooth, and not get over-excited.

Q.—How thick a collodion do you use?

Mr. B.—As thick as I can flow well. Sometimes, in making a transparency, where I want to get great delicacy, I throw down a good deal.

Mr. Gardner.—Is there any tendency of the collodion to tear away from the glass?

Mr. B.—I prepare my glass, in the first place, by washing it with alkali and acid; and after washing thoroughly, albumenize. Without that I could not keep my collodion on at all, but with that I have no difficulty whatever.

Q.—In making up your collodion, don't you have a definite weight of cotton?

Mr. B.—I have known cotton to vary with the same maker. With a certain quality of cotton we make a thicker solution than with a different one. I am not thoroughly versed in that. We have a formula, but very often we have to make the collodion thicker to make it work as we want it, but a certain amount of cotton does not always give a certain film. I use about an ounce of cotton to begin with. I have not made much collodion for a year, because I have a man who is very skilful at it. All these formulas require a good deal of judgment. You could scarcely follow any one of them exactly.

Q.—Why do you dispense almost entirely with bromide?

Mr. B.—I find, by using much bromide with this bath, your picture is very flat indeed.

President Bogardus.—Gentlemen, if you have any more questions, ask them; Mr. Black is before you, and the process is not patented. [Laughter and applause.]

Q.—How soon after making it can you use your collodion?

Mr. B.—I use it an hour afterwards

Q.—What iodide do you use?

Mr. B.—Ammonium. I don't find much difference between cadmium, potassium, and ammonium.

Q.—Do you know anything near how much iodide you use?

Mr. B.—Between three and five grains to the ounce.

Q.—Does the bath require the usual sunning, also what kind of water is used?

Mr. B.—I take our usual rain or Cochituate river water that comes into the city, and make the bath up with that, without any preparation or filtering. There is not organic matter enough in it to do much harm.

Q. (interrupting).—In winter do you notice any difference between negatives taken with bromide and chloride?

Mr. B.—I think I have. The chloride is bluer, darker, and looks more intense than the other. I use one grain of chloride of potassium, taken from Prof. Towler's suggestions, in place of bromide. I can't see any difference in the chemical effect, except in deep shades it will not give minute detail. The bromide gives a little more of a rich brown. We have a neutral bath box in general use, very simple, and cheap and good. We make a common box of white wood; screw or nail it together firmly, and cover it with the common tar with which they cover roofs. I have used a box like that for a year and a-half without its leaking any. Such a contrivance, holding three pails full, cost me ten

dollars, while a glass one would cost me sixty or seventy dollars. Silver put in that will work right along. The first solution I put in was coloured somewhat; but after a short time it worked just as well, and I saw no difference.

President Bogardus.—I cannot let Mr. Black sit down without thanking him on behalf of the Association. Just that one fact of Mr. Black's standing up here and giving us that process has made me sure our organization is a success. [Applause.] Two years ago a man who would have found out such a process as that would have written it out on paper, and travelled from Portland to New Orleans selling it out at twenty-five dollars a piece. To-day it is told to you openly without any secrecy whatever. It confirms my impressions that we are stronger united than divided.

REDUCTION OF NITRATE OF SILVER BY CHARCOAL.

BY C. F. CHANDLER, PH.D.

WHEN solid nitrate of silver, either in crystals or sticks, is placed upon glowing charcoal, deflagration takes place, the silver being left in the metallic state, while binoxide of nitrogen and carbonic acid are evolved. The nitrate is fused by the heat of the reaction, and sinks into the pores of the charcoal, and as each particle of charcoal is replaced by metallic silver, the structure of the original wood is preserved. With proper management, pieces of silver of any desired size can be prepared, showing the exact structure of the wood. A crystal of nitrate is placed on the end of a piece of charcoal, and the blowpipe flame is directed upon the coal near the crystal to start the reaction. When deflagration begins, crystal after crystal may be added. The nitrate fuses, passes down through the porous metal already reduced, until it reaches the glowing coal, where it is reduced. I have prepared in this manner lumps of silver weighing an ounce or more, which exhibit most beautifully the rings of the wood.—*American Chemist.*

HOW TO MAKE A GOOD SOLAR NEGATIVE.

BY W. L. SHOEMAKER

(Solar Printer, with Albert Moore, Philadelphia.)

SINCE my article in the *Mosaics* on solar negatives, I have received many letters asking for further instruction, and a more extended criticism of the faults and causes thereof; as it would consume too much time to give personal answers, I ask to give such through the medium of your valuable journal.

I find the majority of operators do not take the proper time to get good solar negatives, and when they send their efforts in that line to us for printing they accompany them by such apologies as the following, apparently thus expecting to relieve themselves of all responsibility: "This was taken late in the day." "A little overtimed, but guess you can fix that all right." "My developer streaked this; vignette it out if you can,"—poor excuse. "Light was bad; had a good deal of trouble with this sitter." "Had no collodion ready"—no excuse at all. "My bath was awful bad." "Did not know this was to be a solar negative"—reasonable. "This is a little thick, but do the best you can." The latter negative was overtimed, and, not having sufficient contrast, the operator intensified with sulphuret of potassium, thereby totally spoiling it for solar purposes. Here is the one generally used, and is had because too often repeated; "I will do better next time."

My advice is to try now. Let your mind fully understand what your hands are doing. Try and interest yourselves in your business so as to improve every branch of the manipulations. Do not try every receipt given you, but select one you have seen well worked, and do not give up

until you have equalled your neighbour's work; then let your ambition be to excel it.

Such being the weak excuses used to cover the carelessness of operators, is it a wonder that many make no effort to establish a good trade in enlarged work? Those making the effort invariably succeed, and it not only adds to the income of the establishment, but gives a reputation such as only they who make life-size heads attain. Moreover, it secures additional trade in the smaller sizes. As it requires but little additional expense, and that only in adding a few specimens of large sizes, to obtain this kind of trade, why not make the trial?

As to the chemical manipulation necessary to produce good negatives for solar purposes, a very trifling outlay of time and patience, with the hints I shall give, ought to suffice.

Let us commence with the sitting. Let the light be so managed as to give full shadows, round up with proper side-light and screen. The finer details in the shadows are much more effective in an enlarged print than in a contact print, therefore do not place the side-screen too close to the face. The majority of negatives are spoiled by the side-screen being placed so as to throw a false light over half the eye, thus destroying not only that feature, but many of the fine lines, and causing flatness to the negative. Observe that the high lights are not dense, but full of detail. All of this can be secured by fully understanding your light. The great fault is in using too much light, not having what is used come in at the proper angle.

Never use a dark ground for a solar negative for printing vignette heads. Either use a white ground at a distance from the subject, or a medium tint closer. Mr. Bigelow's new revolving ground is about correct in tint.

Never use a small tube expecting to get good sharp results. Use the 4-4 whenever practicable—a waste of time in exposure, but a great gain in quality.

Use your camera as near level as possible. The greatest fault in this direction is in using the camera at too great an angle, thereby distorting some features, and foreshortening others. The best illustration of this error was that displayed by Dr. Vogel at the last Exhibition, and should be well studied.

By using a large tube at the proper distance from the subject the angles are shortened, and nature is more nearly approached. When possible, use a large plate for the negative, and select a glass as free as possible, and clear of all imperfections. Some of the negatives we receive have the appearance of being selected as unfit for anything else, and, as some have said, "It is good enough; it is to be coloured." They are too nearsighted to observe that the time lost by the artist in retouching spots and bubbles is so much work taken from the face. Do not use albumen on the plate unless very thin, as it is liable to contract under the intense heat of a condensing lens, thus splitting the collodion. If used thin, no harm will result.

Make the head on the negative at least one inch for bust or vignette pictures. A little larger is better. The larger the head on the plate, the less the intensity. Many make a half inch head, and expect a fine solar full life-size. We can do it, but at a great loss of time and of quality.

Make all standing figures, whenever practicable, on 4-4 plates. Make the figures of such a size as to take in all of the background, as a great difference of proportion is necessary in an enlarged print, and requires more background than cards or cabinets.

For solar negatives of children, or views from animal life, small negatives and smaller instruments may be used to an advantage, as they require shorter exposure. The most desirable size for solar negatives from life is two on a 4-4 plate. I would prefer views taken on 4-4 or 8-10 plates, as they can be made much cleaner, and allow us to use a wider angled tube for enlarging, thereby securing straighter lines. I would recommend the trial of the developer used

* Philadelphia Photographer.

by Mr. John C. Browne.* Mr. Browne's negatives are the cleanest I ever saw, and perfect for solar purposes, which perfectness is mainly due to the care in developing. Any bath in good order should make a good solar negative. The collodion used should never be quite as thick as for contact negatives. Cadmium collodion gives a bluish negative, and very rarely makes as fine a negative for solar purposes as ammonium and potassium collodion, which gives a creamy tint to the negative.

As I have been repeatedly asked what I consider a good collodion for solar purposes, I give the following formula—one used by a very successful photographer. It is not given with the idea of being the only good one, but to answer the inquiries.

Ether and alcohol	... ..	equal parts
Iodide of ammonium (light yellow)	...	5 grains
Bromide of potassium	... ..	2 "
Bromide of cadmium	... ..	1/2 "

Mixed in the following manner:—In one bottle place fourteen ounces alcohol, four ounces ether; to this add cotton for thirty-two ounces—about four grains to the ounce (prefer Anthony's blue label); dissolve the bromide of potassium in very little water; to this add two ounces of alcohol; mix thoroughly with a rod. To this add the iodide of ammonium and bromide of cadmium. After dissolving, add twelve ounces of ether, which, when stirred, will throw down a heavy precipitate, and should leave the solution perfectly clear. If not, add alcohol drop by drop until clear, without stirring. Have another bottle ready with an ordinary filter; if an oily deposit is seen below the precipitate, it should not be added to the filter. Now add the filtered solution to the other bottle. After filtering or settling, it is ready for use. With this collodion I have seen many fine negatives produced.

Whenever we receive a negative full of pinholes, we ask what kind of iodide of ammonium is used. The answer invariably is "dark red." I have always recommended the use of light iodides for avoiding this very difficulty, and firmly believe that most of the trouble of the dark-room is from the use of dark iodides.

This collodion keeps well. If it works rather weak, add few grains of iodide of ammonium to the amount in the coating bottle, which will readily increase the intensity. A good plan is to have a bottle of plain collodion always on hand, made very thick, say double thick; also a bottle of iodized ether and alcohol doubly iodized. If the collodion you are working is too intense, pour off a portion of the iodized solution, add the plain collodion until of the proper thickness, and you are ready in a few moments with a new collodion. Never dilute collodion except with ether. Some cotton is made glutinous and lumpy by having alcohol added to the collodion. This mixture can be added to the regular coating bottle at the end of the day's work, thereby benefiting it. It is the duty of any operator who as ambition to always be ready with materials in proper order, so as not to throw the blame of a failure on the sitter. This collodion works quickest when fresh. Care should be taken not to overtime, as overtiming flattens the image and weakens the contrast.

As the developer may make or destroy, use your judgment as to the proper strength. For solar work use the developer about two ounces of protosulphate of iron to the quart; one and a-half to two ounces of acetic acid, and not less

* It consists of a saturated solution of ammonio-sulphate of iron in water, filter, and to every ounce of solution add one drachm of glacial acetic acid. This is a stock-bottle. Before developing a plate it is necessary to reduce the strength of the saturated solution. Take a small wide-mouthed bottle, and to every five drachms of water add two drachms of the stock solution. The developer is now ready for use. Time may be saved by marking with a file or diamond upon the bottle the exact amount of water desired, and another mark for the iron solution. The proportion of five to two is the formula that I generally prefer, but it can readily be altered to suit the subject by increasing or decreasing the amount of iron. When the bath is new, no difficulty will be experienced in flowing the developer evenly over the plate, but, by constant use, alcohol and ether being absorbed into it, the developer may require the addition of a little alcohol to make the solution run perfectly even.

than half an ounce of alcohol. The developer may be used even weaker than this with fine results. A solar negative should never be redeveloped. If too weak, leave it alone. A weak negative is much easier managed in a solar camera than a strong one. Always, when a negative is no satisfactory, make another if you can. As it is the most profitable negative made, care should be given it to make it well. Stop developing when all the detail in the face is developed. Pay no attention to the drapery. If properly timed, the drapery will be strong enough. Fix in cyanide of potassium, used weak; wash very well, as the majority of negatives we have on hand unvarnished, although protected by tight closets, are changing, and in some can be seen signs of crystallization.

We do not object to varnished negatives if properly varnished, that is, with a soft varnish such as sandarac with oil of lavender and chloroform. This I consider the best varnish, if used thin. Thick varnish becomes rough by partially softening when printing in a solar camera. A hard varnish becomes brittle under a condensing lens, and frequently cracks from the plate. Varnish having Venice turpentine in its composition is subject to this more than any other. Never add gum arabic or albumen to the surface of a solar negative, as it sometimes roughens the surface. In some cases a little reduction in the negative benefits the print. When so coated, it is impossible to reduce a negative clean.

"Overtime and under-develop," says old Foggy, but such a result is flat and never round. Learn to time correctly, and until full detail is obtained. Further timing only injures.

To Pack Negatives Safely.—Face the negative to another glass of the same size, paste small pieces of card on the corners, wrap well in newspaper, and, without tying with a string, inclose either in a box or between strips of back-board. A great many negatives we receive are broken by tying before putting on the outside wrapper or box, thereby making an uneven pressure. Where negatives are to be mailed, try and get them stamped gently while you are present, as it seems to be the particular pleasure of Uncle Sam's postmasters to break anything containing glass.

To the many whose questions I have here tried to answer I can give no better advice than the following:—

"Never be ashamed not to know, but be ashamed not to learn. Never pretend to know; as for pretending to be ignorant, there is danger in that, since all men are ignorant." Even in asking questions concerning the subjects I have most carefully studied, I may truly say I desire to learn. And "as every man knows something I do not know," let others follow up this subject until we all fully understand.

Correspondence.

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Sir,—Mr. Cunningham has in his last letter favoured your readers with another fallacy, in addition to those with which he has previously treated us. He would have us believe in the infallibility of Hansard, basing his faith on the popular but untrustworthy myth that all the speeches recorded therein are revised by their respective authors. I am sorry to be obliged to dispel this charming illusion, and to inform him that it is not the fact,* though, no doubt, in special cases, this is done. Be this, however, as it may, the report in question, on which Mr. Cunningham founds his assertion that Sir Roundell Palmer used certain words, does not even profess to give them, but a short *resumé* only of what the reporter believed to be the purport of Sir Roundell's speech. It is obvious this amounts to nothing in determining a nice technical point of law, where precision of terms is of the essence of the question. However, all this is of no importance, as the Act alone is, after all, the only authority; I merely draw attention to

* Only last week Mr. Gladstone, in the course of debate, denied having corrected a speech of his which was quoted from Hansard.

the matter to show how little reliance is to be placed on Mr. Cunningham's facts and deductions.

My advice to your "Poor Photographer" is to read the Act, and not bother himself with learned or quasi-learned disquisitions, which will only mislead him. He will learn, broadly, that the copyright belongs to the photographer, except where it is a commissioned picture, and then it belongs to the party giving the commission, unless there be an agreement in writing to the contrary; that when a negative is sold for the first time after its production the vendor does not retain the copyright unless the purchaser signs an agreement to that effect, and the purchaser does not acquire it unless the vendor signs an agreement to that effect; in default of this the copyright is irrecoverably gone. Registration is necessary before a party can enforce his rights by legal proceedings. Of course it will always be a question in every case how far the facts come within this or that rule.—I am, &c.,

A LAWYER.

July 5th, 1871.

APPRENTICES AND PHOTOGRAPHERS' ASSISTANTS.

DEAR SIR,—I had hoped that the subject of photographers' apprentices and assistants would have been taken up by an abler pen than mine. As it has not been so, and the subject being a very important one, having a very important bearing on the future of photography, I cannot refrain from writing a few sentences more in reply to "A Little Photo." and J. Schmidt; or, I should rather say, make a few remarks called forth by their letters. Personalities I do not like, and will not indulge in them; they stir up angry feelings, and do no good.

There is a part of photography—I will not say a branch of it—that I have wished to say a little about for some time, but health and time, and my inability to find a suitable assistant, forbade. I refer to the time from the entering of the sitter into the studio until the completion of the sitting. The management of the sitter during that time I consider the most important part of the taking of a negative. To do it properly the photographer must be able almost to look into his sitter's very soul, and read there sufficient to enable him to decide what would be the most natural expression to show on the face, whether thoughtful, sentimental, arch, grave, or gay. Then the next thing is how to get the natural expression on the face, and transfer it to the negative. This is sometimes very difficult to do, as not unfrequently the sitter—whom we will suppose to be a lady—wishes to appear different in her picture from what she really is. Perhaps she is naturally grave, and wishes to appear smiling. Tact is here necessary. No general directions could be given; but I give one hint: just quietly say to the lady, before exposure, "Please be careful not to smile, as, if you do, the shape of your upper lip will be lost; or, the dimples at the side of the mouth, which look so nice to the eye, will in the photograph look as part of the mouth, and make it appear large." Sometimes a little light conversation may do; or serious talk, or pleasing controversy, when judiciously managed, in either lady or gentleman, I have seen cause the eye to sparkle, and the countenance to beam with intelligence, and remain there, so as to leave its impress on the negative.

The position of the figure and head and eyes should be in keeping with the expression. This is most important. For instance, it is not natural to see a lady with her head resting on her hand, the head inclined towards the receding shoulder, with a smile upon her face, because that position denotes sentimental thought. In many cases the position of the body and head and eyes will denote expression. Suppose the same person, of a quiet expression, to be placed, the body turned a little from you, the head and eyes looking straight forward, he will appear thoughtful. Allow the head to incline a little to the receding shoulder, and the eyes to move very little from you, and he will appear sentimental. Preserve the same position of body, and turn the head towards you—that is, towards the lens—and the eyes a little more still, and the sitter will appear animated. Now take a lady, and turn the figure slightly from you; turn the head until nearly front, and allow it to incline a little on the near shoulder, with the head slightly drooping; raise the eyes a little, to look into the lens, and you have the arch expression. Of course every face will not bear such treatment. To attempt to get an arch expression with sharp features, small eyes, and heavy eyebrows, you would, instead, get a scowling expression, anything but pleasing.

Great care is here necessary, and it requires a good education, intelligence, and many years' careful training and experience to fit the photographer for this part of the profession. It is a very common practice amongst photographers, almost the first thing in posing sitters, to tell them to look at a certain point. What is the consequence? In many cases the person allows the head to droop a little, and still looks at the same point. The person then appears to be looking from under the eyebrows, and, of course, sulky.

There are two classes of photographers to whom my remarks will be of little use; that is, those whom I would term daubs, who work in open yards, or in such studios that it is impossible to turn out good pictures. They have no ideas for the good or future of the profession. There are also the mechanical or commercial photographers, whose idea is to make money. They work at a low price, and, of course, must produce quantity, or it will not pay. They may have fine studios, the finest accessories, may light their sitters well, and produce good clear photographs, but the expression is lacking, and the pose often bad. They cannot take the time to secure the best artistic results, and to treat sitters as I have described. The third or artistic photographers are those for whom I now write.

I have stated what I desire to accomplish, and what I have been striving for years to accomplish. What I intend to do in future, regarding apprentices and assistants, is as follows. In the model school here I know a boy under twelve years of age, who has for free-hand drawing, model drawing, and geometrical drawing, received honourable mention from the Art and Science Department of South Kensington. He has also passed his examination, having answered eight questions correctly on acoustics, light, and heat for the same department at South Kensington. His other studies are, of course, in keeping with this; and many others in the school were equally successful. I propose, if I can, to get a boy of fourteen or fifteen years of age, and if he can show that he has passed successfully at South Kensington, I may infer that he has a fair amount of artistic taste, and that it has been properly cultivated; and if, after a month's trial, I find that he is in other respects suitable, I will engage him for four years. With careful training, at the end of four years I may hope that he will be able to assist in raising the status of photography a little above what it is at present, in this part of the country at least. As the fees of the school are only five shillings a quarter, including drawing and physical science, I cannot be said to believe in caste too much.

I have now expressed my opinions, and those who choose may agree; and if any person has a better opinion to give, I am open to conviction. I believe, as a building requires a foundation, so does a photographer require education to begin with. I will merely say to "A Little Photo." and Mr. Schmidt, that I have had more than one assistant, if not quite so bad, yet not much better, than I described.

As to albumenizers, I only stated what my assistant told me was the practice amongst employers, and he was quite surprised because I did not do the same.

I intended to write only a few sentences, but the subject is important, and, as I chanced to have an evening to myself, I have said my say, and now place it in your hands to give or withhold as you see fit.—Yours truly,

D. WELCH.

Newry, Ireland, July 8th, 1871.

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SIR,—Will Mr. Cunningham kindly answer the following query:—

I stand on the high road, and take a view of one of the leading objects, being a gentleman's seat. Is it intended by his letter that the common law right of the owner of the house entitles him to stop my publishing my picture? If so, what becomes of my common law right to my own production?

I hope I may be allowed to say I think he has some very wild notions on the subject of copyright.—I am, yours obediently,

AN OLD SOLICITOR OUT OF PRACTICE.

Talk in the Studio.

ROYAL PATRONAGE TO PHOTOGRAPHY.—There are probably no more constant patrons of photography than the various members of the British royal family. Mr. Melhuish has recently been favoured by its patronage on a somewhat extensive

scale. Having just photographed the Prince and Princess of Wales, the Princess Louisa and the Marquis of Lorne, and Prince Arthur, in the dress they wore at the Waverley ball, he has just received instructions to produce card and cabinet portraits of all who danced in the costume quadrille on the same occasion, nearly a hundred in number. The Prince's interest in the art, thus expressed, is highly gratifying.

TAXES AND PHOTOGRAPHY.—The amateur chauceillers of the Exchequer are irrepressible. Another brilliant genius has discovered that photographers are the fairest possible game for taxation. The Paris correspondent of the *Daily News*, referring to the proposed new taxes in France, and pointing out the propriety of taxing photographs in England as well as in France, remarks that the cost of producing cards is less than a penny each, and that they sell for eighteen pence each. The mis-statement in the matter of the first cost is, of course, the result of ignorance; as to the price at which they are sold, everyone knows that the current price is one shilling each. Here are his remarks:—"There is one thing, however, which he has not taxed, and I recommend it to his notice, and also to that of Mr. Lowe—photographs. The number of photographs sold every year is prodigious, and the profit on them is also enormous. There may be no excessive profit to the photographer when a private person goes to have his likeness taken, and it may be advisable to exempt such productions from the tax. If you want your portrait taken, you will order two or three dozen copies, and you will pay nothing very extraordinary for it. But the photographs which figure in shop windows, and which are sold in the shops, are very different. A photographer asks Mr. Gladstone to do him the honour to sit to him, or he obtains such an honour from one of the princesses of the reigning house. Perhaps half a million of copies of the Gladstone photograph will be sold. The photographer can turn it out on the large scale for less than a penny—the public pays for it eighteen pence. There is an enormous profit on which the Chancellor of the Exchequer might well batten. In France photographs are better and cheaper. The established price of a *carto-de-visite* is a franc, and they are sold by millions. Why should not M. Pouy r-Quertier come and take his little share? The public would not pay it; but the photographers would give up an infinitesimal share of their profits. Conceive what gain the photographers are making just now out of the ruins of Paris. The photographs are sold for two, three, or four francs apiece. The dealers order them by the hundred thousand, there is such a demand for them. Why should the photographers in these times of distress have all the profit? Let Mr. Lowe think of it."

A MATCHLESS CAMERA.—*Fun*, referring to the diminutive Princess Felice, now in London, pays a deserved compliment to Mr. Blanchard, and says:—"Her palace is at present in Piccadilly, nearly opposite the Royal Academy, and within focus of the matchless camera of Mr. Valentino Blanchard, who, having succeeded so admirably in photographing great people, has now a chance of portraying one of the smallest ever seen."

THE CHEMICAL NATURE OF TANNIN.—Dr. Hugo Schiff recently presented to the Chemical Society of Berlin a paper upon the properties and composition of tannic acid, from which we (*Journal of Applied Chemistry*) abstract the novel features. The subject of the true nature of tannic acid has occupied chemists for a long time, and there are few questions upon which such a variety of apparently contradictory opinions obtains. It is evident that crude tannic acid contains glucose, and that this is not an accidental admixture. The amount of sugar varies between wide limits, and its removal does not materially affect the reaction of tannic acid. Some chemists would, therefore, class tannin among the sugars, while others stoutly deny its claim to such a position, and hence the question, "What is the true nature of tannic acid?" still remains unsolved. Dr. Schiff thinks he has settled the point by removing all the sugar, then transforming the tannin into gallic acid, and afterwards reconverting it into tannic acid. He says that tannic acid is the anhydrous alcohol of gallic acid, and that the least purified tannic acid is in fact the best. It may not appear to be of much value to tanners to know that they get a peculiar variety of alcohol out of oak and hemlock bark, but all such knowledge is likely to be turned to good account in the long run. Tanners know that the exposure of the extract of bark to the act on of the air destroys it for

tanning purposes. Chemists say of this change that gallic acid is produced, which no longer has the property of coagulating albumen, and of rendering gelatine insoluble in water. If we know the true chemical nature of tannic acid we may devise some method of preventing this change into gallic acid, and thus be enabled to make extracts of bark in the forests that will bear transportation and preservation any length of time; hence the value of the purely theoretical observations that Dr. Schiff has just presented to the Chemical Society of Berlin.—*English Mechanic*.

BLUE GLASS AND VITALITY.—The *Pall Mall Gazette* says that "an interesting discovery has lately been made in America—namely, that 'the germ of all growth and life lies in blue or violet glass,' the blue ray being more probably meant. If this be so, photographers will be tempted, as they must live in glass houses, henceforth to swear by blue glass. Our contemporary adds:—"The gentleman who discovered this secret has given it to the public in a pamphlet, in which he tells the results of his own experience. Under blue glass in a graperly in five months, two-inch vines had grown forty-five feet. He next tried the effect of violet glass on pigs, and found it answered admirably. Three sows living in a piggery roofed with glass of this hue increased twelve pounds almost immediately, and a barrow pig reached an alarming state of obesity, even more rapidly than the sows. He then experimented on an Alderney bull calf just born and apparently dying. Under the influence of this coloured glass the calf revived in a few hours, took to feeding with great vivacity, began to grow next day, and was 'full-grown in four months.' By roofing our houses with violet-coloured glass 'we can produce in the temperate regions the early maturity of the tropics, and develop in the young a generation, physically and intellectually, which will become a marvel to mankind.' We sadly want something of this kind to promote the greatness of our public men, and it is for Mr. Ayrton to consider whether it might not be advisable to try the effect of a violet-coloured skylight at St. Stephen's by way of a small beginning. If it answers physically as well as mentally, Mr. Cardwell would find some coloured bell-glasses valuable for recruiting purposes; a few hundred undersized recruits placed under these glasses would soon be converted into any size that may be required according to the exigencies of the service—if intended for Guardsmen they should be kept under cover for a longer period than if intended for regiments of the Line."

CHEMICAL NOMENCLATURE.—Prof. Filopanti, of the University of Bologna, in a lecture entitled *Alcuni Misteri di Chimica popolarmente spiegati e Nuova Nomenclatura*, proposes the following scheme to replace the unsatisfactory nomenclature at present in use. He forms words on his system that shall express not only the chemical formulæ, but, where possible, some of the properties of the compounds. Hydrogen is *a*, oxygen *e*, nitrogen *i*, and carbon *o*; and these letters, the first four vowels of the alphabet, indicate at the same time the quantivalence of the elements in question. The other elementary bodies have names consisting of four letters, the first being invariably *u*, the last the vowel denoting the quantivalence, and the remaining intermediate two being consonants taken from the ordinary name of the element. Thus we have for chlorine *ucra*, calcium *ucele*, copper *upre*, silicon *usle*. To mark the number of atoms contained in a compound, consonants are employed of the following respective values:—

<i>b</i> ,	<i>c</i> ,	<i>d</i> ,	<i>f</i> ,	<i>g</i> ,	<i>l</i> ,	<i>m</i> ,	<i>n</i> ,	<i>p</i> ,	<i>r</i> ;
1,	2,	3,	4,	5,	6,	7,	8,	9,	0;

And numbers over nine are shown by a combination of the above letters, *de* being three atoms of oxygen, *man* seventy-eight atoms of hydrogen, and so on. State of aggregation, degree of basicity, and other characteristics, are indicated by the position of the accent. In this new language water becomes *becr*, carbonic acid *eccebo*, lime *bebeclee*, urea *bobecifa*, melissylic alcohol *becaedr*, and chloride of sodium *busdabucra*.—*Academy*.

To Correspondents.

W. E.—Send a copy of the photograph to our Publisher, with title and full particulars, stating author's name and address, and name and address of owner of copyright. Also enclose eighteen stamps, and our Publisher will attend to the matter, making the entry, and paying the fee at Stationers' Hall.

EXPLAIN.—As a rule there is no need to bring the glass of a side-light right down to the ground, and as it is inconvenient to have it too low, and increases risk of breakage, it is not customary to have glass lower than from eighteen to twenty-four inches from the floor. Sometimes, when the amount of light obtainable is limited, there is an advantage in bringing it as low as possible, and in no case will it be injurious to have glass to the ground.

OLEOGRAPH.—Messrs. Sampson Low and Co., of Crown Buildings, Fleet Street, are the agents for Oleographs. 2. We have no means of knowing, having made no comparative trials. We believe both are good; we know D is good. 3. The large portraits by Mr. Blanchard are produced by Dallmeyer's D lens. 4. We do not know of any better plan of encaustic cards than that described in the YEAR-BOOK. The process to which you refer is, we believe, simply a modification in detail of the known and usually practised process.

J. P. S. F.—Unquestionably a master is bound to teach his apprentice every branch of the art as specified in the indenture, whether a premium is paid or not. Doubtless he will do so. 2. The illustrations in the *Graphic* are copyright. 3. The number of the dry processes is legion, and hence it is very difficult to say which is best or simplest. Perhaps, for simplicity, the coffee process will answer your purpose best. You will find brief details in our last YEAR-BOOK, and fuller particulars in subsequent articles in the NEWS.

MORS.—We have not tried the additions to the sulphocyanide bath which you mention, and cannot speak positively of their effect. They would probably cause little difference, and are not necessary. 2. To what promised results do you refer? 3. Prints require fixing as usual after toning in the sulphocyanide and gold bath. 4. The action of hyposulphite of soda is to dissolve and remove the sensitive salts of silver remaining in the paper after the formation of the image by light. 5. You may practise freely any of the processes described in "Hunt's Photography," but you will not find the heliotype printing process described there or mentioned. Albert's process, which we have described tolerably minutely, is not patented in this country, and you are therefore at liberty to practise it. 6. Several methods of working without a dark room besides the Graphogenic have been described in the NEWS; but we consider that of Mr. Edwards the best and simplest. We cannot explain the delay you speak of having had in obtaining the apparatus; but no delay will entitle you to make one for yourself.

W. STURGEON.—A drawing from which to produce a photograph should be produced on the smoothest drawing paper obtainable, or on fine Bristol board, and the size should be as much larger than the size required on the photograph as the draughtsman can conveniently make it. To obtain the best result, a negative of the size required should be taken; but if you have not a camera and lens large enough except your Woodward's camera, your best plan will be to produce first a small and then an enlarged negative. If you have to procure a lens, a rectilinear will answer best. A landscape lens will give curved marginal lines. Such drawings are often photographed in the United States without lens or camera. The drawing is carefully made of the required size on thin transparent paper or tracing linen; from this a photograph is produced, and this is waxed, and used as a negative for as many more copies as may be required. We have seen very perfect results produced in this way, with much less trouble than the use of camera and lens. You will find a detailed description of this method, as used in the U. S. Government offices, on page 55 of our volume for 1869, the number for January 29th of that year.

COLONIST.—Silver stains on cloth garments cannot be always removed without removing the colour from the fabric. Make a strong tincture of iodine, say twelve grains of iodine in an ounce of alcohol; apply to the stain, and rub well in; then take strong hypo solution and apply, subsequently rinsing well. 2. Yes: such an act is a fraud punishable by law.

A SUBSCRIBER (Frome).—You can obtain a portable background suitable for open air portraiture of Mr. Solomon, Red Lion Square.

HORACE.—The ordinary commercial carbonate of soda is used. This is generally in the form of a bicarbonate. It is the alkaline quality which is required. The smell is not dangerous in the printing room. There is no mistake in the formula.

CHROMO.—It is probable that skill as a colourist would be of much value to you. Mr. Croughton will probably be of service to you. We do not, unfortunately, know of anything suitable for you at present.

F. LANE.—Imperfectly cleaned glasses is an occasional cause of a similar defect; but in your case the conducting of the intensifying operation in daylight is the most probable cause, especially if any predisposing cause—such as imperfectly cleaned glasses, or traces of cyanide of silver—were present. Your letter shall appear.

X. Y. Z.—We cannot, unfortunately, indicate with certainty. Try Solomon, Red Lion Square.

AMERICANUS.—The *Philadelphia Photographer* and *Photographic World*, both published by Beneman and Wilson, corner of Seventh and Cherry Streets, Philadelphia. You may possibly be able to get them of Trubner, Paternoster Row, or by order of our Publisher.

W. E.—The mottled spots in your prints are caused by irregular sensitizing; partly because the solution is getting weak, and partly the result of using too small a quantity in the dish. Strengthen the bath, use a greater depth in the dish, and now and then agitate it between the floating of sheets.

ENAMEL.—We have published several recipes for the preparation of enamel paste. Unless you can give us some indication of which you require, we cannot refer you to the one in question. You will find the formulae for an enamel paste by Moas. Adam-Salomon on p. 88 of our YEAR-BOOK for 1869.

C. M. C. (Reigate).—We rarely hear of such matters which are not advertised. The price of negatives is generally a matter of arrangement, and may range from a guinea each upwards. The landscape bit is very pleasing indeed.

S. G. W.—With the necessity of placing the sitter facing south, we fear you will have much trouble. The only plan you can adopt is to have a thin white curtain very easily movable, in order to intercept direct sunlight when it enters the room.

J. J. (Doncaster).—The sandy deposit which keeps returning after partial elmination is, doubtless, due to the supersaturation of the bath with iodide of silver, and will require to be dealt with as we have often described. Take for each pint of silver solution two pints of distilled water, and pour the solution slowly into the water. This will precipitate the iodide. Filter at once, and make up with nitrate of silver to the proper strength. We believe the varnish you mention presents a tooth to pencil. 3. Yes; there are a few YEAR-BOOKS for 1871 still left. Nitrate of potash is added to the positive developer to form a portion of nitrate of iron, which gives a collodion positive of a fine silvery white. 4. Possibly such an association may some time be formed here.

GEORGE MOLD.—Thanks. We will use your communication shortly.

W. W. LAW and SON wish us to state that their photograph mentioned by our American correspondent should be Brighton Church, not Brighton Church.

CAMERA.—Your question is one for a lawyer if you wish to recover your camera by legal proceedings. The facts as you state them are certainly very provoking; but we know that large manufacturing firms generally dislike to undertake repairs, which are generally troublesome and profitless. We should recommend you to try again by "moral suasion." We think that unless the manufacturer has entered into a contract to repair your camera, you have no power to compel him to do so; nor could you recover the value of a new one to supply its place because he neglects a task he did not undertake. The case is very annoying to you, and it may be very wrong of the manufacturer, but we fear that your only remedy in case of continued neglect will be to send some one to bring your camera away.

NEGATIVES.—We have occasionally known negatives undergo a change and become thin and worthless for printing. It is not easy to determine the cause in the absence of a precise knowledge of the history and conditions of the negative.

W. W. W.—Ferrotypes are produced in precisely the same way as collodion positives on glass, an enamelled iron plate being used instead of the plate of glass. 2. It is probable that the copper contamination you mention would not be seriously injurious.

Several Correspondents in our next.

Photographs Registered.

- Mr. HAWKE, Plymouth,
Two Photographs of Officers and Crew of H.M.S. Ship
"Galatea."
Messrs. R. WARD and Co., Belfast,
Photograph, entitled "The World Besieged."
Two Photographs, entitled "The Mutual Creation of God."
Mr. J. FRIEW, North Shields,
Photograph of James Philip Dodd.
Mr. S. SEED, Bristol,
Photograph of C. H. Mackintosh.
Mr. W. G. LAWIS, Bath,
Two Photographs of J. S. Toole.
Mr. HARRISON, Newcastle-under-Lyne,
Two Photographs of Rev. W. M. Beeby.

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15 Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.

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ANOTHER NEW STYLE IN PORTRAITURE.

OUR readers are familiar with various background effects produced by double printing. There is the simple vignette merging into grey instead of white; the ordinary vignette within an oval aperture, beyond which is printed a spandrel of some tint varying from grey to black, as the taste of the printer may deem desirable for the picture; there is the picture printed "solid" within an oval, the oval being surrounded by a spandrel of grey; and there are various similar effects of ornamentation of this kind obtained by means of a second printing. The last number of our Philadelphia contemporary contains an example of another variety of background effect of this kind. The portrait, which is a picturesque female head treated in the "Rembrandt" style, is printed solid. We should explain, perhaps, that the term solid is used in America to denote a picture printed out, not vignetted. The solid oval, with a somewhat dark background, is surrounded by a spandrel of delicate warm grey, which is, of course, the natural tint of the lighter middle tints of the picture. All this is familiar enough; but the novelty consists in the fact that this surrounding grey tint is traversed by darker lines about a millimetre, or, perhaps, a little wider—say one-twentieth of an inch—apart. The effect is not unpleasing; it slightly deepens the tint of the grey, but is less heavy in effect than a deeper grey would have been. It also adds somewhat, by contrast, to the softness of the picture. The sharp, regular, straight lines give value to the variety of curve and undulation and the soft gradations in the picture. Some of our readers are, doubtless, familiar with a similar effect in old line engraving portraits. We have before us at this moment a fine portrait of Shakespeare, engraved in 1719 by Vertue, after the Chandos painting, in which the oval of the portrait is surrounded by a somewhat similar tint, and a copy of the Felton head, and some other old engravings of Shakespeare portraits which are treated in a manner precisely similar to the photographs before us.

The portraits in our contemporary, which are very fine, are by Gihon and Thompson, of Philadelphia, who have adopted M. Adam-Salomon's alcove background. No details are given of the mode in which the backing effect in this case is produced, the editor intimating that he and his readers are left to surmise. The effect might have been produced in several ways, and as the prints are before our eyes our surmise as to possibilities may aid our readers who care to experiment in this direction. Where a few copies only are required, and double printing is employed, the usual method of printing through a mask with an oval aperture will be used, leaving a white margin. A plate of glass with an opaque oval mask attached of the exact size and shape, to protect the portion already printed, must

be provided. The clear glass of the margin must now be covered with thin paper bearing the design either in lines or some diaper pattern which is required in the grey spandrel of the print. The best mode of securing such patterns or designs now becomes the consideration, and here the photographer's ingenuity and resources must be brought into operation. We have seen examples of fine thin writing paper, intended for foreign letters, with very fine close lines in the form of water-marking, which would answer. We have seen paper printed with a series of close fine lines as guides in preparing designs for textile fabrics, and these would answer. But, probably, better than all, would be the production in the camera of negatives to be used as masks. Many of the diaper designs of wall papers might be reduced in the camera for such a purpose, and produce very pleasing and telling effects. We here only indicate a few of the modes of securing such designs which immediately occur to us; but those of our readers willing to produce such results will doubtless readily find the means. We may add, however, that where a large number of prints are required from a negative, it will be wise to scrape away the margin, leaving the portrait within its oval of background, and attach to the bare glass so produced a suitable mask with design, so that the effect may be produced at one printing instead of two, and a large amount of labour so saved.

The advantage of methods of producing varied effects in portraiture like that to which we have just referred are various; but there is one especially worth consideration: they afford facility for the exercise of individualism. One of the evils to be deplored in photography is the tendency to run in grooves, and stick to common-place unvarying styles. A wholesome effect in the art and the artist will generally result from the exercise of personal taste and ingenuity, and variety of effect. The varieties may at times be in doubtful taste, or vulgar, but defects of this kind will soon correct themselves, bad and worthless styles soon dying out, the healthy and worthy alone retaining vitality and strength enough to acquire recognition.

THE ORIGIN OF THE COLLODIO-CHLORIDE OF SILVER PROCESS.

IN a recent letter in a contemporary, Mr. Thomas Sutton, formerly of Jersey, takes occasion, partly by insinuation and partly by mis-statement, to falsify the history and origin of the collodio-chloride of silver process, the apparent object of which is an unprovoked attack upon our claims in the matter. Mr. Sutton's reputation for exactness of statement is not such as to cause much uneasiness to any one subject for the moment to his detraction, nor does it seem of vital importance to vindicate the claims which

he denies. But as silence in regard to a public mis-statement may be construed into acquiescence or acknowledgment of its truth, it becomes necessary at times to rebut errors which it would be more agreeable to ourselves to pass over with contempt. If the claims to be vindicated, whether small or large, were those of others, the duty of vindication would afford us pleasure; as they are our own, we dislike the office, and simply do it because we think it ought to be done.

It is not necessary to repeat the history, which we have more than once detailed, of our discovery of collodio-chloride of silver in the autumn of 1864. We worked out its use carefully into a practical process, which we described at a full meeting of the Photographic Society of London in the following spring. Its entire novelty was accepted there, and in all the journals, English, continental, and American, unchallenged. The only form which the inevitable detraction of certain writers then assumed consisted in sneers at the process and its utility. In the course of two or three years, when the process had received recognition, and was practised with success, a writer in a contemporary discovered that the process was not ours at all, but that of M. Gaudin, from whom we had stolen it, notwithstanding that it was published, and the evidence in print accessible to every one. We then stated the full facts upon which this claim for M. Gaudin was made, which he had never made for himself, but had in the most unequivocal terms disclaimed. M. Gaudin, in the year 1861, published the details of some experiments with what he termed photogenes, which consisted of emulsions of silver salts in gelatine and collodion, his chief aim being, as he affirmed, the production of negatives, the emulsion consisting of iodide of silver held in suspension in the collodion or gelatine. He commenced his article by stating distinctly the nature of the material with which he had worked, in these words, "I propose to give the name 'photogene' to any sensitive compound containing iodide of silver with excess of free nitrate of silver;" and he then proceeded to describe his mode of preparing such an emulsion in gelatine or collodion. Incidentally, in this article, he suggests in a single sentence, that a similar emulsion or photogene may be prepared with chloride of silver, and used for small pictures. He gives no formula, does not say that he has tried it, nor does he ever again refer to the matter in subsequent articles. So far as we have been able to ascertain, no one else tried it. We had no knowledge, at the time of our experiments in working out the process, of printing experiments with a similar compound, either by M. Gaudin or any one else, nor have we heard since of any previous to ours. Soon after we published details of our successful working out of a printing process, M. Gaudin referred to the subject in the journal he then edited, and alluded to his former experiments with iodide, stating that "with chloride he had experimented very little," and distinctly adds that he came to the conclusion from his attempts that there was "no possibility of succeeding." This is the statement of the gentleman for whom Mr. Sutton once more claims the discovery of the process.

When Mr. Sutton says that the "collodio-chloride process of M. Gaudin has been employed in France and Germany with some success in the preparation of sensitive paper," he makes a delicate mis-statement; first, because, although M. Gaudin suggested a possibility, he never published a collodio-chloride process, as a process involves details and formula; second, because no one in France or Germany or elsewhere attempted to work out the possibility suggested by M. Gaudin, or to work the collodio-chloride process at all until we had published details; third, because no one in France or Germany or America, of whom we have ever heard, has ever affirmed that the collodio-chloride process he employed was that of M. Gaudin, the manufacturers of the collodio-chloride paper, we believe, to a man, recognizing the process and their

work as the result of our initiative; and, finally, because, as we have shown, M. Gaudin himself has, so far from claiming the process as his, distinctly stated, that although he conceived the idea of its use, he gave it up after trial, because he saw "no possibility of succeeding."

As a question of simple historical fact, we repeat these details in answer to the gratuitous detraction of Mr. Sutton. We have no desire to parade our claims in the matter, and we have never sought to make pecuniary capital out of them. The history of Mr. Sutton's pseudo-discoveries and claims, and the mode in which he has utilized them, might afford ample scope for curious reflection, if we cared for retaliation. But we refrain, merely adding that amongst all whose good opinion we value in our country, and without exception abroad, both in America and continental Europe, our claims in this matter have always been amply and gracefully acknowledged.

AN AUTOTYPE KORAN.

THE followers of Mahommed, as most readers know, maintain very careful conditions and restrictions as regards the reproduction of copies of their sacred writings. Photography and carbon printing, however, have recently been enlisted in this work, and as (matters of religious faith apart) the Koran is full of very excellent teachings, no one can regret this application of the art. *The Pall Mall* says, referring to the *Levant Herald* as its authority:—

"A somewhat remarkable work has just appeared in Constantinople, in the form of a photographic reproduction of a very beautiful Koran, copied in the year 1094 of the Hegira by a celebrated Mussulman penman, Hafiz Osman, from the manuscript of one of the lights of the ecclesiastical lore of Islam, Ali Al Kari. This work is due to the taste and perseverance of M. Fanton, a French barrister, and Kemal-Bey, who intend it as the first of a series of publications for spreading instruction among the Mussulmans. Many difficulties stood in their way. The existing system of photography would not suffice; but after many trials a process was perfected in England by which a perfect reproduction was effected, including the actual colour of the old letters, the paper used being of the precise texture and hue of the original manuscript. The mechanical and artistic part of their difficulties overcome, there still remained the old prohibition against the importation of Korans into Turkey from Europe; but the Grand Vizier and several of the Ministers having interested themselves in the matter, the necessary firman was granted, and the new Korans were passed through the Custom House. It is proposed to establish premises and apparatus in Stamboul for the preparation of a number of educational works on a similar plan."

The "process perfected in England" is simply the autotype or carbon process. Some months ago Mons. Adam-Salomon gave us some examples of this carbon reproduction. It was produced upon a deep cream-tinted vellum-surfaced paper, with portions illuminated in gold. The material used, and the facilities which carbon printing presented, permitted the production of absolute facsimiles of the original, and gave the works an interest and a value for their purpose which nothing else could possess.

THE FRENCH PHOTOGRAPHIC SOCIETY.

WE have pleasure in congratulating our friends of the French Photographic Society on the resumption of their active life, after an interregnum of such sad twelve months. The first meeting of a new session was held on Friday, the 7th inst., one of the chief subjects occupying attention being not unnaturally especially associated with the late war M. Dagron, who, during the siege, was actively engaged in aiding the army to transmit despatches by

means of microscopic photographs, to be forwarded by pigeon post, these photographs were produced on pellicles of collodion, and permitted enlargement for subsequent deciphering with perfect success. M. Dagron demonstrated this fact by exhibiting some despatches to the meeting, and also some microscopic views of the results of the war devastation. These microscopic souvenirs will, doubtless, be eagerly sought as mementoes of the terrible events through which Paris has passed. We shall look with interest for renewed activity in the French Society, and a full resumption of the valuable discussions which in the past have so often been of service to our art-science.

RETOUCHING NEGATIVES.

The practice of working upon the negative with pencil or water-colours, for the double purpose of ameliorating natural defects—such as freckles, scars, &c.—in the model, and of removing accidental or inevitable defects in the photograph, has acquired of late such general recognition as a necessary part of the operations of successful portraiture, that the photographer who refrains from it is in danger of failing to gratify a portion of his patrons, especially that large section who prefer a likeness to look smoothly pretty than sternly true. It is not important to discuss the legitimacy of such a process here. It is only necessary to say that if the manipulation on the negative by the pencil be carried to such an extent as to destroy natural characteristics, it is clearly wrong; whilst, if it only repair the evil effects of bad lighting, or soften freckles, scars, or asperities in the texture of the skin, whilst retaining the true character of the likeness, the public will generally prefer the result to that in which the accidental defects of the model are exaggerated by the faults of a similar character in the photograph.

On another page we give details of a suggestive discussion in Philadelphia on the subject; and as, although we have from time to time published details of different methods of working on the negative, we still receive constant enquiries for a concise statement of the most simple mode of improving a negative by touching, we subjoin some details, the result of our own experiment, and compiled from the hints of others. We would enjoin on the photographer attempting the modification of negatives the important maxim, never attempt too much. Photographic defects—such as pinholes and stains—must, of course, be removed; but in dealing with freckles, wrinkles, and other natural markings, the aim should be to ameliorate, but not to erase. Let the truth always be indicated; tenderly, if necessary, but let it be retained.

There are various modes of retouching the negative, but that most generally practised—because easiest and most efficient—is the method in which a suitable lead-pencil is used. It is necessary, in the first place, to secure a surface possessing a suitable "tooth" to permit firmness of touch. This may be secured in several ways. A very simple plan consists in giving the negative a final coating, before drying, after fixing and washing, of a ten-grain solution of gum arabic. Upon this surface, when dry, the pencil bites well; and, when the retouching is completed, the surface may be varnished without risk of removing the pencil marks. Another method consists in varnishing the negative with a thin spirit varnish—say of the character of the Diamond Print Varnish prepared by Mr. Newman—warming the plate before applying it, but not applying further heat after the varnish is poured on. This varnish dries with a sufficiently matt surface to enable the artist to work upon it with a pencil easily. It is also a good protection to the negative without further varnish. With care it may be varnished with a negative varnish if desired, but there is occasionally a slight chance of disturbing the pencil markings before applied. Some of the matt varnishes in the market give an excellent tooth.

Some of the German retouchers use an ordinary strong spirit varnish, drying with a glossy surface. To secure a tooth for pencil work, they apply very fine pumice stone powder or cuttle-fish bone rubbed on the varnish with the finger end until it is just sufficiently roughened to give a tooth for pencil work, just in the part where retouching is required.

The pencils most suitable for the work which we have tried are Newman's HB, B, BB, and sometimes BBB; one of each, for different kinds of work and different kinds of surface, being desirable. They should be brought to a fine point, and worked with a light careful touch, to avoid risk, by carelessness, of cutting or scratching the surface. It is well to try each pencil before applying it to the negative, in order to ascertain that no chance grittiness exists in the point.

Besides the pencils, black-lead in powder, to be applied by means of a leather stump, is often found useful, especially for clouds in landscapes, and for modifying backgrounds. Ordinary water-colours may be employed if the artist have sufficient skill to use them efficiently. In any case, water-colour is best for stopping pinholes and similar defects. Payne's grey is a very useful pigment for retouching. A retouching desk permitting the light to pass through the negative is a necessary adjunct to the work.

It is desirable that one proof should be taken from the negative, and placed beside the artist, in order that by examining its shortcomings he may the better supply what is lacking. Until he is quite used to the work, the artist must accustom himself to a constant recognition of the fact that every touch of black he puts upon the negative means a touch of white in the print. Where he sees a light lacking in the print beside him, he applies a dark touch on the negative; where a wrinkle, a line, or a freckle is unpleasantly pronounced, and looks black in the print, there he puts a touch of black in the negative. But his great aim is not to do too much; each touch must be delicately applied, and not exceed in the space it covers the size of the spot to be erased or softened. And the artist must remember that his aim should be rather to soften than remove defects. The hard line, scar, or wrinkle are characteristics of the face; and the object is not to remove all indication of their existence, but to soften and destroy the exaggerated effect which simple photography often gives to them. Especially must the artist be careful not to alter the forms of shadows upon which the drawing of the face depends. A primary aim should be, neither to remove absolutely anything which the drawing of the photograph presents, nor to add anything absolutely new of which indications are not found in the negative. Lights which are not sufficiently pronounced may be increased; detail in shadows indicated in the negative, but insufficiently strong to print, may be strengthened; black shadows, deep lines, hard wrinkles, and scars may be softened; freckles may, perhaps, be entirely removed, but nothing else. The best negatives for retouching are those which have received sufficient exposure, every detail being indicated, but, from under-development, all may be a little wanting in intensity. Such a negative may be made to produce good results. Over-intensified negatives can rarely be much improved by retouching, the object of which is to increase opacity where it is lacking; transparency in the negative, which means greys or blacks in the print, cannot be communicated.

The artist will endeavour, in applying his touches, to follow the form of the muscles, as in hatching and stippling with water-colours, or using the crayon in chalk drawing. The greater his skill in drawing, the greater will be his success. A little practice will be required, and careful thought, to understand the characteristics of the negative, and the end in view in adding touches. Let us suppose a negative ready for retouching. It is fully exposed, but lacks intensity, and prints flat and tame. First begin by

putting in opaque touches for the lights, noting carefully how the light has fallen on the model, so as to place the high lights in their proper place, on the forehead, nose, chin, and cheek bone. Next strengthen the detail in the shadows and the reflected lights, softening this work, if necessary, with the stump, so as to blend them, but not too intimately, with the high lights. Now soften the lines about the eyes, the corners of the mouth, and those lines of the cheek which lead to the mouth. Then remove freckles, taking care not to make the applied touch more opaque than the parts adjoining; otherwise white spots will appear in the print, rendering touching-out in the print necessary. The retoucher should always aim to avoid putting any touches in the negative which will require modification in the print. The hair may frequently be improved by applying a few sharp touches to the lights, following the lines of the locks carefully. Masses of deep shadow may often be beneficially modified by touching the negative at the back with water-colour, and, as the thickness of the glass will soften the touches in printing them, may be somewhat roughly applied.

If it be intended that the negative shall be varnished after retouching, a proof should be taken before the varnish is applied, so that any further touching or modification of that already applied may be more effectually managed than it could be after varnishing.

PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.

WE have delayed any detailed notice of the photographs at the International Exhibition because the imperfect character of the catalogues and the somewhat scattered and irregular hanging not only rendered the task difficult, but involved risk of omission or neglect of contributions to which we would willingly do justice. We regret that the amended catalogue and completed arrangements scarcely merit matters. The photographs are scattered in different departments, occupying two distinct positions in the gallery of the Albert Hall, and a place in a dreary corridor behind the refreshment department in a place at the utmost distance from the Albert Hall which the limits of the Exhibition renders possible. Some of the pictures are unnumbered, some incorrectly numbered, some not entered in the catalogue, and in many cases all the scattered contributions by one person entered under one number, so that the catalogue is no aid whatever to the visitor anxious to learn whether he has seen all the examples sent by any special artist. It is possible that the limited space allotted to photography, and the late arrival of some of the contributions, partially contribute to this disorder and confusion; whatever the cause, the result is discredit to the Exhibition, and very unsatisfactory to photographers and the public.

As we remarked in an earlier general notice, a large proportion of the English contributions having been exhibited before, and noticed in our columns, extended comment thereon is not necessary now. One of the most noticeable points in connection with this part of the Exhibition is the number and excellence of the examples of the three forms of permanent photographic printing now before the public in this country: the Autotype process, the Woodbury photo-relief process, and the Heliotype process. In extent, excellence, and size, the Autotype productions, of course, take the precedence. They consist chiefly of reproductions from paintings, some of them on a very large scale, and all very perfect. Some prints about four feet in length, one of a painting by Beavis, entitled "Conveying Stores to Elizabeth Castle, Jersey, during the Civil War," and another by Lucey, entitled "Intercepted Embarkation of John Hampden and his friends, A.D. 1637," are magnificent specimens of photographic reproduction, and the fine mezzotint-like texture of the carbon prints is most effective. Rarely has anything been pro-

duced in photography on such a scale, never before have large untouched photographs been so perfect as works of art, and the abounding satisfaction conferred by a knowledge of the permanency of the process is a crowning excellence. The copies of drawings by old masters, of Turner's *Liber Studiorum*, and of Sir Joshua Reynolds' portraits, are all very perfect as photographic reproductions, and the colour and texture of the carbon printing are most effective. Some interiors and architectural views are also very excellent.

The examples of photo-relief printing by Mr. Woodbury's process are all very excellent, and include copies of paintings and engravings, subjects from nature, and reproductions of various art subjects, all rendered with great success, the prints being undistinguishable from photographs on albumenized paper. The examples of Mr. Woodbury's new photo-engraving process are few in number, but of sufficient excellence to give great hope of the value of the process. Messrs. Edwards and Kidd exhibit some very fine examples of their heliotype process. Some of these are exceedingly perfect, whilst others have a little more of the fuzzy irregularity of lithographic gradation, the fact of some variety in excellence of result being a slight drawback in the otherwise high promise of the process. As there are examples of every class of subject of great excellence, there is nothing to indicate inherent defect in the process in any of these variations: the working of the process involves new operations of great delicacy, and requires skill and experience. Continued practice in the manipulations will doubtless remove all such shortcomings. It will interest photographers visiting the Exhibition to learn that this process, as well as that of Mr. Woodbury, is worked in the Exhibition daily; the latter in the department of machinery in motion, and the heliotype process in a room not far distant from that department, but somewhat nearer the refreshment department.

There are very few examples of photo-mechanical printing of any kind sent by foreign contributors, which, considering the number of recent processes introduced on the Continent, is matter of regret. Albert, Obernetter, Ohm and Grossmann, Tessie du Motay, Carleman, and others who have for some time been doing good in this important direction, are unrepresented. The chief Continental examples of this character are some fine portraits described as phototypes, by J. Maes, a Belgian artist. These are in general character apparently similar to the prints by Albert's process, and they appear fine, but are hung too high to admit of satisfactory inspection.

The bulk of the English contributions in portraiture and landscape have, as we have already remarked, been exhibited and noticed before, and extended criticism thereon would be but a twice-told tale. We shall, however, in our next, proceed in such detail as we think necessary, and as circumstances permit, to notice the remainder of the photographic contributions, in Albert Hall and the corridor behind the refreshment department, commending in the meantime the latter specimens to the especial attention of visitors.

AMERICAN CORRESPONDENCE.

NEW PHOTOGRAPHIC PATENTS—COPYING COLOURED AND DEFECTIVE DRAWINGS—PRINTING IN COLOURS ON TEXTILE FABRICS, GLASS, ETC.

New Photographic Patents.—As the fraternity becomes more enlightened, the applications for photographic patents decrease in number. Still there are some patents granted occasionally, and I send you a few notes from the specifications of the most recent ones. The first, granted to Mr. Isaac Rehn, of Washington, D.C., is for an "improvement in copying coloured and defective drawings," &c. The purpose of this invention is to obtain, by means of photography combined with artistic skill, mono-chro-

matic copies of drawings, having a variety of colours in them, in such a way as to secure the linear accuracy of the original by an easy and rapid method, and thus to avoid the necessity of making tracings of such drawings.

It is well known that a great difficulty exists in the way of copying, by means of ordinary photography, all subjects having a variety of colour in them, owing to the different degrees of actinic power manifested by the several coloured rays of light, and hence the impossibility of copying such drawings so as to secure a uniform degree of strength and definition in all parts thereof.

The red and yellow portions of the subject, and such parts as are coloured by combinations of these colours, yield very feeble impressions, while the blue, and combinations having blue in the ascendant, give results of great energy.

Where either of these colours is uniform over the subject, the chromatic difficulties may, in a measure, be overcome by adapting the period of exposure to the nature of the colour; but where portions of the subject are blue, and other portions red or yellow, it is impossible to equalize the effects of their different actinic power by any uniform period of exposure so as to secure in the negative a uniformity of strength with the black or white portions of the object to be copied.

In order, therefore, to preserve copies of such variously-coloured drawings, which shall possess a clear uniformity in all parts with the original black lines, Mr. Rehn says:—

"I proceed as follows:—First, I make a negative in the usual way, as though the drawing were made entirely in black lines. This negative will show, in those portions from the coloured parts of the subject, all degrees of strength, varying as the colours vary in actinic results. I next proceed to apply a varnish or composition prepared in the following or analogous manner:—Take of gum benzoin a sufficient quantity; add to this enough strong alcohol to make, when the gum is dissolved, a varnish of the consistency of oil. To this add aniline yellow and aniline red until a strong orange colour is secured, and the varnish is ready for use. Other resins or substances, both for the varnish and colour, may be substituted for the above, the points I aim to secure being a non-actinic translucent coating of a somewhat tenacious quality, so that it will cut readily without fracture, and that will dry quickly, occasioning no delay.

"The above I have found to furnish all the required conditions, and employ it in practice.

"My mode of applying this to the negative is as follows: In front of and between myself and the light I place an easel with an opening to admit the light to the negative. Just back of the easel I lay a mirror to increase the light. Having placed the negative on the easel, the figures in all parts will be distinctly visible. With a camel's-hair pencil I now apply the non-actinic coating to all parts of the negative needing emendation. The varnish drying immediately, I proceed, with suitable drawing instruments, to trace the figures through the coating, all of which will be distinctly visible. When this is done the negative is ready for printing, and will yield results as perfect as may be desired if the work is carefully performed.

"The advantages of my process are, to make photography available when else it would not be, and to do the same by an easy and rapid method, and the preservation of the linear accuracy of the original."

The principal use to which this process is put is in copying the drawings at the Patent Office, where M. Rehn is engaged as photographer. It may be useful to some of your readers who are engaged with similar work.

Printing in Colours on Textile Fabrics, Glass, &c.—Mr. H. H. Snelling, whom you well remember edited a very fine photographic art journal in New York a few years ago, has returned to his old love, photography, and taken his pen up again in its behalf, opening with the following

(which he has just communicated to me) article on the above subject. He writes:—

"This process is based upon the carbon process, and was first executed by me in August, 1857, the earliest attempt, I believe, ever made.

"1st. Take as many negatives of the same view or object as you intend to use colours. These negatives must be well defined, sharp, and as intense as it is possible to get them, otherwise the high lights will be somewhat clouded in the print.

"2nd. Place your muslin or other fabric upon a stretcher, and draw it perfectly tight and even; as tight as it can be without tearing it. The best way is, to begin at one of the corners; then tack the corner diagonally opposite, next the third corner to the right of the second, then the remaining corner. Next tack one end, drawing the cloth so that the thread in it which rests upon the corners of that end covers the edge of the frame. Then tack the other end in the same manner. Next tack one side, having the edge of the cloth perfectly straight with the stretcher, and not pulled over more than at the corners. Lastly, fasten the remaining side, being careful to keep the selvage straight.

"3rd. Varnish the cloth with gum dammar dissolved in benzine, to which add a little alcohol to prevent cracking. The proportions are not material, provided you do not get it too thick to work easily. I generally used two ounces of gum to eight ounces of solvent.

"4th. Make a strong solution of bichromate of potash to keep in stock-bottle.

"5th. Procure as many small colour cups or saucers as you wish to use colours, and the finest and best colours you can obtain either in dry powder or in cakes. If you use dry colours, cups will be best; if the cakes, get saucers. You will also want a glass pestle if you use dry colours. In using the cake, put sufficient for your purpose of the bichromate solution into a saucer, and rub the cake therein until the tint of the solution is two or three shades deeper than you desire to produce upon the cloth. In using the dry pigments, rub them up in the cup, at first making only a paste with gum-arabic water added drop by drop, and when this paste becomes perfectly smooth and free from particles, add the bichromate solution gradually to the proper consistency, observing the same rule as given for the cake colour. In this way prepare the number of tints required.

"6th. Suppose you have a landscape to print containing six colours—the sky, distant mountains, a stream, light and dark foliage, and, say, a red rose tree in bloom in the immediate foreground—the sky and light part of water should be printed first. All parts of the negative for this, except the sky, must be obscured by pasting black paper on the collodion side, carefully observing the outline of the sky. All the other negatives must be treated in the same manner, permitting light to pass through the portions to be printed only. Select the tint necessary to represent the sky and the middle tint of the water, which are always the same, and lay it over the space to be occupied by the picture on the cloth with a broad camel's-hair brush, and let it dry. This, of course, should be done in the dark room. Place the sky negative over it, and expose to sunlight for about two minutes, then wash off the superfluous colour in plenty of water, being careful that none of the unaffected colour remains. When dry, lay on the tint for the distant mountains, and proceed as in the first instance; then the light foliage and other parts of the same hue should follow; thirdly, the dark foliage and deep shadows on the water, and in clouds, if there are any; and, lastly, the red rose. Wherever the shadows are not brought out sufficiently strong, touching with the required colour may be done with a brush. Judicious use of a little white in the high lights will also improve the picture.

"It will be well, to prevent mistakes in printing, to num-

ber the negatives distinctly, commencing with the one to produce the lightest tint.

This process is peculiarly appropriate for window shades, and may be used on ground glass for the light lamp shades, &c.

My original intention was to keep this process a secret, and use it myself, as soon as I was in a position to do so, in the manufacture of window shades, but having found occasion much more congenial to my taste and inclination, I now present it through your columns to the photographic public.

Truly yours,

Edward L. Whelan.

Philadelphia, July 1, 1871.

RECTIFYING ERRORS IN EXPOSURE OR INTENSITY IN VARNISHED OR UNVARNISHED NEGATIVES.

By H. A. W. THURSTON.

ONE of the most delicate as well as important operations in photography is, I think, regulating and harmonizing exposure and contrast or artistic contrast, so as to secure the best result in both tone and number of detail. Even the best and most experienced operators are sometimes deceived in judging quality of negatives, they may show different shades in colour, fixing, drying, varnishing, &c.

A short time ago a method was described in the Photographic News for increasing or decreasing contrast in varnished negatives by means of the use of iodine. I tried this plan, and found it to increase density up to a certain point, and then apparently get thinner as described; but this although the operation was carried out as it was apparently described, it printed with more contrast than at first, nor have I been able—and I have tried several—to reduce it to the least. Perhaps others have found it otherwise, but this is my experience, so I hope none of my brother photographers will risk a valuable negative until they have fully tested the plan, and that not by appearance, but by printing.

In experimenting with this method I discovered and worked out another and certain method—and one capable of being applied to any extent—which I will now proceed to describe.

If a negative looks dense, or if it is very much deficient which is seldom the case, it may be corrected by the nature of the process referred to above, or by the process hereinafter described. It never, however, by a moment's deficiency that cannot be rectified in printing by means known to every competent printer. The greatest difficulty is to rectify the excess of hard negatives, but this is no longer a difficulty, for it may readily be accomplished by means of cyanide and lime. I find the best form of cyanide to be an aqueous solution, as in using an alcoholic solution I have found a peculiar appearance after cyanide finally used all the image, which is not the case when lime is used dissolved in water by means of hydrochloric acid. My solution is a saturated, about the same as is generally used, prior to the coating with pyro after fixing. If the negative is varnished it will be necessary to dissolve the varnish. This is readily done by covering the plate with methylated spirits, and leaving soak about half a minute, pouring off, and repeating with fresh dose. See that there is no sediment or anything floating about in methylated spirits, if so it must be filtered, now wash water up till greenish disappear, and cover with iodine solution in solution, as usual on even stains. The longer you wait the longer the stain may be left, but I generally keep it on till it is changed to shades, according to the several negatives; now slightly wash and fix with cyanide in solution as just like fixing on ordinary plate. The exposure is not (if iodine was kept on so long as to be heavy) more than 100 times as great. I always use a battery of two cells.

It may now, by means of pyro and silver (with preliminary iodine) be transferred to your heart's content. Try one or two old negatives first, and you will be astonished at the vast and certainty of this plan; but if the negative is under exposed, I should, after fixing, use the iodine again before re-iodine, if the shades will be reduced, a fact which is invaluable in the case of over-exposure as you know, if you have made an over-exposed picture under-exposed. I have frequently made a negative fully exposed into a picture of great brilliancy.

I hope this may prove as useful to others as it has to me, and I am repaid for my trouble.

PHOTOGRAPHY IN THE NORTH OF EUROPE.

(FROM OUR OWN CORRESPONDENT.)

Edin. in the *Herald*, Fri. July 9, 1871.

AFTER some ten days walking through the Christiania and Bergen districts, the traveler cannot fail to be enchanted with Norway provided he enjoys, as I have done, favourable weather. Certainly in no other country have I met with such delightful and varied scenery, the beauty and grandeur of some of the fjords, and especially of those connected with the sea—as, for instance, the Sogne and Hardanger Fjords—being quite unparalleled. I only wish I had more time to devote to my camera work, but the truth is, as I have before stated, photography is not the primary object of my journey. As all photographers know, even when a good and fitting subject is at hand for the camera, some time is necessary to fix upon the right kind of foreground and framing for the picture, and seeing that my fellow-travellers have made a kind of bargain that I shall not detain them more than thirty minutes for every view, I am at times exceedingly puzzled to know how to set. Not but what my companions are perfectly right, for when the distance to be walked over amounts to thirty and even forty miles daily, one must be very judicious of foregrounds. The stations or inns are exceedingly few and far between, and when reached afford unfortunately, less hospitality than a small ale-house in England. Fresh meat I have tasted but once since I left Christiania, and if we obtain dried animal food of any kind every other day we consider ourselves fortunate. Sometimes it is dried reindeer, sometimes tallow bacon, and occasionally preserved beef. On our way to the Fille Fjord Mountains, one of the principal ranges in Norway, we were advised of the killing of a reindeer at a station (Nystun) some thirty miles ahead, and so eager were we for fresh meat, that we pushed on at once, at the expense of great bodily fatigue, and were rewarded in the end by a good feast of dried reindeer steaks. But that was once in a way only; the great *piece de resistance*, as a rule, is a dried shoulder of meat, so hard, tough, and indigestible, that I can only compare it to a past-mime imitation, such as the downs make merry with at Christmas. Indeed, if not so heavy, I would bring one home as a present to my friend Harry Payne of Court Garden.

But to return to the scenery, which is a far pleasanter subject to discuss in Norway than in Victoria's. The variety of the landscapes is perfectly striking. Here one sees a perfect representation of the Killarney Pass, a very favourable imitation, indeed, and a little distance off a Scottish loch, but that of Dalriadanish is met with. Then I can show you as charming a little wood and glen or Devonshire lane as ever you will see in England, barring the hedges; and, again, a Welsh lake or tarn, by no means unlike those in Wales.

As regards Swiss views they also can be obtained in any variety, supposing Manulvern and Bossens glacier landscapes are not actually required, for if snowy peaks are not very abundant, some of the glaciers and snow-locked mountains are, at any rate, exceedingly fine. Therefore, if a photographer wishes to do a little in the department of the scenery of all nations with a minimum amount of trouble, let him come to the Bergen district; and a vicinity, and he can, like Sam Weller's plover, make a real picture.

a kidney, and that again into a mutton, according as the market changes and appetites vary.

It is a singular fact that in this out-of-the-way country I have met with a far greater number of pedestrian tourists during my ramble than I have done in any of the more travelled playgrounds of the Continent, as, for instance, Switzerland, Tyrol, North Italy, Pyrenees, &c. They are, however, for the most part, Christiana students, mostly in white caps and ponderous seal-skin knapsacks. Hardly a day passes but what we come upon a little group of these lighthearted travellers, singing or yodelling some of their popular melodies. Luckily one of us has a capital bass voice, and with a little aid from the rest of the party we can manage also to enliven the march with a song or chorus. The "Hardy Norseman" is, as you may know, quite at home here, but the great national song is "Who will o'er the downs," which Pearsall adopted from the Norwegians, and which the boatmen on the lakes sing in capital time and tune.

One important use to which the camera tripod has been put with very great success is as a stand for our *pot au feu*. Fortunately we had provided ourselves with a good stock of Liebig's extract of meat, and Fortnum and Mason's concentrated beef tea, so that a lunch of soup in the middle of the day forms sometimes our principal meal. Each man has assigned to him his particular post; my appointment being that of wood collector and assistant fire blower to the establishment. Our chief is, of course, the cook, and the servile work to which I am often put I attribute, for the most part, to actual spite on that functionary's part. The truth is, that on one occasion he confided to me the fact that he intended on the first opportunity to introduce a few frogs into the broth, to impart to it somewhat of the mock-turtle character, and since I openly disclosed this fact to my companions I have never been forgiven. As it is, however, our mess is a very good one. A large biscuit tin is filled with water, and when boiling there is thrown in some chopped eorrel and mushrooms (both very abundant here), and the proper amount of beef extract; subsequently rye-flour is gradually introduced, stirring all the while, and finally, some thin shavings of Bologna sausage and salt and pepper. If we have a sufficiency of Fladbröl to eat, the soup is thin; but if we have no bread, a larger portion of rye-flour goes into the pot. The result is, I may tell you, simply delicious, and in default of this nourishment I am afraid we should have been unable to go through the fatigue we sometimes experience. Our party only boasts of one large wooden spoon, so we all squat round the cauldron and take our turn in an orderly manner until the very last drop.

Before closing, I must just describe the Norwegian carriole, the only conveyance used in the mountain districts, and which is admirably suited for the country. It is simply a Lapland dog sledge mounted on a pair of wheels; a shell, something like one end of a canoe, contains the traveller, whose legs rest upon the shaft, and inasmuch as there are no springs or footboard, he must wedge himself firmly into his place to avoid being thrown; he, of course, drives himself, being the only passenger, but a carriole boy generally hangs on behind wherever he best can. In winter, instead of wheels, the vehicle is converted into a sledge, and becomes then a true Lapland dog cart. The nearest approach to a carriole in England is the trotting-match cart.

I think I have secured some characteristic views of the Hardanger and Sogne Fjords, as also of the Fille Fjeld. I go hence to visit the Voring Foss, said to be the finest fall in Europe, and return by a high level pass towards Draunnen and Christiana.

PROGRESS OF PHOTOGRAPHY IN GERMANY.

BY DR. VOGEL.*

The past year conferred upon me the honour of becoming a member of the Committee on the Progress of Photography

* Report to the U. S. National Photographic Association.

of the National Photographic Association, and as such I consider it my duty to report the progress which photography has made in Germany during the last twelve months. Being the only German member of that committee, I shall confine my remarks to German investigations, leaving the reports concerning England and America to my honourable colleagues.

A gigantic war, the equal of which Europe has not seen for the last fifty years, has, during the past year, disturbed our political, social, and industrial life. Men of art, science, and industry were called to arms by the thousand, in order to fight a war which had been conjured up against our wishes, without a fault of ours. The youth of Germany gathered around the nation's standard, and for a moment it seemed as if our artistic and industrial life had come to a standstill in the turmoil of war. Thank God, it turned out differently.

When the first battle had been fought, when the proud conviction entered our hearts that the Watch on the Rhine stood firm and true, and that no enemy would cross the German river, the arts of peace revived, and six weeks after the beginning of hostilities an art exhibition was opened in Berlin, richer in masterpieces than we had seen it for many years before. The devotees of photography did not remain idle, although many of our most prominent artists had exchanged the camera for the needle-gun, and were fighting and bleeding for the dear Fatherland.

In the midst of war we can point out several contributions to the progress of photography. I will begin with mentioning the investigations of Dr. Schultz-Sellack. He established to a certainty that the chloride, bromide, iodide of silver, and their mixtures are sensitive to the light of the spectral colours. He showed how important a part the variable sensitiveness to colour plays in portraiture, as in our ateliers the shaded side of the model is illuminated by light reflected from the walls, while the light side is illuminated by the white and blue light of the sky; this produces, generally, an over-exposure of the lights before the shadows have had time to impress themselves on the film. He pointed out how to modify the too intense light, without detriment to the action of the shadows, by placing a thin film of iodide of silver between the lens and the object. This film absorbs the energetic violet light, and the result is a harmonious picture. The discovery is valuable for the taking of interiors, oil paintings, and landscapes.

Equally interesting are the investigations of Dr. Schultz on the physical changes which iodide of silver undergoes, and also the production of colour on a film of iodide of silver; finally, the simple and easy production of Daguerreotypes by exposing an iodized plate of silver under a negative, and fixing it. This last discovery may be important for America, where Daguerreotypes are sometimes asked for, and where no one is at hand who would make them in the ordinary way. The plates which are exhibited by Dr. Schultz in the present Philadelphia Exhibition represent results of his experiments.

In Germany particular attention has been paid to the artistic development of photography. The best portrait or landscape picture fails to make an impression unless the laws of the beautiful, which are the cause of our pleasure in contemplating works of art, have been observed.

Pose and illumination, projection, the beauty of lines and of arrangement, subjects which I have tried to elucidate in my "Hand-Book of Photography," are of as much importance to the photographer now as good lenses and pure chemicals.

Negative retouching remains an important auxiliary to artistic photography. It equalizes the shortcomings which cannot be avoided by the chemical processes, and has for its purpose the removal of wrinkles, freckles, and other accidental matter which by its presence would interfere with the calm impression of a portrait, leaving, at the same time, those parts intact which are the characteristic ones of the individual. The latter point has frequently been

neglected, and we are indebted to Mr. Hartman, who in two excellent essays (published in the *Mittheilungen*, July and August, 1870, and just reprinted in the *Photographic World*) pointed out the parts which a thinking artist may change by the negative retouching, and which should remain unaltered, and the manner of proceeding in working out the lines of the eyes, the mouth, nose, chin, and forehead.

In like manner has artistic photography been advanced by Petsch and Grasshoff. While the former was encamped in front of Metz, in the service of his country, there appeared from his pen an excellent article on the influence of individuality in portraiture, also republished in America.

In photographic optics we have to record a new lens, by Steinheil, which is distinguished by a wide angle, great intensity of light, and freedom from all distortion.

The photographic printing process has been much improved by the introduction of washed silvered paper. The problem to produce permanent sensitive paper for the trade has been solved. Mr. Romain Talbot, in Berlin, has produced such paper, which in depth, brilliancy, and beauty of the tones, surpasses the ordinary paper. I have printed pictures on such papers, put them away for a week or longer before toning them, and obtained always the same favourable result. The pictures by M. Grasshoff and myself, which are at present exhibited in Philadelphia, were printed on such papers.

The former mode of fuming has been much simplified by substituting the dry carbonate of ammonia for the liquid ammonia.

The "Lithdruck" processes of Albert and Obernetter have been further improved, and found more general application. The silver print will always hold its own where a limited number of copies or extreme delicacy of detail is required, but for productions in masses, where some of the quality is sacrificed for the sake of quantity, the "Lithdruck" process and the Woodbury process, which approaches nearest the silver print, are of great value.

Photo-lithography, which is rather sparingly cultivated, possesses great merits for certain contingencies; for the reproduction of war maps it has again proved its efficiency. It supplied many thousands of copies with surprising rapidity, and supplied our armies with one of the most essential auxiliaries for an advance into the enemy's country.

The photo-lithographic establishment of Bros. Burchard, here, furnished to the army, from the 9th of November, 1870, to the 24th of January, 1871, no less than 42,000 maps, each being 2½ feet square.

Passing to the application of photography during the last year, I have to mention the services it has rendered to surveying in war times; two photographs, taken very often while exposed to the fire of the enemy, proved sufficient for the construction of a map of the landscape.

As a means of observation in astronomy and microscopy photography has again done its full share of duty.

The reproduction of oil paintings opens at present an extensive of labour to the German photographer. The artistic manipulation of the negative, after the example of Milster, has overcome the antagonistic effect of colour, and we have now faithful copies of the art treasures of all the galleries of Europe. The greatest masterpieces become thus accessible to all, and photography contributes as much to the education of the people in the realm of art as the printing press does for the distribution of knowledge.

I have attempted to sketch with a few lines the progress of our domestic art, but I cannot omit to acknowledge the impulse which our German photography has received from America. The study of the principles of illumination by Mr. Kurtz in New York; the introduction of the carved background; imitation of approved American apparatus, as, for instance, the stereoscope of Holmes; the enlarging apparatus of Roettger; the stands and camera boxes of the Scovill Manufacturing Company; the albumenizing of plates; all these things have rendered material advantages

to our photographers, and I look forward with much hope to the future intimate intercourse between Europe and America.

We have reached a turning-point in the history of civilization. The political events have taken from France the name of being the centre of science and culture. Other centres will form, not one, but several, and every educated nation will claim it as an honour to work independently for the promotion of art, instead, as in the fashions, to follow blindly the example of one people.

So far as photography is concerned, this emancipation has taken place some time ago. It will extend to other branches of art and industry. Let us rejoice at this future self-government of the nations in the realm of art.

One thing, however, may become of primary importance for the future development of our art. It is the artistic education of the disciples of photography. The scope is large; it requires mechanical dexterity, chemical and optical knowledge, practice and acquaintance with the laws of art.

But how shall the young photographer become artist, chemist, optician, and practical worker? Only by study, and such studies can only be made accessible to him by the establishment of academies of photography. Only when such exist will we have a large number of able operators, and not before. Such schools might become a powerful lever for the further development of our art. Perhaps such an institution will sooner flourish under the favourable sky of America than in the Old World, which so far has granted to the young art only a limited space in the places of learning.

DISCUSSION ON RETOUCHING NEGATIVES.

At the meeting of the American National Photographic Association a discussion occurred on retouching negatives. Mr. Baker, of Buffalo, an artist of considerable skill, was requested to give the members some hints and instructions. In reply, after stating that he used both pencil and pigments, as seemed best, he added, "Gentlemen, you must read your journals more attentively, and you will be better informed; at the same time, if I can privately be of any use to you, I will be very happy to aid you, but to publicly explain all the little details in the art of retouching is an impossibility.

Mr. Spencer, of Michigan.—I would like to ask Mr. Baker the best method of preparing the varnish upon the collodion film for the pencil.

Mr. Baker.—I have never practised but one method; that is, grinding the surface with the pumicestone. I did at one time, prepare a soft varnish, the form of which was given by Grasshoff, but it was so soft, and took so long for it to set, I hid it aside for a harder varnish.

President Bogardus.—Allow me to take one moment of your time on this very subject. I think a great many pictures are retouched too much. My theory of retouching is very simple: remove the freckles and heavy lines and spots, and perhaps grade your lines a little, but do not retouch your picture until you work all the likeness out of it. Some four years ago I was fortunate enough to buy of a sailor a little box of India ink that he had brought with him from China, and I find I am very fortunate in possessing it, because it is far superior to the ink sold at the art stores in this country. My retoucher uses not only that, but also Faber's softest pencil; but he never, with my consent, polishes, or grinds down, or rubs the surface of the plate. I think it will rub away just so much of the likeness. Still, others will differ from me.

Mr. Southworth, of Boston.—Show me all the pictures that are retouched upstairs, and select the best one, and I will report: "Touched so as to diminish the regret a little that it was touched at all."

Mr. Ayres, of Detroit.—I think Mr. Baker's remarks are eminently proper, for this reason: that this thing is just like painting. One paint may be used successfully by one

man, and another by another. I remember some time ago meeting a photographer—

President Bogardus.—Mr. Ayres is the author of the work "How to Paint Photographs." Most of you will probably know him now. [Applause.]

Mr. Ayres resumed.—I was just going to say I met a photographer who had a little cake of Prussian blue, and he says: "I have got the thing; I am going to retouch negatives," just as if somebody had told him to use Prussian blue; that that would be sufficient, and all he had to do was to retouch his negatives with Prussian blue. Now one man will use indigo, another Prussian blue, and another the pencil, and so on with different things; but the whole thing clusters in this, that whatever will produce the requisite amount of casting in, or to produce gradation of shade, is just what we want. What will suit one man will not suit another, and consequently each man will have his own way of doing it. Other people may not agree with me, and, perhaps, the expression which I used may not be thoroughly understood, but I do say that this matter of retouching is becoming the curse of our profession [applause], and I will give my reason for it. Here a man sits down to retouch a picture, and what does he make of it? He works on the flesh until all the appearance of flesh is gone. Now it is an improvement to a negative to take out the freckles, and discolouration, and skin spots, and reduce the severity of the wrinkles; that is one thing; but to work on the picture until you take out all the granulated effect of the skin is another thing. It is one thing to make a picture finished, but it need not be excessively fine. Our pictures that we see nowadays are, in general effect, like a wax figure, or billiard ball, or something very smooth; now, is that flesh? Certainly not. I may sit down and work at a picture until it is just as smooth as glass; is that flesh? Certainly not. I want to work that picture until it looks like flesh. Another thing: I have known a great many country photographers, if you will allow me to use that term in contradistinction to those who live in the city, who did, before this retouching came in vogue, make first-rate work, but since this device they all think themselves artists; and what is the result? Why, without any knowledge of just the amount of force they should use, they go to work and take out all that looks like flesh, and these pictures look as though they were all spotted over with whitewash.

Another thing these same artists undertake to do with their own retouching what artists do with india ink. It is plain one runs a great risk in touching a negative at all, but if he does touch it, he must know something about facial anatomy and something about light and shade. Suppose you have a three-quarter face, and the light is full on one side, then your man commences to retouch the negative, and retouches until it is as flat as chalk. What ought it to be? There ought to come a white line to show the nose stands out, there ought to be a shade running along the edge of the nose, there ought to be a delicate shade to show where the temple is; but the picture they produce looks like a full moon [applause], and that is what I mean when I say this matter of retouching has become a curse to the profession. There are too many trying to become artists when they are simply photographers; they attempt things on negatives which they never dared to attempt on paper, whereas they ought to proceed more carefully on a negative than on paper. Then they undertake to put the light on the eye; I have seen lights on little cartes-de-visite big enough for eight or ten inch heads; then they think they give expression to the eye by running over the white of the eye, and what do they make of it? Dead white with no roundness at all. I warn my professional brethren against this. I think if they will undertake to make real good pictures in the first place, they would not need quite so much retouching. It is far better to have a good negative, than to have a poor negative and hope to fix it by retouching it.

Mr. Fennemore.—My artist simply grinds the surface a little, and touches with the pencil and india ink.

Mr. Baker.—Our President made use of an expression that I do not understand. He spoke of grinding away the likeness. I do not see how that can be done; there is a perceptible thickness in the film of the varnish, and the grinding the varnish down a little does not touch the face.

President Bogardus.—Some grind down the varnish so as to get the retouching substance to take hold, and then they retouch too much; I know they cannot touch the negative, that is impossible.

Mr. Bigelow, being called upon, said: I work in water colours, though my experience there gives me some idea of photography. I heartily endorse everything Mr. Ayres has said. I am an advocate of retouching, particularly in copying, removing the scratches, which can easily be done by retouching. Retouching scientifically improves a picture. I prefer to use the gum negative; the solution of gum, without bichloride. I prefer to use Faber's drawing pencils, and retouch on a gum surface, then it can be varnished afterwards. A small pointed, fine stick can be used to good advantage, where we have those "lightning streaks" on the background.

SILVERING PAPER.

BY J. R. CLEMONS.*

You all know how to silver paper. I have followed a mode of silvering paper, though, which I think is new to a great many of you. I have shown it to a great many, and they all appeared to like the idea. There are a great many prints spoiled in not having the paper properly silvered.

The silver is in the best condition for printing generally when it is in a weak state. Strong silver, as a general thing, is not good for most of the negatives made at the present day. If you silver strong, the shadows will be dense and thick; but if the silver is weak, the prints will be more uniform throughout. Oftentimes in taking a dozen cards from a sheet of paper that has been silvered, they will print uniformly alike, but when you come to tone, you will find it is then lacking in a great many cases. It all proceeds from the silver itself, which fact I have thoroughly tested. You can test it by taking a piece of paper from the silver solution and hanging it up. In proceeding to silver a sheet of paper, I generally turn the right hand upper corner, so as not to get the silver on my paper; my bath lies in front of me; I hold the sheet in a vertical position, and slide it on the edge; I never raise a sheet of paper to look if there are any bubbles there—I simply give it a little tap, and that will disperse all bubbles. In lifting the sheet of paper up I commence at the upper right hand corner, raise it very slowly, keeping it in a vertical position all the way. [Mr. Clemons here illustrated with a piece of paper his manner of manipulating a sheet of silvered paper.] Since I have attended the meeting here and the meeting at Cleveland, it has been asked what strength of silver I used. In a cloudy day I would not use over eighteen grains of silver. A man that is printing can come very near telling how much he is using. Let him weigh his paper dry, then silver it, and thoroughly dry it, and weigh it again, and the difference will be just the amount of silver he has. Such weather as this I use about eighteen grains. I float one minute and a half in a small box; I fume five minutes, which I find is near the point.

Now, with your silver at that low state, after floating several sheets of paper, it will be apt to foul; to cure that I take one ounce of camphor and six ounces of alcohol, and when I find the silver solution has albumen in it, which is readily told (for when it is filtered it will soak up, and the bubbles will not break readily), if you will add camphor to that, these bubbles will break and go away; as soon as the bubbles leave, you will have sufficient camphor, the camphor grabs the albumen and holds it, and when you come

* Read before the United States National Photographic Association.

to filter the solution you will find it will not froth up. After filtering, stand it out in the sun in a bottle. I did not think I would be called on this afternoon for remarks; if I had I would have written out a formula and brought it up. In the morning I will bring up some for those who wish them.

A discussion followed, and in reply to a question, Mr. Clemons said, "At times I use plain silver solution, but I find fused silver is best without the addition of anything, except when you are using at a low stage. To every twelve ounces of silver use one ounce of about 95 per cent. alcohol."

Mr. Fennimore.—It struck me a few words from me might, perhaps, be acceptable, from the fact that what my friend Mr. Clemons said, I think, will apply only in a few instances. We have got to go farther than that. We have got to know why a weak solution is better than a strong one, and why it is necessary we should put camphor in it in order to precipitate the albumen. You can take almost any ingredient that will cause a precipitate in a silver solution, and carry down the organic matter, therefore the camphor answers the purpose. I will take the dirtiest bath ever made, and by simply adding salt enough I will carry it down, although I may carry all the silver down too; it is simply a matter of how dirty it is; and it is just so with camphor. I am using Mr. Clemons's paper now, but I do not indorse all he says, neither do I indorse as the most economical a weak bath. The reason why a weak bath is necessary for Mr. Clemons's paper is because he does not salt very strong. Just so strong as your salt is, just so strong you must have in proportion your silver. I can take a solar negative and make a harsh print from it, and not use over fifteen grains of silver to the ounce. I think I demonstrated that to a certain extent in one of my little articles in the *Photographer*. Take a piece of porcelain, which is the best because non-absorbent, and a pure substratum of albumen; put it in the bath, and you will produce a strong print with a solution of silver of only five grains to the ounce, but it will be to a certain extent a harsh one. The smaller the amount of salt in combination with that albumen on porcelain, the softer your picture will be; but if you apply the same to a sheet of albumenized paper you will find it is worthless, because the amount of organic matter in the paper absorbs it. Therefore the strength of your picture is in the same proportion with the amount of salt you add, and to the density of your negative. The reason I speak with regard to weak silver solutions is because I think we have been working towards a false standpoint and false economy, so far as first class work is concerned. A great deal may be done in this matter of keeping baths clean in using a stronger silver solution. You will find you can make more improvement by going back to old ideas. We want the albumen to stay on the paper; we do not want it to go into the bath.

Mr. Hough.—Did you ever use camphor?

Mr. Fennimore.—No.

Mr. Hough.—That is where I have got you. Camphor does not carry anything down; it floats; if you shake it up it does not precipitate any sooner.

Mr. Fennimore.—As an experiment, if you coat a plate with albumen, and silver it in a silver solution of about live grains to the ounce, you can get a strong print with it without any salt whatever, showing that the albumenate of silver is sufficient to produce of itself a strong picture.

Mr. Johnson.—In a weak bath we are very apt to form albumenate of silver instead of chloride of silver, which we are required to make to produce our picture, and the articles we use for the production of chloride of silver, to be used in connection with the albumen, has a great deal to do with the formation of true chloride of silver, which is necessary to produce fine prints. Without the use of ammonia you cannot produce a strong print with a simple solution of silver. You must have relative proportions of chloride of silver upon the surface of the paper. The great trouble is with our paper; some of it is salted so highly that it re-

quires a very strong solution of silver, and some is salted so low that there is not that relative proportion of chloride of silver upon the surface of the paper to produce a fine print. I have taken simple plain paper and formed a chloride of silver upon the surface, and have produced a print that I would defy any member of the Association to distinguish from an albumenized print. I claim we want to keep the silver on the immediate surface, where it is brought in contact with the negative, and the action of light is brought directly upon the chloride of silver.

Mr. Spencer.—I like this idea of giving the amount of salt in the paper. I have had trouble about dissolving albumen in the solution in warm weather. In a solution of thirty grains of nitrate of silver I floated thirteen seconds, and it took the albumen off of the paper and destroyed the fine surface. Now, if it is true that the albumen must be coagulated in order to keep it upon the paper, I wish to know whether we cannot carry the solution so weak that it will, at any rate, not be carried out from the paper, or whether the sulphate cannot be used strong enough to coagulate the albumen quickly. When you go beyond that, so that you carry it off from the paper, you are going too far.

Correspondence.

COPYRIGHT IN PORTRAITS.

SIR,—I am much obliged to your correspondent "A Lawyer" for his answer to my letter, but I shall be further obliged if he will go a little further, and tell me whether it is necessary to register a negative before selling it and the copyright. If the copyright be sold without being registered, does it still remain valid? If I ask a person to sit to me for the purpose of producing his portrait for publication for my benefit, does the copyright belong to me as a matter of course, or does it belong to the sitters?—Your humble servant,

July 17th, 1871.

A POOR PHOTOGRAPHER.

[If our correspondent carefully reads the letter of "A Lawyer," he will find that his questions are already answered. Registration, "A Lawyer" states, is necessary before proceedings can be taken. Registration does not confer copyright, but is a necessary prelude to steps for enforcing copyright. When the copyright is sold, an agreement in writing must be entered into, and that agreement registered. "A Lawyer" distinctly states that copyright belongs to the photographer, except where the picture is a commission. Our correspondent should read the Act, and also read "A Lawyer's" letter carefully.—ED.]

LES ENFANTS.

SIR,—"How beautiful is babes!"—at least, how beautiful their mothers always think them!

Is it not a strange reflection, that the uglier and more generally disagreeable a child is, the more its mother is sure to be pleased with it? This sentiment is often curiously developed in the studio of the photographer. There the anxious mother, bringing her offspring to the trial of the artist's skill, assures him that, not only has her child the bluest of eyes and the flaxenest hair, but besides, and above all, the sweetest of tempers and the very prettiest little mouth (if he would but hold it still) that you ever did see or hear of. In the meantime, the little imp is, in all probability, demonstrating, in the most unspeakable manner, that it enjoys the most unbounded power of bellowing, any attempt to assuage which results only in frantic endeavours to swallow one or more of its fists, or thumbs, or feet.

In the studio, too, are often exhibited the supremest efforts of infantine stolidity. I have seen small infants whose primary characteristic may be denominated as "puttysm." They are exactly like very soft putty: if you put their head on one side it will remain so for about a second, and then slowly, but with perfect regularity in the action, fall over upon the shoulder, or back, or stomach, as it nothing but introducing a piece of stick inside could keep it up. Children of this description offer one great advantage to the photographer: they have no expression; and therefore, as their portraits can exhibit none, there is no possibility of making a mistake upon this score; no music,

nor howling, nor any performance, natural or unnatural, which the photographer may attempt, can instil a ray of brightness upon these apathetic commencements of humanity.

There is one class of infants, however, more difficult to treat with than either of these: and that is the truly jovial. When you do get a baby to laugh—to laugh, I mean, from a natural sentiment inwardly developed, because, of course, a baby cannot see a joke—why then it is all up with the camera, for that day at least. I have seen a baby laugh till the very amusement ran down its cheeks like tears, and had to be wiped off by the attendant nurse. There is one peculiarity I have noticed in the laughter of infants. It is this: the effects produced are always symmetrical. I do not so much mean that the corners of the mouth move in equal angles, or that the eyes become screwed up in exactly the same degree, but there is a certain symmetry of motion communicated to the whole body; as, for instance, if the inward sensation of delight points to the elevation of the toe as a suitable expression of mirth, then *both feet* must rise in equal proportion, and there is at once a danger of the infant losing the feeble powers of balancing which it may have enjoyed before. Again, if one arm assumes, from causes of internal satisfaction, a vibratory motion, the other follows suit with the utmost regularity, so that the figure becomes suggestive of the action of a cobbler. I have noticed, by the way, that this symmetry of action is sometimes retained through life: as, who has ever seen a man walking who did not swing both arms if he swings one; unless, indeed, to avoid a consciousness of absurdity, he places one hand in his pocket? Again, it is often observed, in the vibratory motion employed in brushing the hair or teeth, the unoccupied arm often assumes a motion sympathetic with the one which is doing the work (perhaps the ridiculous appearance of seeing one arm moving in this way while the other was at work first suggested the use of two hair brushes at once).

To return, however, to the infants. There are, as I have endeavoured briefly to sketch out, three classes of these beings: the cross, the stupid, and the volatile. It is probably needless to add that there are two sexes in each class; but this is a detail which signifies very little to the photographer.

To take a baby's portrait is not difficult under favourable circumstances. If, for instance, the child is asleep, no great difficulty will arise; and even some of the most demonstrative may be taken without difficulty, if they can be carried asleep into the studio, and only awakened just as the picture is about to be done. The mind of a child is naturally quick, but it must be a sign of extraordinary decision of character if a child could wake up and begin to cry at once, without taking a few seconds to consider the circumstances of the case, and the prospect of getting a supply of food first.

Stolid infants are not difficult at all if only you can make them keep their heads up. A simple arrangement would be, with very limp ones, to get the nurse to hold them upside down, so that the head might hang straight; but I have not tried this plan. Should any of your readers feel inclined to make the experiment, I would suggest that the mother should be asked to step into the waiting room for a few minutes, "just while the exposure is going on." If any interest can be awakened in one of these stolid ones, the ticking of a watch will do it. The extraordinary interest which is often developed in the infant mind by this simple means is often very remarkable. Hilarious children are calmed by it, being apparently reminded of hidden mysteries which, perhaps, ought not to be the subject of such unbounded mirth; while stolid ones are often almost animated with a faint realization of pleasure.

The following hints may also be useful to some of your troubled readers:—

Turn out of the studio, to begin with, all useless persons—as fathers, brothers, aunts, &c. Turn out also either the mother or the nurse, if they show the slightest tendency to be fractious, and look as if they wanted to interfere.

Do not let the infant have any food for some time previous to sitting.

Never let a complete system of infants from one family be pressed upon you in one day; one is just enough to do in the day. For my own part, one in the year would be too many; but I suppose they must come some time or other.

Then, again, always learn the manners and customs of the child before you make any attempt upon its portrait; and by no means try to keep it awake just when it wants to go to sleep.

There are stated times in the day—which will be given, on application, to the nurse or mother, the nurse generally knows best—when the attempt will be more likely to succeed than at others.

I hope these hints may be of use to some of those of your readers who are, like me, occasionally troubled with babies.—I am, sir, yours truly,
THEOPHILUS THIDDLEMIDTCH.

Talk in the Studio.

PHOTO-TYPOGRAPHIC PROCESS.—We have received from Mr. C. G. W. Carleman, of Stockholm, about a dozen examples of a new photo-mechanical printing process, in which the photo-engraved blocks are intended for printing in conjunction with ordinary type at the ordinary typographic press. We have no information of the mode in which the blocks are produced, but, from the result, we conclude that it is by a mixture of photography and skilled hand labour, apparently in applying the engraver's ruling machine, five straight lines crossing all the gradations, and giving the transparency necessary in impressions of this kind. The effect is very successful. Both in subjects from nature and reproductions some very pleasing results are obtained. Altogether this appears to be the most successful attempt we have seen to produce photographs from nature by the ordinary typographic printing press, and we shall look for further information with great interest.

THE NEXT SOLAR ECLIPSE.—The next total solar eclipse will take place in December. It will be visible in India, Ceylon, and Australia. Arrangements for observation in India and Australia are already in progress, and it is hoped, *Nature* states, that the Government will aid in sending a small expedition to Ceylon. Stereoscopic and photographic observations are still important.

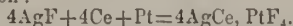
ARCTIC SCENERY.—The paintings of arctic scenery by Mr. Wm. Bradford, now exhibiting at the Langham Hotel, were produced by the aid of photographic studies taken under direction of the artist.

THE PATENT LAWS.—At a recent meeting of the London Patent Agents, held to consider the proposed changes in the patent laws, Geo. Haseltine, M.A., chairman, it was resolved: (1) That inventors have a *right* to the sole use of their inventions, which it is the duty of legislators to harmonize with the interests of the State. (2) That patents should no longer be granted to mere "*first importers*," but should be confined to actual inventors. (3) That the term of a patent should be twenty-one years (now fourteen) without provision for extension. (4) That the official fees should be reduced from one hundred and seventy-five to ten pounds for the entire term, which is sufficient to defray the expenses of an efficient patent system. (5) That the French mode of granting patents—without official investigation of the merits of the application—should be adopted. (6) That in patent suits the rights of patentees should be determined by a competent court of equity, dispensing with *jurors* and "*expert*" witnesses.—*The Globe*.

PETITJEAN'S MODE OF SILVERING GLASS.—Prepare two argentiferous solutions. For the first take 180 parts of nitrate of silver, which treat with 62 parts of liquid ammonia, of a specific gravity of about 870°, and 500 parts of distilled water; filter. This solution is afterwards diluted with sixteen times its volume of distilled water, to which is added, drop by drop, 7 parts of tartaric acid, previously dissolved in 30 parts of water. This is No. 1 solution. The second solution is prepared in precisely the same way, only it must contain double the quantity of tartaric acid. After having cleaned the glass with putty powder mixed with water by spreading it over the entire surface with a ball of chamois leather, and leaving it to dry for a few minutes, and then rubbing it off with another piece of chamois leather or a soft linen cloth, this glass is placed on a rack, and an india-rubber roller, moistened with distilled water, passed over it to remove any particles of dust that may adhere to it. After this it is laid upon a metallic table covered with a waxed or varnished cloth, and heated to about 126°. The plate being in a perfectly horizontal position, its surface is covered with No. 1 solution. The deposit of silver commences in about ten minutes, and is completed in about fifteen minutes afterwards. The glass is then tilted up so as to allow the liquor to run off, and rinsed with water rather more than

lukewarm to carry away the non-adherent powder. It is then restored to its horizontal position and covered with solution No. 2. In a quarter of an hour the deposit is completed. The next thing is, to wash the plate as before, and dry it, after which it only remains to polish and burnish the film of silver deposited in order to make it perfectly smooth, and give closeness to the grain.

FLUORIDE OF SILVER.—Mr. Gore has found (*Proc. Royal Soc.* xix. 235) that argentic fluoride is only superficially decomposed by chloric acid at 60° F. in 38 days, and at 230° F. was but slightly acted on in 15 days. Heated to a red heat in platinum vessels, it is entirely decomposed according to the following equation:—



An aqueous solution of the fluoride, when treated with chlorine, evolved oxygen. At temperatures below 200° F. the action of bromine on the fluoride resembled that of chlorine; at a low red heat complete decomposition of the silver salt occurs, a portion of the fluorine being liberated and an insoluble fluoride of platinum and bromide of silver being formed. The reactions of iodine were in most respects like those of chlorine and bromine.—*Academy*.

To Correspondents.

CLERICUS.—The wringing machines which are employed with domestic washing machines have been at times recommended for aiding the perfect washing of prints. The object is to remove all traces of the early washing impregnated with hyposulphite. The prints, after washing for a few minutes, on removal from the hypo are passed through the rollers, again washed for a quarter or half an hour, and again submitted to pressure. As the prints are passed through the rollers in parcels of about a dozen, with blotting paper at top and bottom, they do not come into contact with the vulcanized rollers containing sulphur.

J. GRAY.—The yellow spots of fading may be due to various causes. A small acid nucleus in the paste or other material used for mounting would cause such a result. A point of imperfect fixation in the print would cause a similar defect. The final result is yellow sulphide of silver, and its presence might be due to a variety of causes. Perfect fixation in fresh hypo, perfect washing, and the use of a neutral mounting material, are the best guarantees against such results.

J. JERMAN.—Nitrate of potash is not, as a rule, used in negative developers. It is added to the iron developer for positives to form nitrate of iron in the solution by double decomposition. Nitrate of iron, when used as a developer, produces a deposit of silver which is pure and white in colour. A silvery white deposit is valuable in positives, but useless—or, rather injurious—in negatives. 2. The high surface in the cameo vignettes to which you refer is due to the ordinary enamelling process with gelatine and collodion, which we have often described. A plate of glass is coated with suitable tough collodion; suffered to dry; coated with gelatine; the print attached face down, and removed when all is dry, bringing with it the gelatine and collodion, which gives it the fine surface to which you refer.

J. H.—The best mode of vignetting glass positives is as follows: take a piece of cardboard, say eighteen inches long by twelve inches wide. Cut in it an oval aperture five and a half or six inches long by four inches wide, giving the aperture a serrated edge. Fix this on a stand the height of the lens, and place it at a position midway between the lens and sitter, which will give an aperture of the proper size on the ground glass. The cardboard may be left white, or coloured similar to the background, but of a somewhat lighter tint. This, if managed properly, will yield a good result. In some cases the cardboard screen with the aperture is kept in motion, but if placed well out of focus, this is not necessary. 2. The process of enamelling would require too much space for a detailed description in this column. Besides, the term "enamelling" is rather vague, even to refer you to any article. It is used in relation to burnt-in photography, it is used in relation to the fine surface imparted by gelatine and collodion, and also to the surface produced by encaustic paste. We have described all repeatedly in back volumes. If you say specifically which you mean, we can refer you to an article on the subject.

HOROP.—You can secure the copyright of the especial design you produce, but not of the idea of producing similar designs. You can register it at Stationers' Hall in the ordinary way. Send copy and particulars, with eighteen stamps, to our Publisher, and he will attend to the matter for you.

FRANK NAIEN (New Zealand).—Your subscription is paid to No. 750. We have no personal knowledge of the lenses to which you refer, but have no reason at all to doubt their genuineness.

A YOUNG BEGINNER.—The principles of lighting and the modes of erecting glass houses to which Mr. Slingsby refers as having been ventilated in the PHOTOGRAPHIC NEWS are discussed in many scores of articles, extending through various volumes. The only certain mode of becoming familiar with the matter would be to obtain the back volumes and read them. Failing that, we shall have pleasure in advising you upon any specific point upon which you may require information.

J. W. PICKERING.—The letter was duly addressed and forwarded.

HYPOSULPHITE.—We have often recommended photographers to test for themselves the cards they obtain for mounting purposes. We have described the best modes of proceeding repeatedly. Details will be found on page 88 of our YEAR-BOOK for 1869. We see no reason to doubt the purity of the cards forwarded. They show no trace of the presence of hyposulphite of soda. 2. As a rule, free nitric acid is better absent from the paper bath. It sometimes interferes somewhat with facility and evenness of toning.

W. W. W.—By the "enamelling of the ferrotype plates," we presume you mean coating the thin sheet of iron with the enamel-like black surface. The manufacture is carried on in America. The coating consists of some black or brown pigment and a varnish. Possibly asphaltum is used. The varnish is probably stove-dried to secure hardness. The method of japanning employed in preparing black *papier mache* and black metal tea trays would, probably, answer well.

W. (Bristol).—The falling off and darkness in the background towards the top of your picture is the result of want of light. This probably arises from the roof of the shed being low, and the top light a little in advance of it, in which case no light will reach the top of the background screen. If you look on the ground glass you will see that the light on the screen falls off towards the top. It may possibly arise from your lens not covering well, being of very short focus. To ascertain which of these causes is in operation, remove your background into the open air and try a picture. If the background is then properly illuminated to the top, you will know the fault is in the studio. In this case you must either bring the background further forward, so as to be nearer the light, or raise the roof a little to allow the light to fall on the top of the background as well as the lower portions. If the background still falls off towards the top, you may conclude that the defect is due to the lens. In such case the use of a smaller stop will make the lens cover better, but will, of course, prolong the exposure. We should recommend you to use a drop or two of nitric acid in each ounce of your developer. This will give you a brighter, whiter deposit of silver in the lights. You may also use a background screen of lighter colour with advantage.

J. EDGE.—Mr. Cox, of Ludgate Hill, or Mr. How, of Foster Lane, will furnish you with a list of all details.

T. GODFREY.—The article to which you refer appeared in the PHOTOGRAPHIC NEWS of October 7th, 1859. It describes several methods of silvering glass, Petitjean's among the number. The whole article is too long for reprinting, but we repeat Petitjean's method in another column. The number containing the article with various methods is out of print. You may possibly meet with the volume, which is Vol. III. of the NEWS.

F. W. T.—To obtain success in producing whitened positives it is necessary first to obtain a really good vigorous image. After this there should be no uncertainty if matters are managed rightly. It is not likely that the bichloride is impure, or that the stains are caused by any impurity. It is important to wash well after fixing before applying the whitening solution, otherwise stains will occur. 2. The ferrotype plates used to be kept by various dealers in this country, but we doubt whether any one keeps them now. We do not recommend them, nor the black or purple glass. Transparent glass backed with maroon velvet gives a much finer result. The black glass or black plates give a heavy leaden looking picture. The nitrate of iron developer made by aid of nitrate of baryta was first proposed by Dr. Diamond, who has some very fine results produced with it now. We believe that Mr. Keith and many others adopted it and obtained fine results; but a special kind of collodion was necessary to use with it. We have obtained good results with it with various samples of collodion. It is a great error to attribute any special virtue to collodion made according to secret formulae. In positive days there were several samples of positive collodion in the market all equally good, and producing the finest possible results. 2. Col. Stuart Wortley's plates will keep, and are very sensitive.

Several Correspondents in our next.

Photographs Registered.

Mr. E. G. GAULY, Dublin,
Photograph of the Four Gospels in French, Shaitan I.
Messrs. GARDNER and SONS, Brompton,
Photograph of Albert Memorial, &c.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 673. — July 28, 1871.

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COL. STUART WORTLEY'S COLLODIO-BROMIDE PLATES.

A FEW days ago we were present at another trial of these collodio-bromide plates. The light, although poor and variable, was not so unpropitious as on the former occasion to which we have before referred. The results obtained again impressed us with the marvellous rapidity of the process, and with the unusual excellence and delicacy of the gradations, the perfect rendering of every minute detail of foliage in shadow being of a character rarely attained except with wet plates. Indeed, in some respects, the quality of the negatives struck us as finer than that not uncommon in negatives obtained by the wet process. The assertion is a bold one, and requires some explanation. Our meaning is this: the reduced silver forming the image appears to be much finer when reduced by alkaline developer from the substance of the bromide of silver in the film, than the deposit obtained in the wet process from the reduction of free nitrate of silver on the film, the latter tending to a more crystalline character. This condition would, of course, apply to all images produced by alkaline development, but in no case have we observed this quality so manifestly present as in Col. Stuart Wortley's negatives.

The light was so variable that comparative experiments were out of the question, some of the plates having had an exposure of forty seconds, and others as much as eight minutes, the best negative obtained having had one minute in a light which we should have regarded as of doubtful value even for a wet collodion. A singular and interesting feature of these experiments consisted in the fact that no matter how bad the light or insufficient the exposure, it was possible by Col. Wortley's mode of forcing the development to obtain a tolerable image. On another page Col. Wortley points out some peculiar advantages in his mode of development, especially in his plan of soaking the film first with a solution of pyrogallie acid in nearly equal parts of alcohol and water, the common methylated alcohol, of course, answering every purpose. In these plates very slight traces of an image appear on application of the pyrogallie solution, sometimes no trace whatever; but the moment the ammonia is added, the image appears rapidly. The most startling feature in the development is the copious extent to which ammonia may be added with advantage, and without apparently any risk of fog whatever. When it is remembered that the plates contain a large amount of free nitrate, it is certainly surprising to find that the addition of ammonia *ad libitum* has no other effect than to bring out detail and vigour, no trace of fog being in any instance visible.

The value of excess of nitrate of silver was rendered apparent by some comparative trials with plates containing

excess of bromide. Lieut. de W. Abney, a very careful and trustworthy experimentalist, recently mentioned in these pages that he had obtained the green-coloured negative, which Col. Wortley regarded as the test of excess of free nitrate, on plates in which excess of bromide was used. Some of these plates he brought with him to the house of Col. Wortley for exposure and comparison. We may remark, in passing, that the plates are prepared by a modification of the collodio-bromide process, and admit of iron development. Lieut. Abney will shortly describe the process in our columns. The development with iron on Monday was not a success, from easily traceable causes; but the plates developed by Col. Stuart Wortley's method yielded good negatives, and certainly of a tint inclining to green, although warmer in colour than the plates with excess of nitrate of silver. Col. Wortley's conclusion from the colour was, that the plates had contained simply pure bromide of silver, without excess of either nitrate of silver or soluble bromide. Lieut. Abney stated that the collodion contained about one grain excess of bromide; but, as he also remarked that he gave the plates long soaking in washing, by which the soluble bromide would be considerably removed, it seemed probable that Col. Wortley's conjecture as to the neutral condition of the plates was correct. In rapidity the palm seemed to belong to Col. Wortley's plates.

In referring to the question of excess of either nitrate of silver or a soluble bromide, it is important to bear in mind that the amount of washing the plate receives will very materially affect the question. Long washing will certainly remove much of any soluble salt, and leave the plate in a nearly neutral condition. In the original collodio bromide process, Mr. Sayce employed in the collodion a very slight excess of nitrate of silver, but he employed hot water for washing, and the result was, doubtless, a plate as nearly neutral as possible. Col. Wortley, in employing very large excess of nitrate of silver, also employs very slight washing, so that the finished plate contains an excess of free nitrate, and, so far as we can see, with the best possible result.

LOCAL REDUCTION OF INTENSITY.

WE recently called attention to the value of gum water or any similar viscous solution when added to cyanide intended for use in local reduction of intensity in negatives. The gum added to cyanide solution prevents its spreading by absorption, so extending the space upon which the reduced action is exerted. Mr. Carey Lea, in our Philadelphia contemporary, refers to another method which he has previously suggested. In his plan the plate is varnished with a solution of gum arabic, and suffered to dry.

The reducing agent is then applied to the spot to be made thinner, and does its work on the spot where it is applied without further risk or trouble. Mr. Lea says:—

"I mentioned some time back a plan that I had tried for enabling one to work on a negative with a thinning agent, and which plan consisted in sizing the film with gum arabic solution to keep the subsequent application from spreading. I have recently had further occasion for applying this treatment, and found the result so very satisfactory that it seems worth while to recur to the subject. A negative, otherwise excellent, was spoiled by a single object: a piece of smooth wood, from which the reflection was so strong that its image developed to complete opacity by the time that the foliage had received a suitable development. By flowing the film with gum water, allowing it to dry, and then going over the dense part with a small fine sable pencil imbued with a very weak solution of perchloride of iron, the excess of deposit was removed, and that portion printed as full of detail as the rest. Had I attempted to apply any treatment upon the portion in question without the precaution of sizing, the action could not have been confined within the necessary bounds. In this case, the power of reducing exactly where the reduction was needed removed the only defect from an otherwise beautiful negative."

PRESERVATION OF SENSITIVE PAPER.

ANOTHER suggestion reaches us from Germany as to the preservation of the excited albumenized paper. Herr Leyendecker proposes, in the *Archiv*, to keep the paper from changing by placing it in contact with bicarbonate of soda. He says:—

"A few weeks ago it struck me that as I used to keep my sensitizing bath in good working order by adding bicarbonate of soda, it might act in the same way when applied to the sensitized paper. I therefore immersed some sheets of blotting-paper in a saturated solution of bicarbonate of soda, and hung them up to dry. When a sheet of albumenized paper was sensitized, I cut it in two pieces, putting one in a book kept on purpose for it, and covered it with the bicarbonated blotting-paper, and the other I put in a different place in the same book without it. After a period of eight days, the piece which was covered with the blotting paper appeared perfectly unaltered, whilst the other had turned quite yellow. To-day, after three weeks, the covered paper is almost unchanged, while the other is as brown as packing-paper. This shows that in this manner a sensitized paper may be kept perfectly white for at least eight days; but how far the sensitiveness has suffered, further investigations will determine."

It is probable that the sensitiveness will be found to be slightly impaired, but that fuming will restore it, as it is found to do in the washed paper.

TRIMMING AND MOUNTING STEREOGRAPHS.

MR. A. J. CLAIR, in the *Photographic World* (U.S.), gives some good hints on the trimming of stereoscopic prints. He is induced to do so by having read some remarks on the same subject in a contemporary, which appear to him like going around the woods to find the nearest way across. He says:—

"I will not repeat what the writer says, but jump at once into the subject by stating my plan which is in daily use in my gallery.

"1. I prepare my negative by pasting a strip of single sheet Bristol board along the bottom, the upper edge of which marks the lower edge of the finished picture.

"2. I have two glass patterns, one 8 inches by 3, whose edges are exactly parallel, and one 5 inches by 3, edges parallel, and at one end an exact right angle, at the other circular.

"3. The paper is supposed to be 18 by 22. I silver the sheet whole, cut it into three strips crossways, making three strips 18 by 7 $\frac{1}{2}$. I now take my 3 by 8 pattern, and cut each strip into six stereo papers, and print.

"4. After the prints are washed and dried (by laying two back to back, and suspending them by a clothes clip), I take my 3 by 5 pattern and lay it on the print, the square end adjusted to the lower edge of the print, and cut on both sides, then lay it on the other end, covering the same part of the left hand picture already cut out of the right hand picture, cut again on each side, and so have my prints ready for mounting by simply dividing them for transposition.

"5. I take two damaged stereo mounts, draw a line across them exactly in the middle, label them centre cards, and hang them up till wanted. When I get a fresh lot of stereo mounts, I set them up on edge, the lower edge upward, fifty or five hundred, as the case may be, at once, then place one of my centre cards on each side of the lot, and with a straight edge and a dull knife I draw a line across the whole lot; each mount is thus marked by a slight notch exactly in the centre of the lower edge, and that is all the guide necessary to mount by.

"By this plan I get three more prints from each sheet than is usually got, thereby saving paper, silver, and time in silvering, as well as gold in toning. After the negative is prepared, by pasting the strip on it, it is easier to apply the paper than without, and the print is always in the right place. If negatives are properly made, the print may be folded in the middle, and both ends trimmed at once; and if numbered always in the same place, the number indicates which is the right hand picture, without marking the back of the print.

"By the way, a correspondent lately (I forget who and when, and have not time to look up the article) stated that in making stereos with one tube, if the camera, after the first exposure, was moved to the left, and the plate to the right, and *vice versa*, the resulting negative would yield prints stereoscopic without transposition. Just not so. I have made hundreds of stereos indoors and out, but mostly portraits with one tube. My method is simple; viz., I use a sliding plate-holder, put on as usual from the right-hand side of the camera as you stand behind it. I make one exposure, move the camera to the left, then move the plate in the same direction, and make the second exposure. The negative is itself stereoscopic, and yields stereoscopic prints. A negative made with twin tubes is not stereoscopic, and the prints have to be transposed to make them so, while a negative made as I direct is stereoscopic, and yields stereoscopic prints, as any one may prove who will try it.

"I am sorry to take issue with one who talks so learnedly, but my experience is directly contrary to his directions. True, I am an 'old fogey' now, having begun as a Daguerreotypist in 1850, and grown grey under the focussing-cloth; but as all I know has been gathered from the journals (commencing with *Snelling's Photographic and Fine Art Journal*) and my own experience, when I read what I think is calculated to mislead, I always feel like hinting that the writer had better reconsider, and either correct or prove his statement.

PHOTOGRAPHY IN THE NORTH OF EUROPE.

[FROM OUR OWN CORRESPONDENT.]

Drammen, July 14th, 1871.

The scenery of the Hardanger and Sogne Fjords is certainly of the most grand description, and of itself amply repays one for the distant journey undertaken. When I say that in some cases the mountains rise precipitously from the water's edge to a height of some four or five thousand feet, and that these gigantic walls are ever assuming different fantastic shapes, some idea at any rate can be formed of the stupendous nature and grandeur of

the panoramas that are to be seen. Some of the Scotch lochs present pictures of a similar nature, but none that I have witnessed can in any way be compared to the fjords in the vicinity of Bergen. On the Hardanger Fjords the scenery is, perhaps, a little more soft and pastoral than that of the Sogne, whose mountains, presenting sharper and more rugged outlines, exert at times an almost terrifying influence upon the traveller stationed below.

At the extreme end of the Hardanger Fjord is situated the Voring Foss, reputed to be the finest waterfall in Europe. The grandest point regarding the foss is, however, not the actual fall itself, but the fearful chasm into which the water falls. The effect at first produced upon the spectator by this yawning abyss is truly overpowering, and it is some minutes before one feels equal to looking over the awful precipice into the gulf below. Of course, I did not pass on until I had secured a sketch of the scene in my camera; and as, from above, it is almost impossible to get a good view of the fall without approaching to the very verge of the cliff, it was necessary to assume the attitude of *Punch's* "cautious crocodile," and to wriggle on one's stomach to the required position. Unfortunately, while engaged in the operation of focussing, my hat was blown with great violence into the foss, and is not likely again, I should think, to be seen by mortals. To make all the amends I could for the loss, I repeated the photograph, so I hope at any rate to have some compensation for my loss.

In the Bergen district I saw some very good landscape pictures of this magnificent country, taken by Selmer, of Bergen, the first photographs of the kind that I have seen. They were, for the most part, stereoscopic slides, and displayed a considerable amount of skill; at the same time, I cannot but think that an enterprising photographer would do very well to make a tour through Norway, so as to obtain some first-class pictures of more notable dimensions, for there would, I fancy, be an exceedingly good demand for them, only he must be well prepared to rough it to almost any extent.

From the Voring Foss to the lower Christiania road is one of the most arduous bits of mountain travelling I have ever undertaken; and as, moreover, on the first night, we lost our way (for a path, although exceedingly well marked upon the map, is altogether wanting), the physical strain undergone was very severe. Instead of a hamlet or group of shepherds' huts, which our map had led us to expect for night quarters, there was nothing but a solitary mountain hovel, and this being built of grey stoues and boulders, its presence in the dreary landscape could not be detected. For fourteen hours we travelled over a wilderness of snow and rocks, without a vestige of a habitation within sight, the aspect presented to the eye being that of a huge bleaching or laundry-ground. Most fortunately for us, there was no night, and within the space almost of half an hour we watched from an eminence the double event of sunset and sunrise. At about four in the morning one of our party cried out that he had distinctly heard the neighing of a horse, and could, moreover, perceive a hut situated in a little valley at some distance. But as regards habitations we had already become very sceptical, for our tired eyes had descried houses almost at every turn. Luckily, however, we still believed in our ears; and sure enough, in making towards the locality, we perceived, to our intense joy, an old grey horse, his forelegs tethered together, limping among the rocks. A hovel was not far off, and, to make a long story short, no sooner had the herdsman and wife and daughter jumped out of a wooden receptacle which served as bed, than two of my companions, without more ado, jumped into it, and, after swallowing a dose of hot milk well strengthened with *extractum carnis*, at once fell fast asleep. You may be sure we went no further without a guide; and how very necessary this precaution was we subsequently found out. For the next two days, during which we had in all but six

hours' actual sleep, we existed solely upon the food we had in our knapsacks, and did not see a single building fit for human habitation the whole time, two untenanted mountain huts strewn with damp juniper bushes serving us as night quarters; and so wet and cold did we find ourselves in these places, that, although we maintained a good fire throughout the night, it was necessary to lay down in one conglomerated heap to obtain any warmth or rest at all. The walking all the way from the Voring Foss to the Hitterdal Valley was indeed hard work; and although we were rewarded by some magnificent spectacles of vast glaciers and range upon range of snowy mountains, as also by a very fine effect of midnight sunshine, I must say that the cost of these luxuries was a heavy one. Irrespective of the ordinary difficulties presented to weary pedestrians by a rough country of snow-slopes and rugged rocks, the swampy bogs and strong mountain torrents to be crossed were, on some occasions, extremely perilous, and the force of water so strong that at times it became a very even eoutest with the elements; however, there was no turning back, as the way behind was as difficult as that in front, so there was no alternative but to proceed. It was with no little sense of relief, I can assure you, that we sighted a group of some half dozen houses at the head of the Hitterdal Valley, for these meant not only rest and sleep, but also food, and our stock of provisions was miserably low. We bade adieu to our guide, and pushed on rapidly to the habitations in front; and although the meal consisted, as usual, of but fladbrod (thin oat-cake) and butter, it was, at any rate, a great treat to get one's stomach full of provender of any kind.

An universal custom in Norway I must not forget to mention; it is that of paying the traveller unremitting attention when in his sleeping apartment. No matter whether he is dressed, dressing, or actually in bed, the females of the house come and go through the room without the slightest hesitation in the morning, bringing up and handing round coffee and fladbrod in the most matter-of-course manner. There are seldom locks to the doors; but if there are, the good people never stand any nonsense, but bang away at the threshold until admitted, and this to a very modest man—as you, sir, well know me to be—is, to say the least, embarrassing.

The costumes of the women in the Hitterdal are of a most striking nature, and resemble very much the dresses worn in the beginning of the present century, the waist coming right up under the arm-pits. That of the men is also very picturesque, knee-breeches, green shirts, and red caps forming the principal articles of clothing. Unfortunately, with only dry plates at my disposal, it was impossible for me to photograph a group of these peasantry, who would certainly have made a very original picture.

It is interesting to look out for the trace of photography in the little out-of-the-way localities that we visited, for they seemed to indicate very clearly the advance of civilization. Whenever cartes-de-visite were to be seen, one was almost sure that good food and some personal comforts were to be had; but when only one or two solitary glass portraits hung upon the wall, the chance of eatable victuals was very small indeed. In all cases, however, the little pictures were treasured with great care, and occupied the post of honour among faded old prints or flaunting coloured lithographs suspended round the rooms. The benefits of photography are felt, therefore, even in these primitive regions, and its influence in spreading knowledge and intelligence is so great as to reach the most distant and isolated habitation. In one house of considerable pretension there were some lines of English so droll and striking that I at once copied them. They are a translation of a verse descriptive of a Bacchanalian scene, and setting forth that it is only beasts that drink water, and that those who would wish to be men must take to spirituous liquors. Thus the lines run—

Oxen receive strength by the water,
Men by bier and the juice of the grapes;
Therefore we insist upon wine and bier.
Devils! who would horned cattle be.

Hamburg, July 17th, 1871.

A sea journey of thirty-six hours, by way of the Skagerrack and Cattegat, brought us to Copenhagen, past Gothenburg, and the charming palace and villas of Elsinore. The view of the Danish capital from the sea is very fine, the country seats and gardens around the city imparting to it a most delightful aspect. We had to submit to a rigid search at the Customs on landing, and I was in some dread lest the officers would insist upon the opening of the packages of dry plates; but this point was fortunately not pressed. A couple of hours was agreeably passed in visiting the Frue Kirke, containing some magnificent statuary by Thorwaldsen, of the presence of which we had been made aware by photographs thereof in the shop windows.

To Hamburg by Kiel is a journey of but a few dozen hours, and the busy aspect of the town presents a great contrast to the scenes we have recently visited. Hamburg may be said to vie with Nuremberg and Antwerp in respect to the antique and picturesque nature of its houses, for to the artist the town is full of architectural studies. Some very good and well known photographers are to be found in the city. Bieber, who exhibited some remarkably fine work last year at the Paris Photographie Exhibition, resides here: as also other artists of note. Bernhard may be mentioned especially as a successful micro-photographer, and landscape photography has several worthy representatives.

I go on to Berlin at once, where I intend visiting Dr. Vogel and some of the principal studios in that capital.

AMERICAN CORRESPONDENCE.

BIGELOW'S GRADATED BACKGROUND—IMPROVEMENT IN GRANULATED PHOTOGRAPHS.

Bigelow's Gradated Background.—As I have before noted, the background is receiving much more attention in this country than it formerly did, and there is an astonishing improvement in this direction. One of the most effective, useful, and artistic styles produced is that of Mr. L. G. Bigelow, Grand Rapids, Mich., and for which he has just obtained a patent. His invention relates to the form of background known as the revolving background; *i.e.*, it is mounted on a light circular frame, with a hub and axle in the centre, made so as to fit in the place of the forked shaft of any ordinary head-rest.

Placed behind the sitter it may be revolved so as to bring the dark side against the light, or unshaded side of the sitter's face, thus giving strong and bold relief to the figure of the photograph, which could not be obtained if, as is usually the case, the background were the same shade throughout its whole surface. The surface of the background being graded radially from the centre in regard to light and shade, the above is accomplished readily. For example, suppose the sitter for a photographic portrait to have grey or light coloured hair; to get the best relief, turn the shade of the background so that the hair shall be relieved against it; and in the same manner proceed to relieve any portions of the figure which the subject seems to require, be it dark or light.

[Without punning, Mr. Bigelow has created a revolution in the matter of backgrounds, and has not only, with the skill of the true artist, produced an admirable background, but he has awakened study and interest in the subject, which is doing an immense amount of good. For these reasons the committee appointed by the National Photographic Association to award the \$100 gold medal to the American having made the greatest improvement in photography during the past Association year, awarded it to Mr. Bigelow. Mr. Bigelow has also produced a

low-priced substitute for silk curtains, which is very effective, and seems equally as good as silk.

The June No. of the *Photographic Times* contained a photograph showing the effects of both Mr. Bigelow's inventions, and you have, no doubt, examined them.

Improvement in Granulated Photographs.—Mr. Wm. Aug. Leggo, Montreal, Canada, has secured a patent for producing granulated photographs, which I will describe, having already told you of his process of obtaining photolithographs, or, as he calls them "Leggotypes." His object is to produce a new style of photograph in which the gradations of light and shade of the picture are shown in granulation—*i.e.*, in lines and dots—instead of the usual unbroken shades of greater or less intensity. He proposes to use this method in photographing natural objects, and from mezzotints from brush, stump, pencil, and other drawings, and such prints as are not already composed of lines and dots. He also employs it in the manufacture of transfers for zinc, stone, &c., from subjects similar to those already named.

Mr. Leggo says:—"To make a granulated positive, I copy an ordinary photographic negative combined with a granulated plate of known or ordinary construction, the two being placed together act as one plate. From a positive so made I produce, by the art of Leggotyping, a surface printing type, capable of being printed from in any type-printing press. A granulated negative is made by copying by ordinary photo-manipulation the positive above-described, or by copying by known photographic manipulation an ordinary photographic positive combined with a granulated plate, the two in conjunction forming one object. From a granulated negative so made, I produce, by known means, an impression in paper in transfer ink, capable of being transferred to stone, zinc, &c., and printed from in the ordinary way."

Some of Mr. Leggo's results I have already sent you.—
Truly yours, EDWARD L. WILSON.

ON THE DEVELOPMENT OF DRY PLATES.

BY COL. STUART WORTLEY.

A SERIES of careful experiments in search of the most desirable way of developing a dry plate has led me to propose the following modification as the one giving by far the best results.

The important points of this process of development are, to allow a solution of pyrogallie acid, alcohol, and water to permeate thoroughly the film at the commencement, and then to continue the development with this same solution, adding the ammonia and bromide to it, and continuing with it in that manner till the end. The continued use of the modicum of alcohol that I use (about three drachms to the ounce of water) throughout the development appears to offer great advantages. In the first place, it does away entirely with the tendency that the use of a substratum sometimes has to produce blisters, and when the proper kind of permeable powdery collodion is used, such as I find to be a necessity in the obtaining of good dry plates, the alcohol seems to permeate the film thoroughly, and make it adhere more tenaciously than ever to the substratum of albumen.

Again, this continued permeation of the film by alcohol throughout the development enables one to work with a shorter exposure, and to obtain density with much greater ease. On this latter subject, however, I take this opportunity of saying that I do not seek too much to obtain density with the first developer only, for I consider that in the dry process, as well as in the wet, the best negatives are obtained by bringing out a rather thin image at the first, and very full of detail, the necessary printing density being given by one application of pyrogallie and silver intensifying solution. This appears to me to give a crispness, so to call it, to the negative, that is not to be ob-

tained in any other way, while the delicate detail is in no way interfered with. It is certain that in all dry processes that I have tried, previous to the introduction of my own, density at first was a thing to be avoided, in consequence of the overpowering tendency of the high lights to gather opacity in undue proportion. My bromochloride plates are, however, free from that defect, and in development they are singularly manageable.

In another way I think the development with alcohol appears to be of advantage: it tends to prevent the water washing away the gum preservative too readily, and the gum that remains entangled in the film seems to be of great assistance in keeping away fog during a prolonged development. You have seen me bring out negatives under the most unfavourable circumstances of light, and when the development has had, on that account, to be pushed by using the ammonia in drachms instead of in drops, and yet the shadows of the negative have come out as clear and transparent as possible; and it has struck me as a singular thing that these very sensitive films, prepared with a collodion saturated with nitrate of silver, will bear such forcing with ammonia as no other dry plate could withstand.

WHERE TO GO WITH THE CAMERA.

BY A PRACTICAL MAN.

DEVON AND CORNWALL.

"If there be any who desire to be strangers in their own country, and always children in knowledge, let them please themselves."—CAMDEN.

THE Caradons and the Liskeard district take in the Tors and high points of Kilmar, Caradon Hill, Sharp Point, Newel Tor, Down near Menaglew, St. Cleer, Kithill, Trewartha, and Hawkstor near North Hill, all of which are many hundred feet above the level of the sea. The point or place to make for, in the first instance, will be Plymouth, the queen city of the west; it is the genuine three in one, Plymouth, Devonport, and Stonehouse. The journey from London occupies but a few hours, and Plymouth will be found well worthy of inspection and a look round, particularly as regards the views to be obtained of the Breakwater, the Hoe, Drake's Island, Millbay, Devonport Park, Saltash, High Level Bridge, the Hamoaze, and Mount Edgumbe; all the above, after noting, can be taken with the camera if it is found fit and convenient. A look round the three towns will plainly convince any photographic votary that the professors of the district do not merit the same censure lately passed on the London ones, in regard to old, dingy, and dusty specimens, as the general displays are remarkably clean and neat; one establishment, devoted principally to shipping in storms, calms, wrecks, &c., from paintings and drawings prepared for the purpose, are exceedingly good.

St. Germans is but a short railway ride from Plymouth, and had better be visited before Liskeard; it will be found a most interesting and highly cultivated parish, with no wild bleak commons or downs. The church will be found one of great interest, and many good photographs can be taken. It is within the park gates, and quite free from any interruption or annoyance. It exemplifies several varieties of architecture: Norman, Early English, Decorated, and Perpendicular, the Norman and Decorated parts unusually perfect, proving how well and carefully they must have been preserved.

Then the far-famed Dauish Camp, the views from which are most extensive, taking in some part or other of the following parishes: Anthony, Maker, Landrake, St. Stephen's, Mellion, Pillaton, Callington, Quethiock, St. Ive, Linkinborne, Menheniot, St. Cleer, Liskeard, St. Martin's, St. John's, and St. Erney, the whole backed toward the east by the wild and high stretching ground of Dartmoor, on the north by the bold eminences of the Caradons and Hingston, while on the west the Turnerian aspect of the giant hills of Rough Tor and Brown Willey are boldly and

plainly brought out. The circumference of the remarkable camp or fortification from which the above great natural panorama can be viewed, and, if all things are "i' the vein," taken, is computed to have a circumference of nine hundred feet, and is one of the largest and most perfect "rounds" to be met with in the county.

There is a great place of mark near this, Coldrinick, the birthplace and seat of Sir Jonathan Trelawney, Bishop of Bristol, one of the long honoured and renowned seven bishops imprisoned in the Tower of London by order of King James the Second, for his firm and resolute conduct in resisting the king's most arbitrary attempt to overthrow the Protestant religion, and place England again in the power of the Romish Pope. Trelawney's imprisonment and subsequent release have made Coldrinick and all around it famous, the mansion, the church, and the bishop's tomb being still in a good state of preservation. Some years back there appeared in one of the Plymouth papers some lines in connection with the affair of the king and the bishop under the title of "And shall Trelawney Die?"

"A good sword and a trusty hand,
A merry heart and true,
King James's men shall understand
What Cornishmen can do.
Trelawney, he's in keep and hold,
Trelawney he may die,
But twenty thousand Cornishmen
Will know the reason why."

There are some six verses. On their appearance with "no name," they were pronounced by the best judges of the day as rare and curious, with the genuine spirit and ring of the time (1688), but when found to be the production of a but little-known Cornish vicar, all interest ceased: another instance of the apathy that often follows the clearing up of a great mystery.

Liskeard can now be visited, and from there St. Cleer and the ancient baptistry. After this, in a field called Pennant, will be found the "other half stone" part of the great and massive grave monolith of Doniert, the son of Caradoc, one of the kings of Cornwall, drowned A.D. 872. The "Cheesewring," Long Stone, and Hurlers, are all within a short distance. Then South Caradon Mine, with its picturesque massive gearing and machinery, the ancient Barrow and Kistveau, from which the massive gold cup now in Her Majesty's possession was taken in 1857. Then, in places high above the level of the sea, cromlechs, circles, barrows, rocking-stones, and many objects of interest to antiquarians, sketchers and photographers, geologists, and pleasure seekers, proving the county of Cornwall to be well worthy a visit; while the return back can be made by way of Launceston, Okehampton, Belstone, and Exeter, the great city of the red earth.

In the foregoing slight notes the collector of views, &c., will have three chances: the Plymouth Town, &c., for marine views and shipping; the St. Germans for far-stretching panoramas, churches, mansions, lanes, and glades; while the Liskeard and Caradon district will give the wild, the weird, and the wonderful, making, for variety and excellence, a combination rarely to be met with so close together, and not to be excelled in any other part of "Merrie England."

PHOTOGRAPHY IN GERMANY.

Our friend Dr. Vogel, writing to the *Photographic World*, says:—

"The latest experiments of Dr. Schultz-Sellack have attracted a great deal of attention in the Society for the Promotion of Photography, although they threaten to destroy the fond hopes which many a photographer carries in his bosom. They concern photography in colours, the ideal aim of the celebrated Herschel, recently deceased, Niepce, Becquerel, Poitevin, Zencker. Dr. Schultz demonstrated that iodide of silver, when exposed to light with an excess of iodine, becomes, through the action of light, a

peculiar powdery substance; that the film becomes cloudy, and shows colours of diffraction. According to the intensity and duration of the action of light, the yellow iodide of silver is changed to brownish-red, rose colour, green, blue, and finally bluish-white. When, hence, states Dr. Schultz, similar colours are produced on a film of iodine of silver which is placed under a coloured picture, then the reason of it is that by the different colours the intensity of the light is more or less lessened. It follows that if this interference is produced by any other means—for instance, by placing an ordinary negative on the film—the same results ought to follow, and the same colours should be obtained under the different thicknesses of the plate; and this is actually the fact. Dr. Schultz obtained on a film of iodide of silver, under a grey negative (*i.e.*, a colourless original), all the colours of the colour scale, and this has indeed given a great shock to the believers that the colours as such could reproduce themselves. Dr. Schultz is of the opinion that all the coloured photographs which so far have been made were more or less products of accident. The solution of the problem of reproducing colours photographically seems to him very far removed, and, indeed, if he is right, there remains very little chance of success, for according to his experiments is the picture which we obtain under a thin coloured film entirely different from the one produced under a thick one. Dr. Zencker, who also has experimented much in photography in colours, does not admit this, and for the sake of photography I hope that he is right; it is so painful to see our fond hopes ruthlessly destroyed.

Many of these questions concerning the future of photography must, for the immediate present, unfortunately, remain unsolved. Following the English investigation, I have recently reconsidered the question of the permanency of the negative plates; it is a very widespread and partially well-founded opinion that the cause of the cracking of the film is partly due to imperfect washing and dampness, and that plate-glass shows a greater tendency to produce this phenomenon than sheet-glass.

Lately I have prepared a number of negatives. They were all taken on plate-glass and made with the same chemicals, with only this difference, that Nos. 1 and 2 were fixed with cyanide, and one plate thoroughly washed, while the other received only an imperfect rinsing. Nos. 3 and 4 were treated in a similar manner with hypo. Nos. 5 and 6 were albumenized previous to coating, and subsequently treated like 3 and 4. In Nos. 1 to 6 the collodion film was removed from the edge of the plate in order that the varnish might protect the picture completely. Finally, two plates were prepared, and fixed with hypo, one well washed, the other one imperfectly, but these two plates were varnished in such a manner that a part of the film remained unprotected.

These plates have been exposed some eight weeks to the dampest atmosphere of my laboratory; they have been daily sprinkled with water, exposed to dust, and changes of temperature; and what is the result? All the plates are now, after eight weeks of exposure, in a perfect condition, the imperfectly washed ones as good as the thoroughly washed ones, the poorly varnished ones as good as the perfect ones. Again a riddle! Let those explain who can!

THE BACKGROUND.

BY FRITZ LUCKHARDT.

THE background is one of the most important accessories of the photographer's studio, and much attention (particularly to the one by Salomon) has lately been devoted to it by the periodicals.

The construction of an even half round background, as well as the half spherical one by Kurtz, in New York, would not only offer many difficulties, but its use will be restricted.

The principal object of the Salomon background is to make the part which is nearest the light side appear darker in such a manner that the face of a person looking towards the shady side of the atelier is relieved by the, in this case, lighter background. These backgrounds require much space, and are not easily removed from place to place, while a smoothly stretched cloth background is easily shifted, and answers many purposes.

According to the illumination and the nature of the model, it becomes very often necessary to employ a lighter or a darker background; it is therefore desirable to possess several, the tints of which are different. The frames should be 6½ feet high, and 5 feet wide, which rest on iron feet 2 inches wide and 1 foot long; the latter are provided with castors. These backgrounds serve, of course, only for busts or three quarter pictures, the height being insufficient for a standing person, and for the latter most ateliers have specially decorated devices. Cloth has, aside from its cheapness, the other advantage that it is not easily injured or becomes spotted, while, when well stretched, and not placed too close to the sitter, the effect is the same.

In order to produce the effect which the Salomon produces at once, it will require a screen 3 to 3½ feet wide. This is placed in such a position to the background as to exclude the side-light, and the shadow of the screen falling on the background produces the gradation of colour from dark to light. By approaching the screen, or changing the obliquity, of course, always back of the sitter, or between the sitter and the background, the most varied effects may be produced, particularly when the position of the background is changed also.

As portraits are generally taken in such a position that the face is turned towards the dark part of the studio, it follows, from what has been said before, that, for instance, with a blonde, the hair appears lighter on the dark background, while the face appears more plastic on the lighter part of the screen. With a dark-haired person this mode of illumination would be less practical, except the face should be turned towards the light side of the atelier. But in order not to expose the head to this loss of modelling, the employment of a stiff piece of Bristol board, about a foot wide, and one and a-half feet high, is advisable; this is fastened to a small head-rest, and can easily be raised or lowered, as circumstances may require. This fixture is placed at the back of the person, on a level with the head at right angles, close to the background, in such a manner that a shadow is thrown, but not higher than the forehead. This will give prominence to the face, while the dark hair is relieved by the lighter colour of the background; with this arrangement the large side screen is not used.

In order that the shadow in front of the face may not be too sharply defined, the upper side of the screen should be rounded off, in order that the separation between the head and background may appear natural.—*Photographische Correspondenz.*

ODDS AND ENDS.

BY J. R. ORIFFITHS.

As the title indicates, the following are only a few "odds and ends" that everybody knows, but what most everyone wants reminding of.

The first odd is, you should never warm your negative before applying the varnish. The end is gained by pouring on the varnish while cold, and warming after; you get a surface not so liable to scratch, brighter, and which withstands damp better.

The second is, try the washing crystals to clean your plates (given in the *PHOTOGRAPHIC NEWS* lately), and the end gained will be, that you have no more dirty plates, or clothes spoiled by nitric acid; and this with one-quarter the expense, less labour, and time, which in these days of cheap photography is a great item.

The next odd is, I thought that the so-called photo-

graphic companies had got to the bottom of the ladder at two shillings and eightpence the dozen, but I find there is a photographer *doing* them at one shilling and sixpence the dozen. It is such things as these that spoil the profession, and make it hard for a good man to get a reasonable price for his work. The end is ruin, undoubtedly.

The next odd is a question: have any of your readers ever tried the varnish with iodine in it for the backs of negatives? I have made vignette glasses for three or four years that way, and find it at last on the backs of thin and over-intensified negatives. It is surprising the good results that can be got with it. I coat the plate, and dry in the ordinary way, and then take off any parts required with a fine brush and a little methylated spirit; it gives a softer edge my way. The end is, you can use up any old hard negatives, and get excellent pictures with a little tact and care.

The next odd is, do not use pyro before fixing; make a developer as follows, or in proportion:—

Iron	...	...	...	12 drachms
Acetic acid	...	...	...	9 "
Alcohol	...	...	...	8 "
Water	...	...	...	36 ounces

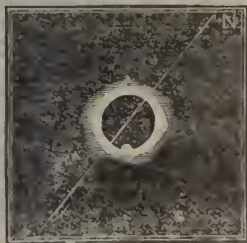
Pour a little in a *sweep from the top of the plate*, and develop until all the detail is thoroughly well out, and then wash and fix. If any intensifying is required, do it now with a weak solution of pyro and silver. The end secured is, a better negative, a better portrait, quicker in working and printing.

Lastly, try all the above you think any good, and if they are so, stick to them.

PHOTOGRAPHING THE CORONA.

BY PROF. EDWARD C. PICKERING.*

THE difficulty in photographing the corona visible around the sun during a total eclipse is mainly due to its small actinic power. To remedy this we must increase the light in our camera as much as possible, and, therefore, when attached to Prof. Morton's Eclipse Party, in August, 1869, I proposed that a common portrait camera should be used. As with such an instrument we can obtain an impression of objects in a comparatively dark room in a few seconds, it seemed probable that in two or three minutes so bright a body as the corona would produce a very distinct impression, even of its more remote portions. We found in Mt. Pleasant, where we were stationed, two photographers, Messrs. Hoover Bros., who undertook to give this plan a trial, and as a result they obtained a photograph which is



represented in the accompanying figure to double its original size. I believe the exposure lasted during nearly the whole period of totality, the apparent motion of the sun being avoided by following it with the camera. The aperture of the lens being much greater compared with its focal length than that of any telescope, so much light is concentrated that an impression of a large part of the corona is obtained, giving one of the best photographs of this body yet taken.

A comparison with the view taken by Mr. Whipple, in Shelbyville, shows many points of resemblance, and greatly strengthens any conclusions based on either. It also proves that the structure common to both is solar, or, at least, not due to any local irregularities in our own atmosphere. The indentation in the moon's limb marks the position of the large protuberance then visible, and we readily perceive the bases of the five points or streamers which were noticed at the same time. The line NS gives the direction of the

* Journal of Franklin Institute.

sun's polar axis, and shows the increased height of the corona at its equator, and the corresponding diminution at its poles. The experiment is so easily tried by any photographer on the line of totality as to encourage the hope that in future eclipses, views may be taken from a great many points with the largest portrait cameras, and thus eliminating all local effects, show with certainty how much of the corona is really solar.

ON KEEPING A NEGATIVE BATH IN ORDER.

BY D. D. T. DAVIE.*

IN my last communication to your valuable journal I gave such advice in cleaning and preparing glass for negatives as seemed to be most practical and best. In this chapter I will endeavour to consider the importance of a good negative silver bath: how to make it and keep it in good running order. In advising my brother photographers in the management of this important part of dark room operations, I do not intend to cram my own peculiar views and notions before them, but glean from the experience of others such practice as seems most feasible. What we aim at in this matter is to get at the best means for reaching the desired end. We want good negatives—those that will print well and quickly; when we have done this it matters not whether it is done by Kurtz's process, or Sarony's, O'Neil's, Brady's or Guruey's.

In the production of the Quartette Test Pictures, the formulas used in those efforts by Messrs. Kurtz, Gurney, Sarouy and Fredericks, [published in the first number of your journal, were very similar, either of which may be adopted with safety, and I am informed that all have been adopted in different parts of the country with invariable success. I do not deem it necessary to change these formulas in the least, nor look beyond them for better. I propose to start out on the basis of those formulas and details, and shall endeavour to make them more comprehensive than there was space to do with them at the time of their publication.

In these formulas above referred to, Mr. Richardson's, for negatives, is more explicit than either of the others; and yet his, although sufficiently explained for those already having a thorough knowledge of negative making, is not sufficiently elucidated for the beginner. Mr. Richardson, in his test formulas, recommends as follows:—

Water	...	...	...	1 ounce
Nitrate of silver	...	...	...	45 grains

with iodide of silver sufficient to make it work well. This is also Mr. O'Neil's formula, as a natural consequence, for Mr. Richardson is the pupil of O'Neil. Mr. R. also recommends boiling down the bath at intervals, and cautions operators to use great care, &c. A doubt cannot arise about the correctness of these formulas, inasmuch as the above-named gentlemen rank first in the dark room, having no superiors in that department. We will, then, adopt Mr. R.'s formula, and endeavour to explain it in detail, so as to make it comprehensible to all.

Mr. R. tells us that in making the silver bath, water is to be used, but does not state what kind of water. It is understood, however, that impure water is not suitable for this purpose. Distilled water is always preferable; but when this cannot be obtained, melt ice and use the water; and if no ice can be had, use rain water. Under all circumstances test the water before making up a bath. The way to make the test is to put one ounce of the water into a graduate, and drop into it one grain or less of nitrate of silver. If the water remains clear, it is pure; but if it turns brown or milky, it is not fit for use. In New York the Croton water is used successfully, and in the country, brook water is often found that will answer. In all cases the water for a negative bath should be boiled, cooled, and filtered before

* Photographer's Friend.

making up. A newly made negative bath, even if properly acidulated and iodized, is often found to work coarse and over-intense, which may be obviated by putting the solution into a clear bottle and standing it in strong sunlight for several days. Before doing this, boil down the solution about one-half, and reduce to proper strength.

Mr. Richardson asserts in his instructions, that much care and judgment are requisite in order to keep the negative bath in proper working order. This has likewise been my experience. After a bath has been in use several days, it becomes inactive from excess of alcohol, iodides, and other foreign substances. To remedy this it becomes necessary to boil the solution down at least one-half, and if very impure, boil down two-thirds, or even three-fourths, as the case may require; using for this purpose, under all circumstances, a porcelain evaporating dish, placed in a tin, copper, or iron sand bath, and set in the griddle hole of a stove, avoiding too great a heat.

If a bath has become extremely impure after once boiling down, let it cool and filter, then reduce it to its original strength, and again boil it down two-thirds; cool and filter, then reduce to its required strength. If it is now perfectly clear or colourless, it will work well; if not clear, it must be placed in strong sunlight several days, or until it is as clear as crystals of ice. After boiling, always cool before adding water, otherwise impurities precipitated by boiling will be redissolved, and the boiling rendered futile.

Re-iodizing is rarely necessary after boiling, yet sometimes it will be required in order to produce the desired rotundity and softness. If necessary, add one fourth the quantity required for a new bath. Iodide of silver is quickly made, and its tendency to change by standing renders it necessary to make it only when required for use. Iodide of silver is formed by dissolving, say ten grains each of iodide of potassium and nitrate of silver separately in two drachms of water, and pouring them together. The precipitate formed is iodide of silver, which when washed in several waters may be added to the bath while wet.

If by some mistake or otherwise the bath has been over acidulated, boil it down to dryness, lastly, over gentle heat, which may be continued as long as vapour escapes from it, or until it assumes a flowery appearance on its surface. When cool, redissolve and make it about 45 grains to the ounce; filter, and again evaporate one-half; then allow it to cool, filter, and reduce properly, and try it. If too much acid still remains, repeat the operation, and, unquestionably, the desired object will have been accomplished.

A bath should never be replenished with new silver when it can be avoided. Adding new silver to a bath causes it to work over intense, and also causes pinholes. Renew the bath with old or stock solution, and add new silver or crystals when boiling, and at no other time. Filter occasionally, but not oftener than is necessary. Never allow the dipper to rest on the bottom of the bath when the plate is coating. To avoid this, attach a hook to the back of the dipper, so that it will hook on to the side of the bath; or make a hole through the dipper, and slip a wooden pin through, resting it on the top of the bath, holding the plate while coating some two inches from its bottom. If these instructions and precautions are adhered to, specks, like angel's visits, will be few and scattering.

Comets! These are awful pests. Where do they come from, and what is their remedy? Dr. Vogel and other eminent writers have exhausted much time in attempting to define and remedy this troublesome pest. It has been mystified and muddled until, like the chain lightning on the film, its amazing, unaccountable, impenetrable mysteries are past finding out. I, however, have the misfortune to differ essentially with the author in relation to the cause of comets. I believe comets result from specks that fly from the mouth while dusting and blowing on the glass, and the remedy is quite as simple as the cause. Stuff the mouth full of cotton or wool, or place an apron over it while blowing on the glass, and you will not be troubled with comets.

RESTORING NEGATIVE NITRATE BATH— LATEST AND BEST MODE.

BY WM. BELL.*

Put the silver solution in evaporator; neutralize acid in it with aqua ammonia, making it just alkaline; boil until solution blackens; thirty minutes' good heating will usually answer. Now let solution cool; filter, and make it acid with nitric acid, C. P., and put the solution again in evaporator. Evaporate to crystallization (not to dryness). When crystallized, put the crystals in a clean glass funnel to drain; then take the mother liquor or silver solution from the drained crystals, and evaporate it to dryness; then thoroughly fuse. When cool, add all the water (distilled) intended to be used in making up the bath, forty grains strong, to the fused silver. A dense precipitate of iodide of silver will take place. Shake well, and set it in the sun to blacken (about two hours if distilled water is used, longer if river water). Filter, and add the drained crystals; dissolve, and make the solution acid with C. P. nitric acid. Again set it in the sun for several hours, then filter through clean filtering paper, for use in making negatives.

This mode of treating a nitrate bath insures a chemically clean solution, perfectly free from any trace of organic matter, and one that will work quick, clean, and for a long time, the negatives produced by it being of the very best quality and intensity. Photographers trying this mode intelligently will never return to the old method.

SOLAR CAMERA HINTS.

BY PROF. D. A. WOODWARD.*

Now that there seems to be an increasing demand for photographic portraits of enlarged dimensions, and as the solar camera is the only apparatus depended upon for producing them, it has become one of the most indispensable adjuncts to every enterprising photographic establishment. Therefore, it is of the utmost importance to know how to work the apparatus to the greatest advantage, and to know precisely the character of the negative to be depended on. I say precisely, because there is no operation in photography that requires so much care as that of producing the negative which is to be used for enlargement by the solar camera. It is true that the same amount of care and skill should be employed in making any negative for the ordinary mode of printing by contact under the pressure frame; that is, as regards the attitude of the sitter, the arrangement and disposition of the draperies and accessories of the picture, and of the distribution of the lights and shadows which enter into the composition, and that greatest of all requisites—expression. But in the negative which is intended to be employed for enlargement, there is something more required in order to produce from it the most perfect results. And herein lies all the difference that exists between good and bad solar camera work. In fact, all I may say, depends upon the negative, that the delicate half tints may be preserved, and nothing lost in the resulting print, which the skilful operator has expended so much time, study, and care to produce in his negative. We must not expect satisfactory results in the use of the solar camera unless we comply with its requirements.

The negative should never be of so dense a structure as to appear semi-opaque, and although the most exquisite result might be secured from such a negative from under the pressure frame, yet, on account of its opacity, might be utterly useless when placed in the solar camera. The experienced operator should have his negative transparent and perfectly clear in the deepest shadows, and of a delicate structure in the film. No thoughts of redeveloping or intensifying should be entertained by him for a moment, and as for varnishes upon its surface to destroy the beautiful and delicate structure of the collodion, it would render his nega-

* *Photographer's Friend.*

tive useless, unless, indeed, the picture is intended to be afterwards painted in oil by the artist. But even then, why tax his time and patience in order to recover that which has been lost by improper treatment in the negative?

Those who are not fortunate enough to possess their own solar camera, as a matter of course are compelled to send their negatives frequently a considerable distance to have their printing done; and it is no uncommon thing for those who make "solar prints" (as they are called) for the trade, to receive, carefully packed, per mail or express, from those who are not familiar with what is required, negatives for enlargement which, as they suppose, are just the thing, but who afterwards discover that the resulting print is just the opposite of that which their imagination had fondly anticipated; and the unfortunate printer for the trade must suffer anathemas unqualified, for the miserable abortions, and the innocent solar camera itself frequently comes in for a full share of condemnation from the chagrined and disappointed photographer, who probably had vainly dreamed of the great pleasure and satisfaction he was about to produce on the mind of a customer. The disappointed photographer must learn that a certain delicacy in the collodion film is absolutely required on which the transparent negative is to be produced; that ordinary card negatives, redeveloped and intensified, are unfit for the purpose, without rendering them still more useless by covering the surface with a villainous mixture of varnish, which, in the course of time, often becomes about as transparent as a piece of leather.

Again, frequently, when the picture is to be considerably enlarged, the negative is reduced down to the size of a one-fourth or a medium, with the head of his subject so infinitely small that the poor printer's patience becomes quite exhausted before old Sol has half done his work. And when the print is fixed, toned, washed, and dried, it is carefully enclosed in a suitable package and forwarded per express to the anxious photographer, who, to his utter astonishment, discovers that the picture is anything but the apparently well defined and sharp image which he saw in his minute negative, and down comes his ire upon the solar printer and solar cameras generally. By a little consideration in the right direction he would find that his negative was in fault, and although appearing to his well trained eye sharp and well defined while in its diminutive proportions, yet, when subjected to the process of enlargement, it may prove to be anything else. Much trouble and disappointment could be avoided at all times by carefully focussing, and by never trusting to the naked eye in performing that part of the operation, no matter how high an opinion he may entertain of the correctness of vision. Never attempt the experiment of reducing the size of the negative simply because the image may appear sharper and better defined, as though the only object was to test the power of the apparatus. A negative for a bust picture, for instance, should, if possible, be either on a half size or 4-4 plate, and the size of the head never less than from one inch to an inch and a-half in length.

In order to prevent disappointment in another way, it should always be borne in mind that no solar camera can operate without sunlight, and the work from the printer should not be expected when the sky is covered with clouds, or during a protracted rainy season. Impossibilities should never be expected. Photographers should be reasonable, and then harsh epithets and bitter words will be spared innocent parties. They should remember that the printer for the trade has no influence whatever at the weather office; but he must—as all of us do—take the sunshine and rain; the bright sky and the clouds. And above all, they should cultivate a spirit of kindness towards their brethren who are trying to act well their part in the progress of our beautiful art. Failures may not always be attributed to the negative, for although the solar camera may be made to produce effects greatly to be admired, it is often abused by improper manipulations in the hands of those who are

inexperienced. It is not to be supposed that all photographers should be experts in the laws of optics, but still they could and should make themselves familiar with certain conditions of the apparatus which will at all times produce the most favourable results.

But this leads me to the subject for another article, which at some future day I may write, as it relates to the best and most favourable mode of using the solar camera.

Correspondence.

COLLODION AND DEVELOPER.

SIR,—Many a useful hint have I gathered from your publication, amongst others the art of making my "own collodion." I find it so sure and certain in its results, that if you will permit me to give the recipe to my brother amateurs through your NEWS, I shall be glad.

I must tell you I had been two years trying different component parts before I succeeded in producing an article which I find A1. Having to take my prisoners as rapidly as possible, I am now suited to a T. The formula is this. For collodion—

Gun-cotton	...	...	...	1 ounce
Ether	...	...	...	36 ounces
Alcohol	..	...	...	12 "

Mix.

For sensitizer—

Absolute alcohol	...	..	...	3½ ounces
Ether	...	...	...	10 "
Bromide cadmium	...	...	...	30 grains
Iodide of cadmium	...	...	...	60 "
Iodide of ammonium	...	...	...	60 "

Mix one part of iodizer to three of the collodion.

Developer—

Ammonia proto of iron	...	...	...	20 grains
Glac. acid...	...	...	...	20 drops
Formic acid	...	...	...	8 grains
Water	...	...	...	1 ounce

I have sent you a small bottle, which I hope you will do me the favour to test. I can secure capital pictures in five seconds (see enclosure). I tried nearly all the collodions in the market, and was at last driven to your NEWS to provide for myself.—Yours faithfully,
AN AMATEUR.

[We shall hope for an early opportunity of fully testing the sample of collodion forwarded by our courteous correspondent, whose examples of work have always been fine. One now forwarded is excellent.—ED.]

PHOTOGRAPHERS' ASSISTANTS.

SIR,—Mr. D. Welch still persists in libelling the profession. He has had assistants as bad, or *little* better than the one he described. At least we have got him to qualify his first expression. Before I reply, I must, at the risk of being thought personal, and getting a rap from you, Mr. Editor, say his letter is very like a lady's or an Irishman's. He begins one subject, then runs off the rails, as the Yankees say, to give a lesson on posing, which is really very good, and will, no doubt, be useful to some employers as well as assistants, and proves him to be a master in the art; but he has not been able to write it before, through not being able to get a suitable assistant. Now, I should like Mr. Welch to tell us what is his idea of a good assistant? What does he expect him to do? And then I will ask him one or two more questions.

The pith of the controversy between Mr. Welch and myself is this. He says assistants, as a rule, are bad; I contend, on the contrary, they are not, but where good work and good pay go together, taken on the average, they are equal to the masters. I might retort, and say good employers are the exception, for one half of them do not understand the profession as they should do, and the treatment we assistants get from some of them is enough to drive the good ones out of the business, or make them open small studios of their own, to the lowering of prices, doing of work in a hurry, and, as a consequence, bad or indifferent, and lowering the art in the eyes of the public.

Why is it that we never hear of the gentlemen of note, such as Messrs Elliott and Fry, Mr. Blanchard (who, according to the writer of 'My Portrait,' has such confidence in his assistant

as to take a plate from him without trying if it is clean? Messrs. Williams and Mayland, Faulkner, England, Bedford Brothers, Mudd, Eastham, Lafoss, Keith, Vandyke and Brown and a host of others, complaining that good assistants are the exception, not the rule? Is it because they are too busy to do so, or can it be that they pay good salaries, and so secure good workmen, and, when they have them, treat them as gentlemen should do?

Is it charity to suppose that Mr. Welch has not visited us English photographers of late, and has not been to our exhibition, or read his NEWS regular, so does not see the improvement that has taken place in the art and its workers, and that there is a prejudice among first-class men to living in a small town like Newry, so really good ones do not apply when he advertises, or what is it that makes him so unlucky in his assistants? At any rate, I, for one, cannot believe good ones are the exception, and when I see a man always advertising for them I put him down as in fault, for they cannot be all bad.

I have been in situations where I was unfavourable compared with my predecessor, and in others thought better. I have been in some from six, nine, to twelve months, others two, three, and nearly four years, one six weeks, in another I gave a month's notice the first day I was there. It is not always the assistants that are to blame.

Mr. Welch's idea of getting youths from the schools of art is very good; but how many prodigies are there such as he describes, and how many are willing to become photographic assistants? I do not pretend (or anyone else, I should think) to say that education is not required, not only in our profession, but in every walk of life. I am but a young man yet, and hope to see the day when every child shall at least be able to read and write his mother tongue properly before being put to any trade or profession; I suppose that will come about when the school boards have done talking, and get to work. Yet, still I know some very good and careful operators that are hardly able to read or write their own names; but their eyes are educated—there is the rub. We are not all born to roach the top of the tree, for I know others, well educated men, and their photographs are things to be avoided. It does not require a vast amount of education to be able to put an ounce of iron in a pint of water, or a drachm of pyro, or to mix a silver bath, fixing, &c., and it is generally in that manner the preparations are mixed: some very good men do not even take the trouble to weigh or measure at all.

In conclusion, I repeat, I should like Mr. Welch's definition of a good assistant. Also, thanking you for the last able article on the subject, with which, I am sure, all my brother assistants must agree; also, Mr. Smith for his very serviceable letter in a former number, which gave me great satisfaction to find I had an ally,—I am sir, yours respectfully,

A LITTLE PHOTO.

PS.—I should have written this last week, but press of engagements prevented my doing so until too late for publication.

BLACKENING TRANSPARENCIES.

SIR,—I find in a contemporary the following method described for blackening transparencies, but having tried it, and failed, I shall be glad if you can inform me whether it is my own fault, or the recipe is wrong:—"Use 1 oz. distilled water, 20 drops protosulphate of iron, 12 grains nitrate of potash, $\frac{1}{2}$ drachm of spirits of wine. Pour the above over the plate, it will turn it white; now wash it well and put it into a weak solution of hyposulphate of soda."

If you can tell me where I am wrong, or give me a good method, I shall be truly obliged.—Yours truly, LANTERN.

[There is clearly an omission in the recipe forwarded: bichloride of mercury, about twenty grains, was, no doubt, intended to be added to the solution of iron and potash. Neither of these is important, but the mercury is. A solution of bichloride of mercury, followed by hyposulphite, gives a good black; and richer, warmer black is obtained by using a dilute solution of sulphide of potassium instead of hyposulphite. A one-grain neutral solution of chloride of gold applied to fixed and washed transparencies produces a fine permanent black.—ED.]

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE usual monthly meeting of this Association took place on Tuesday, the 25th inst., at the Free Library, William Brown Street, the President, Mr. T. HIGGIN, in the chair.

The minutes of the previous meeting were read and passed.

Mr. GREEN suggested that in the preparation of the collodio-bromide emulsion it might be found convenient to use all the alcohol of .805 specific gravity, and use such a quantity of water for dissolving the nitrate of silver as would reduce half the alcohol to a specific gravity of .825. He (Mr. Green) stated that about twenty-four minims of water would convert one ounce of alcohol .805 into .825 specific gravity. He also drew the attention of members to the different modes of washing the collodio-bromide plates prior to applying the preservative adopted by the leading workers, and thought it would be instructive if the members present would give the result of their experience.

Considerable discussion ensued on the subject, some members washing for a few minutes only, others for an hour or more—all using cold water.

Mr. GREEN then suggested the use of hot water, as originally proposed by Mr. Sayce in 1865, believing that greater sensitiveness and better keeping qualities would result, owing to the collodion solvents being more effectually expelled.

Mr. WILSON had not tried warm water, but strongly recommended that the plates should be well washed before applying the preservative.

Mr. ROBERTSON spoke very highly of Mr. M. Carey Lea's process with the cochineal preservative. He had been trying it lately with much success, the plates being quite as sensitive as wet collodion.

Mr. ATKINS exhibited a collodio bromide plate, with a peculiar mottled appearance, which had troubled him very much of late, and desired that a remedy might be suggested.

Mr. COTTON thought the addition of ether to the mixture would set all right, the collodio-bromide being evidently too thick.

Mr. HENDERSON exhibited some exquisite stereoscopic views of American scenery by Messrs. Anthony and Co., of New York, and others; also an $8\frac{1}{2}$ by $6\frac{1}{2}$ landscape by Mr. Carey Lea—all of which were greatly admired by the members present.

The PRESIDENT exhibited a beautiful little "Powell's stereoscopic camera," made in 1853, which was remarkable for its portability and excellent workmanship.

Mr. WHARMY presented four views of Lydiato Abbey and Lydiato Hall for the Society's album.

Mr. COOKE asked if anything had been done about the presentation prints for this year? and the Secretary was requested to take steps to procure specimens to select from.

The meeting was shortly afterwards adjourned.

Talk in the Studio.

AN AID TO MOUNTING.—A correspondent, Mr. Griffiths, Swansea, sends for our inspection Forrest's Express Mounting Apparatus, which he thinks a great boon to photographers. It consists of a roller and handle, and a piece of sheet india-rubber. The latter is placed over the print when applied to the card, and the roller then passing over the piece of elastic padding readily presses down the print evenly and firmly.

HÆMATOXYLINE AS A DEVELOPER.—Mr. Carey Lea, in our Philadelphia contemporary, reclaims the discovery of the substance as a developer recently accredited, doubtless inadvertently, to another gentleman. Mr. Lea says:—"The number of substances capable of developing the latent photographic image is so very limited, that much interest attaches to the possession of this remarkable power. A few years ago I discovered and published the fact that hæmatoxyline possesses this property. About a year afterwards Dr. Jabonski published the same fact as new. . . . I see that the same discovery has been again brought forward, both in Germany and this country, and attributed to Dr. Jabonski."

PHOTOGRAPHING CRIMINALS.—In the report just issued by Col. Henderson it is stated that from various causes the value of

photographic identification has not yet been fully realised. He says:—"It should be borne in mind that the department has been in existence for little more than twelve months; and that the earliest photographs transmitted with the returns of criminals were not received until March last. Indeed, several prisons have only commenced to supply photographs during the last three months, and by the twelve undermentioned gaols no photographic likenesses are yet furnished:—Aylesbury, Bridge-water, Bury St. Edmunds, Carlisle, Montgomery, Petworth, Preston, Reading, Shrewsbury, Shepton Mallet, Taunton, Wall-sall. The absence in many instances of photographs and of any particulars as to distinguishing marks, both in the descriptive form of inquiry made to the registrar by the police, as also in the returns of criminals furnished by the governors of gaols for registration, necessarily often renders it difficult to provide distinct proofs of identity. It is, however, confidently expected that a more general use of photography, the exercise of greater care in observing and noting any peculiarities in the personal appearance of prisoners respecting whose antecedents information is sought, and the cordial co-operation of the police and prison authorities of the kingdom with the Central Registrar Office, will lead to the frequent identification of old offenders. Many prisoners have been identified by means of their photographs, and former convictions proved. Occasional use has been made of photography in special cases with good results, and the system recently established of visiting prisons has given the detective officers a good knowledge of thieves."

FRESH PAINT.—A correspondent of the *Photographer's Friend* says:—"Several days ago my rooms were crowded; my chemicals were in excellent condition; I had taken four negatives and several positives, when all at once a fog set in. It was not a regular fog either; it resembled more the working of very new collodion. I changed collodion and changed baths, but still my trouble increased. I had three families with children from two to six years old waiting to be grouped standing. Just then the dinner bell rang, and the old Latin maxim (*festiux contæ*), make hasty slowly, came to my mind. I excused myself, and went to dinner, more to think than to eat. When I returned and entered my dark room I noticed a strong smell of fresh paint; upon examination I found all the joints of a new sink I had put in that morning stopped with blue paint. I shoved back my curtains, raised the window, and pitched sink, paint and all, out into the alley. After airing the room a few minutes, I took in a new bath and all was well again. Moral—keep fresh paint out of your glass and dark rooms."

ANOTHER AID TO INTENSITY.—A correspondent of the *Philadelphia Photographer* says:—"As a black background gives more intensity to the portrait than a white one, would it not be well to use half-size glass for all card negatives, masking in the camera to nearly the desired size for trimming, thereby giving a large margin of unreduced silver to act as an intensifier, and at the same time give clean margins to negatives? I am something of an old foggy, and redevelop sometimes, and this I find a good way to 'whip the devil around the stump' and get the effect of redevelopment, without the name, which is a great consideration with some men."

HOW TO MAKE A BACKGROUND.—A correspondent of the same journal says:—"Noticing a new background advertised lately, I give you the following description of one used by me since October, 1869. It consists of a very light circular frame, strengthened with two cross pieces and a block in the centre, in which a hole is made large enough to admit easily the rod of the head rest. My background is painted in oil, and sanded, the depth of colour varying from light to very dark, the lightest part a little to one side of the centre. Around the back edge of the circular rim I have driven small pegs, and when the background is turned so as to give the effect desired, a small weight is attached to the lowest peg; this keeps the background in place, and avoids the incumbrance of an extra head-rest upon which to hang the frame, thus saving room, besides being more convenient."

HOW TO USE AN ALKALINE BATH.—Mr. C. J. Billinghamurst, in the same journal, says:—"The question was asked some time ago whether an alkaline bath had ever been used successfully or not. I can answer in the affirmative. For about six months my practice has been to add a little sal soda once a week, and set it in the sun. The bath was made slightly alkaline at first when new, and has not yet had a drop of acid in it, and has

never shown any signs of fogging. I have used it for negatives and positives."

ALBUMEN FROM BLOOD.—It is stated that albumen is now produced on a large scale at Pesth, Hungary, and in North Germany, from the blood of animals. The serum separating when blood coagulates consists chiefly of albumen. The best quality of albumen thus obtained is transparent and soluble in water, and is used for mordanting yarns and cloth. At Pesth, blood is dried in flat iron pans, by exposure to air at a temperature of from 100° to 112° F. From 3,000 pounds of blood about 110 pounds of albumen are obtained, at a cost of \$29; 16,200 eggs would yield the same amount of albumen, at a cost of \$96. Although the cost of egg albumen is three times as great as that of blood albumen, the former is preferred for dyeing purposes, on account of its purity. Blood albumen of a second quality, darker in colour, but nearly all soluble in water, is used largely in the process of refining sugar.

SILVER REFINING.—Dr. F. Gutzkow, late manager of the San Francisco Assaying and Refining Company, has recently described to the Chemical Society, Berlin, a new method of silver refining, which he discovered and introduced in California. In the old process silver was reduced from dilute sulphuric acid solutions by metallic copper; but the increased production of sulphate of copper as a bi-product of many manufacturing processes rendered this method a very costly one, on account of the difficulty of selling the blue vitriol without loss. The plan Dr. Gutzkow at length adopted was as follows:—He dissolves the ingots in hot concentrated sulphuric acid, and then pours his hot turbid fluid into a cast iron cauldron, containing dilute sulphuric acid, sp. gr. 1.617, heated to 110°. When the liquor has become clear, it is siphoned off into another cauldron, and cooled by water externally applied. At the bottom of this vessel a yellow-coloured crystalline mass of sulphate of silver will be found deposited. The sulphate of silver is then removed with iron shovels, placed in a lead-lined box with a perforated bottom, and a very concentrated solution of proto-sulphate of iron (green vitriol) poured upon it. A portion of the silver will be carried through with the iron solution and deposited in a spongy state in the vessel placed to catch it, but the greater portion of the crystalline sulphate of silver is converted into a dense coherent mass of metallic silver, which when washed and pressed is fit for the crucible.—*English Mechanic.*

PHOTOGRAPHS OF THE INTERNATIONAL EXHIBITION.—A correspondent of the *Standard* says:—"I lately travelled a considerable distance in order to visit the Exhibition, and was anxious to take home with me to the Isle of Skye some photographs of its contents. But, to my dismay, none were to be obtained at any of the stalls. This is to me the more amazing because I had seen some admirable photographs which had been purchased there. The mystery is why the sale of them has been suddenly stopped. I can get no explanation of this from the Exhibition authorities; but doubtless, sir, through your instrumentality, by the publication of this letter, the blunder may be remedied. I assure you the subject causes general complaint amongst country visitors, and deeply mortifies yours sincerely."

VELOCITY OF LIGHT.—Dr. J. J. Muller, physical assistant to Prof. Ludwig, who in 1870 communicated to the Royal Society of Saxony an account of a new method of demonstrating and measuring the increase of velocity of transmission of sounds, caused by an increase in their intensity—viz., by means of a modification of Kundt's lycopodium figures in glass tubes—has lately been investigating the same phenomenon in the case of light, and has come to some very remarkable results, which he gives in the *Berichte der Kon. Sachs. Ges. der Wissensch.* of Feb. 11. The light used was that of a vapour ignited in a Bunsen's burner. This light was split up by means of a prism, the spectrum obtained from which was allowed to fall upon a vertical screen. On the screen was a slit, through which a single spectral line was allowed to pass. A real image of this line was cast, by means of a lens, on the hypotenuse face of a small reflecting prism, which was placed in the focus of a collimator lens, beneath which was an interference apparatus for obtaining Newton's rings. Between this apparatus and the collimator lens cross threads were stretched. In the first series of experiments made, a bead of a sodium, lithium, or thallium salt was first held on the outside of the Bunsen's flame, and then pushed into it, an increase of intensity in the light

being thus obtained. It was found that when the bead was pushed into the flame a movement of the Newton's rings was obtained, which showed an increase in the wave length of the light in question. This movement was partly due to a small decrease in the mean refrangibility caused by an increase of the quantity of ignited vapour observed. Dr. Muller has found that when the amount of vapour is increased, the lines broaden themselves out more towards the less refrangible side. This fact he has verified in the case of the sodium, lithium, and thallium lines. Prof. Zollner has since succeeded in making the same observation in the case of the sodium line with a simple reversion spectroscope. These results are in agreement with the observations of Hennessey: that at sunset the atmospheric lines of the solar spectrum broaden themselves out more towards the less refrangible side. This fact is of great importance in the determination of the velocity of motion of the stars by their spectrum. If the position of the centre of a dark spectral line is dependent on the mass of absorbing vapour, this fact must be taken into account in the calculation. The amount of the alteration in the different spectral lines produced by an increase in the amount of vapour will be a variable one, dependent on the various qualities of the several vapours present, whilst that produced by a movement of the source of light on the successive lines will be a determinable one, since that movement depends on wave length. In order, therefore, to make certain that a change in position of lines is due to motion of the source of light, the velocity arrived at from the displacement of several different lines must be found to be the same. No certain result can be obtained from the observation of one line alone. As a part of the movement of the interference lines in the first experiments was found due to the increase in quantity of the ignited vapours, another series was made, in which this amount remained constant, but the amount of light observed was varied by means of absorption with smoked glass plates. The light of glowing hydrogen in a Geissler's tube was also used, a rheostat being introduced into the electrical circuit, so that the intensity of the induction stream could be varied at pleasure. In each case an increase of wave length was found to be caused by an increase of the intensity of the light; that is to say, an increase of the velocity of transmission of light is caused by an increase in the *vis viva* of its undulations. In the case of the sodium line, a change of intensity in the proportion of 1:3 produced a change in wave length of 0.000005 of its actual magnitude, a change of 1:10 an increase of 0.000010. In the case of the red hydrogen line a change of 1:3 gave an increase of velocity of 0.000004, in that of the blue one of 0.00002. The increase is thus larger in the case of the greater undulations. The same result has been since obtained by Dr. Muller by a very different method. An account of his experiments will shortly be published.—*Academy.*

To Correspondents.

A SITTER.—Where the boots in a photograph, owing to their high polish and the position in which the feet happen to have been placed, come out white, it is desirable that a photographer should remove the defect by a little judicious touching. It is not necessary that the sitter should wear unpolished boots, for a slight difference in the position of the foot would have prevented the bright reflections from being thrown direct into the camera.

WELLWISHER.—Your mode of making a bath will doubtless answer pretty well. We generally make the bath about 35 grains strength, add from one to two grains of iodide of potassium to each pint, and try a plate. If it fail to work clean, we add a few grains of bicarbonate of soda, shake well, sun for a few hours, filter, and again try; and then, if necessary, add a drop or two of nitric acid.

E. W. MARDALL.—We understand that Col. Stuart Wortley will supply the small sizes you require. 2. Flooding the collodionized plate with silver solution by pouring it on instead of immersing it in a bath issues in stains and irregularities. An aqueous solution will not flow evenly over a collodionized surface. The use of a small quantity of solution in a dish has been tried with advantage. The dish is tilted so as to cause the solution to run to one end, the plate laid in the dish face upward, and the solution then allowed to flow over it, just sufficient solution to cover the plate being used.

G. ADAMS.—The triple, as a rule, is too slow for group work in a studio. The D lens or rapid rectilinear of the same maker is better. Have you tried your portrait lens with a stop?

JOHN STONE.—We have noticed the purple stain or marking in dry plates developed by the alkaline method. We have not come to a certain conclusion as to its cause, but as the plate generally shows a metallic iridescence at the back when it occurs, we are disposed to attribute it to some want of perfect cleanliness in the plate, and pushing the development with ammonia.

T. H. R.—Thanks. We have noticed the recommendations in Col. Henderson's report, but have not seen any fresh order from Government. Has any been made?

R. L. M.—After the various doctorings you describe, you had better throw your bath into the waste, and make a new one. Much depends on circumstances as to how long a bath ought to keep in order. We have before now worked one for years, merely replenishing from time to time with fresh uniodized solution; but if a bath be hopelessly out of order, it is not of much use to consider how much longer it *ought* to have worked well. 2. You have incidentally mentioned the cause of your necessity for long exposures: the old brown-looking iron developer, which gives you such clean shadows, has lost much of its developing quality, and hence you are compelled to give long exposure to compensate for lack of development. Make a new developer.

B. F. R.—Our correspondent asks too much. To make his three samples of pyroxyline into collodion, and try each bath for landscape and portraiture, would occupy much more time than we can possibly devote to the matter. Our aim is to give our readers information which may enable them to experiment for themselves, and not to experiment for them. We shall be glad to give you our opinion on the results of each sample when you have tried them yourself.

P. N.—The yellow and brown mottled stains are due to imperfect fixation. Your hypo bath has been old or weak, or the prints have stuck together so as to prevent the solution getting freely to each print. The stains would appear in washing, drying, or mounting. There is no mode of improving these. Use a strong fresh solution in future, and keep the prints well moved about and turned over whilst in the fixing bath.

R. G.—Nitrate of soda or potash is not added to the negative bath, but to the printing bath. In an old negative bath an accumulation of nitrates of cadmium, ammonium, and other bases will often be found. These are formed by double decomposition in exciting the plate. Silver leaves the nitric acid and joins the iodine in the collodion, and the cadmium or other base which was associated with the iodine joins the nitric acid which the silver has left, so forming the various nitrates in the bath.

G. E. C.—The Woodbury Photo-relief Printing Company's establishment is at Hereford House, Brompton: and some of their assistants work the process in the International Exhibition. There is no other firm in London working the process.

C. C. F.—There are several faults in the construction of your studio, the chief of which is deficiency of side light. We should make the north-east side all glass, with the exception of the opaque part at the background end. The erection would be improved by raising the ridge two feet. We should stipple the whole of the roof on the south side, and cover up with blinds generally the side light on the same side. If you had sent us one or two examples of the bad lighting, we could possibly have offered further hints.

S. G. B. W.—As we have not seen or tried the preparation in question, nor the instructions for its use, we cannot very well help you in the matter. There are two ways of applying albumen solutions to plates: one consists in spreading it on the dry plate with a sponge, a piece of wood, or a flat camel-hair brush; in the other the plate is first made wet with water, and the albumen solution is then poured on. In either case a little care is required, but it is not difficult after a little practice. 2. We do not know whether Col. Stuart Wortley will supply his collodio-bromide to the public or not; at present only his plates are announced for sale. You will doubtless ascertain by reference to his advertisement.

ERRATUM.—In Mr. Truscott's article in our last on improving negatives, a slight error occurs on top line, second column: the word "with" (in brackets) should be "without."

F. LANE.—Thanks. We will note the fact.

J. R. GRIFFITHS.—Thanks.

Several Correspondents in our next.

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15 Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.



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COL. STUART WORTLEY'S COLLODIO-BROMIDE PLATES.

WE have within the last few days exposed and experimented with some of the collodio-bromide plates prepared by Col. Stuart Wortley, which he was good enough to submit to us for testing purposes. The plates in all respects justified the impression we have already recorded. As we, as a rule, prefer full exposures, we gave the first plate about double the time we should have given to a wet plate under similar circumstances, which was still under a minute, the light being good. To our surprise, the negative was considerably over-exposed, a phantom image quickly appearing under the application of the pyrogallie solution alone. This, we remark in passing, which is regarded as a desirable if not a necessary condition with some dry plates, is regarded as by no means important by Col. Stuart Wortley in working these plates with his method of development. We have seen plates, in his hands, which showed no trace of an image whatever after remaining some time covered with the plain pyro solution, start rapidly into developing action on applying the ammonia, detail in abundance, and satisfactory vigour, being quickly obtained. The soaking action of the alcoholic pyro solution, although producing no visible result, has a very specific value in aiding the rapid development after the application of ammonia. In our case, where a thin image quickly appeared on applying pyrogallie acid, we regarded it as indicative of over-exposure. The bromide and ammonia were at once added, and a good negative, very soft, and full of detail, was obtained almost as rapidly as a wet plate could have been developed. The next plate received an exposure as nearly as possible the same, by estimation, as wet collodion would have received, and yielded a fine negative.

In development we adopted precisely the course followed by Col. Wortley, as described in our last issue, and find it just as simple and satisfactory in our own hands as it manifestly was in his hands in the various experiments we have seen in his studio. With reasonable care there appears to be no possible risk of failure or difficulty. The plates develop with a remarkable evenness and freedom from stains or irregularities of any kind, and intensify, when necessary, easily and satisfactorily after fixation, on application of a slight dose of acid pyrogallie solution and silver. The deposit is of the fine non-actinic greenish smoky tint we have before described, singularly fine and free from granularity or crystalline character, which photographers so well know as yielding harmonious and rich prints.

In referring to relative exposure some difficulty necessarily occurs in precision of statement. We have not stated the number of seconds, because such a statement

means little or nothing unless all the other conditions of lens, light, and subject could be accurately stated. Suppose we say the exposure was thirty seconds, with a triple lens of seven inches focus and three-quarter inch stop, moderately good light, foliage partly in sun and partly in shade. This may convey some idea to some readers; but at best it is far from precise, as "good light" is a very variable thing under the best circumstances, and during the recent changeful weather it has been variable beyond statement. The report that the exposure bears such and such a relation to that of wet collodion is more nearly precise, for although different samples of wet collodion worked under different conditions vary somewhat, the statement affords some approximate idea. The collodions of various commercial makers worked in reasonably good conditions of ripeness, of nitrate bath, and of developer by the majority of portraitists supply a standard sufficiently definite to enable photographers to speak of relative exposure without much ambiguity, and hence we think that it is a better mode of estimating the sensitiveness of dry plates to state their relation to such a standard than the plan occasionally adopted of mentioning an exposure of a certain number of seconds with all the precision possible in relation to lens, light, and subject.

A SIMPLE MODE OF REPRODUCING NEGATIVES.

IN the course of our recent experiments with collodio-bromide plates we have hit upon a very simple method of reproducing negatives, which, so far as we can judge at present, promises very specific practical value. A collodio-bromide plate, having been exposed a few seconds under a negative to a dull diffused light, was developed by alkaline solutions in the manner above described, and yielded a very fine transparency. After well washing, it was flooded with nitric acid, which rapidly dissolved all the reduced silver, and left a negative image of bromide of silver. This was thoroughly washed, taken into the light, and intensified with pyrogallie acid solution and silver, and then fixed.

The principle upon which this operation is based is not unfamiliar to our readers, although this application is, we believe, new. The image produced by means of alkaline development upon a collodio-bromide plate is formed entirely from the bromide of silver in the film, which is reduced by the joint aid of light and the developing agent to the state of metallic silver. This metallic silver is, of course, soluble in nitric acid, and when the developed image is treated with nitric acid, all the reduced silver is at once dissolved, leaving a reverse image in bromide of silver, which is insoluble in nitric acid. The experiment

of producing a transparency by treating a negative with nitric acid has often been described, and the transparency so produced is exceedingly delicate and beautiful; but the process is too expensive for general application. When a good negative is obtained, it is too valuable to sacrifice to produce one transparency, and hence the process was not likely to have any extensive application; but as a means of reproducing negatives the process bears altogether a different aspect. The negative is not sacrificed in the process, and a new negative is obtained by one operation. The transparency is, of course, an exact reverse of the negative, and when treated with nitric acid it leaves an exact transcript of the original. The minute perfectness and delicacy of the copy are something marvellous in their perfection, and the freedom from coarseness, granulation, halo, exaggeration, or omission of any kind, are most admirable. The literal perfectness of the fac-simile, and the exceeding delicacy of the reproduced negative, leave nothing to desire.

A little practice will be necessary to work out the best conditions of intensifying. The image at first obtained consists entirely, as we have said, of bromide of silver, the gradations being formed by the varying thickness of the layer left after the nitric acid has dissolved away the image of reduced silver. This image is thin and exquisitely delicate, requiring, of course, intensification to give it printing value. After the application of nitric acid we found the image somewhat difficult to intensify, having been probably insufficiently washed from the nitric acid. The next plate we tried was submitted, after dissolving the reduced silver by nitric acid, to the alkaline developing solution, and after washing, pyro and silver applied, and in this case intensity was obtained without difficulty. At present our experiments have been limited, and will require more extended repetition to determine all the best conditions; but we believe that this method presents the best and simplest plan yet devised for repeating a negative the same size as the original.

VARNISH FOR RETOUCHEE NEGATIVES.

At a recent meeting of the Berlin Society for the Advancement of Photography, Dr. Vogel exhibited some negatives which had been protected by a newly-devised varnish brought forward by M. Dauthendey, Wwizburg. It is stated to be composed of eopal and amber, and for this reason great permanence and durability are claimed for it. The negative is treated with a two-fold layer of lac, it being, in the first instance, covered with matt varnish, whereon to retouch, and afterwards with another material of a more brilliant character. M. Dauthendey writes as follows regarding his invention:—

“To produce a firm matt film upon a negative, it is necessary that the same should be coated, after washing, with a solution of gum (4 grammes of gum dissolved in 100 grammes of water). When dry, the matt varnish is applied (cold) evenly all over the plate, the superfluous liquid being allowed to drain back into the bottle. The plate is allowed to dry at an ordinary temperature, in a locality sheltered from the dust, and is then warmed over a spirit flame to increase its hardness. It is now ready for retouching. If, as in the case of large heads, it is desired to produce a somewhat coarse grain, it is well to coat the negative twice with the matt varnish, allowing the surface to dry perfectly after the first application. If the gum solution has not been evenly applied, slight stains or other defects are sometimes to be seen when the matt varnish is put on, but these disappear upon the final varnishing.

The fine matt film allows of manipulation as readily as paper, and may be worked upon with pencils, indian ink, brushes, or stumps, as also with brasing needles. For retouching with lead pencils, three descriptions may be

recommended, viz., Faber's No. 2 and No. 3 of ordinary black lead, and No. 1 BB of Siberian graphite. Of particular value is the employment of stumps with graphite, a method of retouching which could not previously be employed with ordinary brilliant varnishes. Whole surfaces may in this way be equalized and toned down, clouds sketched in, and hard patches softened down.

“For the manipulation of large surfaces I employ leather stumps, and for smaller ones implements of cork stuck into a chalk or penholder. To obtain darker tones with the stump and graphite, I moisten the point of the former with oil of turpentine. The levigated Siberian graphite I obtain from the firm of Frederick Bruuch, of Nuremberg, but it may also be prepared from the softest Siberian pencils of Faber.

“The matt varnish may also be employed for the rapid and cheap production of matt glass, suitable for transparencies and stereoscopic pictures, as also for focussing screens. To imitate ground glass in this way, the surface must, in the first instance, be well cleaned, or, better still, covered with a preliminary coating of thin normal collodion.

“To impart transparency to the negative, a coating of brilliant varnish is applied, which shelters the retouching from any damage. This second varnish is likewise applied cold, but as it contains a large quantity of ether, it is necessary to be somewhat rapid and skilful in its manipulation. Further retouching may, if necessary, be carried out upon this second varnish, but under no conditions must this be applied to the collodion film in the first instance, as the latter would probably be dissolved away, and the picture destroyed.”

The varnishes were well spoken of by some of the members of the Berlin Society.

PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.

THE visitor to the International Exhibition, interested in examining the novelties in photography which have been contributed, is enabled to enjoy some of the delights of the chase. After examining the fine examples in the department of the gallery in the Albert Hall set aside for the photography of all nations, the bulk of the contributions in which, having been exhibited before, will not detain him long, he will find some very fine Continental photographs, and some capital artistic photographic studies by an English amateur, in another part of the same gallery. He will next, as we have before pointed out, find some of the finest foreign contributions in a corridor behind the refreshment department. Having examined these, he may, naturally enough, fancy he has exhausted the photographic treasures of the Exhibition. Nothing of the kind: photographic surprises are perpetually turning up. Just as the visitor in search of photographs is leaving the building, at the extreme end of the southern corridor, two or three more photographs are found hanging. These consist of very fine coloured specimens by Lock and Whitfield, and some fine plain photographs by Denier of St. Petersburg.

Again, in the north-east portion of the building, reached from the gallery devoted to pottery and porcelain, is a small detached building containing the products of Australia and New South Wales. Here, besides a large number of architectural and topographical photographs contributed by the Government of New South Wales, are several fine contributions by Sydney photographers. Amongst these we find a number of fine examples of portraiture to which our attention had been invited by the contributor, Mr. J. H. Newman, some months ago, and which we had despaired finding in the departments devoted to photography. Mr. Newman's examples of portraiture are of large size, the plates being sixteen by twelve and upwards. There is fine modelling, great delicacy and force, the work being altogether credit-

able, competing not unfavourably with much of the portraiture in the mother country. Next we find some very respectable portraiture by Mr. Oswald Allen, also of Sydney. This gentleman's contributions include some good coloured specimens, the work of Mrs. Oswald Allen; these examples are also very satisfactory. Mr. F. W. Robinson contributes some very large photographs, on whole sheets of paper, of landscape and architectural subjects. These are very fine, at once delicate, vigorous, and well defined, and of unusual excellence for pictures of such large size. M. Degolardi also exhibits some large landscapes of Sydney scenery.

Another photographic surprise is found in the department devoted to pottery and porcelain, where Herr Leth exhibits some of the finest photographic enamels we have ever seen. These consist of portraits, portrait groups, subject pictures, landscapes, and reproductions, and form the centres of porcelain plates, with borders of turquoise blue and gold. The peculiar quality which gives their especial superiority consists in their singular richness, depth, and warmth of colour, which is of an intense, velvety, purple brown. This richness and depth is obtained without any sacrifice of delicacy, transparency, or perfection of gradation. The number in the catalogue attached to these is 3549, and is merely the same as that attached to some of Herr Leth's paper prints hung amongst other photographs, so that the catalogue affords no clue to the existence and whereabouts of these very fine specimens of ceramic photography, which should on no account be overlooked.

No memorandum or description of any kind accompanies these enamels, nor have we heard anything recently of Herr Leth's operations in this department of photography. About half a dozen years ago he described a process which he was then working, and by which he obtained some fine results. Its character was analogous to that of Mr. Joubert. A solution of gum, honey, and bichromate was applied to a plaque of porcelain, dried, and exposed under a transparent positive. The enamel colour and flux was then applied with a soft brush, the unaltered portions of the film being then removed by means of very dilute nitric acid. After rinsing, the image was ready for the muffle. The enamel powder at that time employed by Herr Leth was composed as follows:—

Sulphate of cobalt	...	...	...	1	part
" zinc	...	...	...	$\frac{1}{2}$	"
" iron	...	...	...	1	"
" manganesc	...	...	...	1	"
Nitrate of potash	...	...	...	6	parts

These were heated in a pot until the nitrate of potash was decomposed, and afterwards cooled and washed. To one part of this mixture two parts of a flux consisting of borax, sand, and red lead properly fused and powdered, were added. If the colour of the examples now shown be obtained by means of this mixture, we commend it to the attention of experimentalists in ceramic photography as well worthy of trial.

Besides these scattered photographic contributions, some fine photographs will be found in the Indian Court recently opened; and on the walls of the stairs leading to the photographic gallery of the Albert Hall will be found some very interesting photographs of the results of war desolation in Paris, lent by Mr. W. H. Cremer. These are well worthy of examination as fine photographic records of architectural ruins of a kind to be, we hope, altogether exceptional in our times.

Foreign Miscellanea.

Dr. Stolze has recently published a table giving the different periods of exposure which lenses of a certain focus require. Dr. Stolze observes that hitherto the requisite amount of exposure has always been guessed at, and for this reason he thinks that a tabulated statement, prepared with

mathematical accuracy, will be a welcome aid in the studio. He mentions a very simple way of finding the focus of a lens, which may not be generally known: an upright line of any nature is focussed sharply in a perpendicular position in such a manner that the original and reproduction are of equal dimensions. The fourth part of the distance of the object from the focussing screen is then the focus of the lens, measuring from the optical centre.

To prevent the blistering of albumenized paper, M. Carl Suck recommends the employment of two fixing baths, the one a strong and recently prepared liquid, and the other one much weaker. The prints are first put in the strong bath, and subsequently passed into the weaker one, where they assume a highly agreeable and uniform tone. The prints are washed in but a small quantity of water at first, but the supply is afterwards increased by degrees.

The favourite style of portrait on the Continent just now is without doubt the carte-de-visite showing only head and shoulders, such as are prepared to a great extent in this country. Owing to the expense of their preparation, cabinet portraits have never become very popular.

The Russian scientific world boasts just now of one, if not more, lady chemists; and it is somewhat singular, therefore, in turning over the transactions of the St. Petersburg chemists, to find among scientific opinions one given by a Miss —, who quotes formulæ and specifies reactions with the address of an accomplished savant.

The report of the German photographers who accompanied the victorious army into France is expected to be printed immediately. It will, in all probability, appear in the *Mittheilungen*.

A lengthy article upon iodide of silver, and its combination with nitrate of silver, appears in *Licht*. It is written by M. Julius Kruger, who enters very fully into the subject.

M. Fritz Luckhardt has been chosen secretary of the Vienna Photographic Society.

"A very simple dry plate process" has been brought forward by Dr. Van Monckhoven before the Vienna Photographic Society; he does not claim any great sensitiveness for it.

At a recent meeting of the Vienna Society, M. Ritter Von Wertheim reported that the collection of pictures forwarded by the Austrian photographers to the London International Exhibition created a very fine show, and had been much appreciated. He also stated that the series of pictures had been divided (owing, probably, to the late period of their arrival, or to other difficulties), and were exhibited at two different portions of the building, but that now they would be formed into one collection, and exhibited together.

Dr. Stolze, the president of the Berlin Society, has been for some time past suffering from indisposition, and unable, therefore, to take part in the business of the Society.

The photographic manual of Dr. Vogel, which has recently been translated into English, and published in America, has been received throughout the Continent with very great favour indeed.

It is proposed to institute an International Exhibition on a large scale in Vienna in 1873.

The Paris Society have recommenced its meetings. It would be well, when matters get a little straight, to enquire what has become of the Photographic Exhibition of 1870, which was interrupted by the breaking out of the war. The pictures, of which a large number belonged to foreign exhibitors, occupied one of the rooms of the Palais de l'Industrie, which was subsequently turned into a hospital and depot for medical stores. Afterwards, we believe, the building came in for some share of the bombardment and small arm practice, so that there is very little chance of the pictures still being uninjured. At the same time, it is due to the exhibitors that some enquiry should be made as to the actual whereabouts of the photographs at present.

A modification or improvement of the Dubroni apparatus, in which the photographic manipulations are conducted without the use of a dark room, but which is scarcely suited for serious working, has been recently brought forward by

M. Prumm at a meeting of the Berlin Society for the Advancement of Photography.

M. Reutlinger, the eminent Parisian photographer, who was compelled to leave Paris during the siege, has not yet, we believe, fixed upon his future place of residence. M. Romain Talbot, another exiled German Parisian, is just now stationed at Berlin.

At the inaugural meeting of the French Society, some account was given of the part played by photography in sending despatches by balloon post during the siege. As so much exaggeration has been spread regarding the matter, it would be well for a committee to be appointed to report exactly what was actually done under the circumstances, for the subject is certainly one of paramount importance.

No practical application of the Lichtdruck processes of any importance seems yet to have been made. It is probable that booksellers and publishers have not yet sufficient confidence in the process, or that a good application of the art has yet to be suggested.

The *Moniteur de la Photographie* has just reappeared, and promises its readers to make up for lost time by publishing certain important papers which the authors have kept back in order that the information may in the first instance be made public through the columns of a Paris journal. M. Ernest Lacan, the editor, publicly thanks several correspondents for their kindly remembrance of him, and one in particular, Dr. Phipson, for a substantial present of comestibles during the days of privation that followed close upon the capitulation of Paris. "The armistice had scarcely been signed," says M. Lacan, "the gates of Paris were but half open, bread was still particularly black in the beleaguered city, our stomachs were still very empty, the brain enfeebled, and the heart as sad as ever," when he received aid and cheering news from sympathising friends.

M. Ogier, who recently published in the *PHOTOGRAPHIC NEWS* an article on moon photography, states that he has a further communication to make upon the subject, and that this will be published in the *Moniteur*. M. Ogier has forwarded his photographs to Mr. Baxter, who has recently combated the possibility of moonlight photography in the *Philadelphia Photographer*, and hopes thus to convince that gentleman that Selenography is an accomplished fact.

There will be an exhibition of photographic work at Marseilles, opening on the fifteenth of the present month. The affair is held in connection with the Artists' Club in Marseilles.

M. Ludovico de Courten communicates an interesting note to the *Moniteur*, in which he institutes a comparison between the human eye and the photographic camera.

M. Lacan has taken some important photographs of the siege operations, made during the investment of Paris by the Prussians. He promises to report fully upon the aid which the camera may afford in certain military matters.

AMERICAN CORRESPONDENCE.

APPRENTICESHIP—THE USE OF PHOTOGRAPHIC LITERATURE—KEEPING COLLODION COOL—DRYING APPARATUS.

Apprenticeship.—I am glad to see this subject agitated in your columns; it is one of more importance than it is yet allowed to be by the fraternity, yet one which they must sooner or later consider, for the future welfare of our art is largely depending upon it. I do not exactly mean that the binding of lads to stay a certain time with a master photographer to learn the "trade" is the great essential; what we want can be effected without that. What photography already needs, and what each year it is more and more decidedly demanding, is more talent and better talent; and it seems that the only way to secure it is to take the youth of intelligence and good breeding, and put them through a regular course of education in all the departments of photography. I say all the departments, because I think a great deal of the bad work pro-

duced, even in our largest establishments, is owing to the want of sympathy between the operator and the printer, and *vice versa*.

Photography has advanced so rapidly and so wonderfully that it is attracting attention from our men of science and culture more than formerly; for this reason, as well as to ensure further growth and development of it, photography should attract the best of men to follow it as a profession. A photographer should be graded in society as highly as the followers of any other profession, and it should offer inducements to our best citizens to devote their children to its prosecution as readily as they would to the bar, to medicine, to civil engineering, or to any dignified and useful science or profession. If this can be brought about, and a system of education into the mysteries of the art follow, then photographers may hope to keep pace with photography, and grow as fast as it grows. If it cannot be attained, then our beautiful art must be like an unattended garden, growing rankly, and scattering its seed uselessly here and there without purpose or good.

Good intelligent boys to devote themselves to the art is what we want. I am glad to say that there is a generation of them growing up in our country, and that some of our most successful photographers are young men who went from the school-room to cleaning glass, and who have "served their time at the business." Let us keep the subject awake, offer inducements to the best and more intelligent classes, take the trouble to educate the boys that offer, and photography will thrive on it.

The Use of Photographic Literature.—I have seen it remarked several times that in England photographic books are not generally purchased and read very liberally, and that publishers seldom risk anything beyond their own periodicals and the usual year-book. In this country it is quite different. I do not know that our craft is any more intelligent or has better workers than yours; but I must give them the credit of always reading whatever they can get pertaining to their art. Dr. Vogel's work, which you so highly commend, may be taken as an example. One thousand copies of it were issued in March, I think. Before July came, the second thousand was broken into, and the sale continues. This only as an illustration. Now for the effect. I was not a little surprised to find some of our best workers and most intelligent men, such as Messrs. Kent, Baker, Newton, and others, men who, one would suppose, knew enough without reading more, in the excellent papers which they read before the National Photographic Association, recommending their co-workers to study "the literature of your profession," and declaring the benefits they had received from such a course. Mr. Newton, in speaking of other sources of improvement, said in his paper:—

"There is another broad and popular avenue to knowledge such as you desire, or should desire, in the many ably conducted periodicals published here and abroad. Read all that is written on the subject, whether in book or pamphlet form; do not fear that you will know too much on the subject; digest well what you glean from the sayings or writings of others, and you will often find occasion for practical application of much thus acquired."

Mr. Thorp said in the convention:—

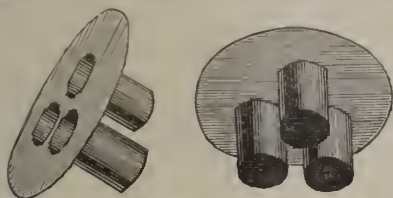
"About two years ago I commenced at the lower step of the ladder, and looking up I saw Mr. Bogardus, Mr. Kurtz, and some others away above in the upper stories, and I saw that although our profession was crowded on the first floor, there was plenty of room upstairs; and there is where we want to go. If we make good work and ask a good price for it, by that means we will get the money into our pockets, and not consume too much time. And in regard to the manner of investing our money, I think if we would pay out ten dollars for photographic literature where we pay out one for patent rights, we would succeed much better."

Mr. W. J. Baker, of Buffalo, in explaining his method of retouching the negative, said:—

“Gentlemen, you must read your journals more attentively, and you will be better informed; at the same time, if I can privately be of any use to you, I will be very happy to aid you, but to publicly explain all the little details in the art of retouching is an impossibility.”

Here are men among the highest in our art, giving their testimony to the value of photographic journals and books. There are those who never read such a thing, saying that the collodion, developer, &c., they use now is the same as they used ten years ago, and there is nothing new. Let such rest content if they will; their day will soon be ended, and the intelligent ones will be able to keep pace with their profession.

Keeping Collodion Cool.—In this extremely hot weather it is very difficult to keep the collodion at a proper temperature. Many practise keeping the collodion pourer in cold water. This answers, but it requires time to wipe the pourer dry each time it is used, lest the water drop on the plate. I append a drawing of a little device



which, I think, will answer every purpose. I get it from a New Hampshire artist, where one would think such a device needless, inasmuch as the snow was six inches deep on Mount Washington on the fourth of July. It can be made of sheet iron, zinc, or tin at a very trifling expense, and is to be inserted in a pail of cold water (ice water if necessary), the pots extending their full length into the water. It can also be made to fit any sized collodion vial desired. One look at the engraving will be sufficient explanation of the construction and use of this cooler, and any artist who has ever been troubled with a hot dark-room will see at once the benefit of this little idea. The top, you see, is a disk; to this any number of little pots may be fastened, and they are set in the water, the top keeping them together, and the pots keeping the bottles dry.

Drying Apparatus.—Here is another home-made apparatus which may be useful to your readers, and emanates from a western photographer, who, like any others of the profession in humble circumstances, doubtless has to secure all the modern conveniences on a small sum of money. It is for drying paper or negatives after varnishing; or the same thing may be used for a fuming apparatus. He says:—

“My apparatus is a common flour barrel with a sheet-iron head in the bottom, and the top open, and which is covered with a lid about one inch thick and two or three inches larger than the top of the barrel. To the under lid is a frame almost as long as the barrel; the paper is fastened to this frame, and then let down into the barrel. The under side of the cover has some thick cloth tacked around it, so that it serves to keep the heat in the barrel by packing the joint. A common coal oil lamp is used under it for heat.”

Truly yours,

EDWARD L. WILSON.

Philadelphia, July 14th, 1871.



PHOTOGRAPHY IN THE NORTH OF EUROPE.

[FROM OUR OWN CORRESPONDENT.]

Berlin, July 19, 1871.

Do any of my readers desire to be informed of a good remedy for sea sickness? If so, I can supply one which has been instrumental in saving myself, who am one of the worst of sailors, from much suffering during some half dozen sea voyages lately. Take a dose of hydrate of chloral, about twenty grains, dissolved in a wine glass of water, and this, provided the stomach is in good order, and the traveller repose quietly during the journey, will create so soothing an effect that at any rate for eight or ten hours afterwards he will be troubled with no sickness whatever. In one case, indeed, the effect was truly surprising, myself and companions, who had doctored ourselves, being almost the only passengers unafflicted by the malady.

It is a great trial to a pedestrian, after roughing it in the mountains for some weeks, to come all at once into a grand town like Berlin. When it is remembered that the whole quantity of linen that he wears has been jammed into a knapsack for the last month, and that his clothes have been upou very intimate acquaintance with all kinds of earths and soils, not to mention bogs and glaciers, it is obviously somewhat difficult for him to present even a decent appearance in the fashionable promenades or resorts of entertainment. In my case the task was the harder from the fact that my head-gear had gone over the Voring Foss, and when, after marching about in the wind and rain for nearly a week with but a very slight protection, I was successful in obtaining another hat in one of the little Norwegian villages, the same, although emanating from a first-class London maker, could scarcely be deemed either of a recent or fashionable mode. However, as eccentric Englishmen are by no means unfrequent in continental cities, I was no exception to the rule, and, indeed, barring the circumstance of the people looking well after their wares when we entered a shop, and the *concierges*, or porters, instructing us to be careful about wiping our shoes, there was really very little to complain of.

I wish somebody would smarten up Berlin a little. I do not know what has become of Baron Haussman, but if the Prussians could give that gentleman *carte blanche* for a couple of years, the improvements he would effect would, doubtless, be as significant as they are needful. There is nothing of importance wanting to make Berlin really a bright, sparkling, and magnificent city, provided money were spent a little freely; and surely Prince Bismarck might devote a little of his earnings during the late war in smartening up the capital of the first empire of Europe. Of course, we know there are no end of difficulties to be encountered from the natural position of the city, but paving with properly cut stones, renewing the benches and wood-work in “Unter den Linden,” and clearing away eyesores of divers kinds in the principal streets, might surely be mauaged.

I happened to be exceedingly fortunate in respect to a guide about the city, and to anyone who has but a limited period at his disposal I would heartily recommend the mode of procedure that I adopted. I obtained in the first instance from our worthy editor an introduction to Dr. Vogel, the well-known photographic chemist, and this was the result. Not knowing the locality of my destination, I first assumed a central position, so as not, at any rate, to be very far from the point, and then made the necessary enquiries. I was directed to the very north of the town, through the Friedrich's and Oranienburger Strassen, and almost to the Hamburg Gate; arrived there, I found the worthy doctor had removed, and now had the benefit of visiting the west end of the city, the Dorotheon Strasse, the Brandenburg and Potsdam Gates, the Thiergarten, &c.; thence I journeyed to the Royal Industrial Hall, by the busy Leipsic Street, past the palaces, the Guildhall (visited

en route) the König's Strasse, and to the east end. So that, as will be seen on reference to the map, I made a very comprehensive tour through Berlin in a couple of hours, and obtained a good insight of the main thoroughfares. The names of the principal photographers, as one passes, sound quite familiar, and it appears at first sight almost as if one has been here many times before. Here is Milster's studio, "Unter den Linden;" here also is Carl Suck, Pflaum, Stolze; in the Leipziger Strasse is the well-known firm of Loescher and Petsch, and in the immediate neighbourhood the name of Johannes Grasshoff appears. By the kind assistance of Dr. Vogel I was enabled to visit the studios of the two last named, and will send you a copy of the notes I made on that occasion.

But I must proceed to give you an account of my visit to Dr. Vogel at his studio in the Royal Industrial College. Although busily engaged in the tuition of some distinguished amateurs, when I presented myself the President of the old Berlin Society received me with much warmth, and took considerable pains to show me everything of novelty and interest that was to be seen. The white Apollo bust, with its black drapery and little cross upon the nose wherewith to focus, which has served so often and so well for the doctor's experiments, and of which the diagrams are familiar to the readers of all photographic journals, occupies a central position in the large and roomy studio, and round the walls are other models and appointments suitable for instruction and experiment. A copying table which the doctor has constructed deserves special mention; it is a long frame on castors, about the size and shape of a carpenter's bench, but much lighter, at one end of it being an upright board supporting the print to be reproduced, and at the other the camera. The copying table is moved about bodily until the print is favourably lighted up, and the latter is then, by a kind of pulley arrangement, approached near to the camera, this being also capable of being focussed in the ordinary manner. Thus a double focussing action is secured of an exceedingly practical character.

Dr. Vogel continues to employ washed albumenized paper for printing, using powdered carbonate of ammonia for the purpose instead of fuming. His printing pads consist of square bags having a slit on that side farthest from the negative, and into this opening the powdered carbonate is introduced in sufficient quantity to last for about twenty pictures. The bag is, indeed, a kind of *sachet*, and the washed paper that was being employed at the time of my visit had been sensitized as long ago as the tenth of April previous. For thin weak negatives this manner of copying is especially to be recommended.

The manner of copying tracings recently suggested by Dr. Vogel—namely, by using the latter simply as a negative, and then printing in the ordinary manner—is really a very simple and clever application of the art, and one which to draughtsmen and others is of great value. Another idea, to do away with the pigment backing of dry plates by using a piece of carbon tissue in place thereof, which adheres firmly to the glass surface, and which may be used over and over again, is also worthy of serious consideration by dry plate photographers.

In his cameras, Dr. Vogel prefers to employ the American dark box, in which the slide, instead of being merely drawn up on exposure, is pulled out altogether, so that out of doors there is no chance of the plate being shaken from the wind acting upon the thin unsupported diaphragm; moreover, as the slit is securely closed by a spring, there would seem less chance of any light entering the dark slide. The arrangement is a good one, and certainly possesses many advantages.

I enjoyed a few minutes' conversation with M. Schwier, Dr. Vogel's assistant, I believe, who has recently returned from Strasburg and Paris, where he had been rendering assistance to the engineer officers in preparing plans of those cities. His report upon the application of photo-

graphy in the Prussian army will be published very shortly, but it appears that as yet the camera is employed upon a very limited scale in the German War Department.

PRACTICAL HINTS FOR YOUNG PHOTOGRAPHERS.

BY LIEUT. ABNEY, R.E., F.R.A.S.

An Ill-used Force of Nature.—In my own experience I find that the force called capillary attraction is "the best ill-used" force with which I am photographically acquainted. Were a little more attention paid to this powerful auxiliary, much saving and great cleanliness would result. In abstracting a plate from the bath, for instance, beginners (with a great many of whom I am daily brought into contact) drag it out in the most needless and careless manner, and the consequent draining to secure freedom from stains has to be reckoned by minutes instead of seconds. If the plate be *very* slowly and evenly withdrawn from the solution, half a minute to a minute being spent in the operation, the capillary attraction will suck away all the free nitrate of silver from the film (which would have had to be charmed away), and leave that alone to be removed which has become fastened in between the back and the dipper; blotting paper will remove this, and the plate is ready for the dark slide. There is another gain also to be noticed: it *will* happen sometimes that a scum is formed on the surface of the bath solution. The scum yields to the same force only, it is to be hoped, to be subsequently removed by a clean strip of blotting paper.

Again, in sensitizing or albumenizing paper the same force may be called upon to act. If the paper be raised slowly, it will be found that there will be no drops to be absorbed. In fact, in all the wet operations of printing, toning, fixing, and washing, this delicate little force can be made to play a most important part. A print gently withdrawn from the hyposulphite bath is really better washed in an hour than is another which has been carelessly and quickly abstracted, and plunged into the washing water.

Development of a Wet Plate.—Supposing a developer to have been applied properly to a wet plate (or, indeed, a dry one as well), the general habit of a novice is, to let it flow backwards and forwards over the plate, from side to side, or end to end. It is forgotten that the centre of the plate by this method has double the amount of developer passing over it than that which the edges get. The developer should be made to flow round and round to each corner in succession; by so doing the development proceeds evenly, and the silver is deposited in proper gradations. Let any one try developing a stereoscopic picture by the two methods, and the advantage of the last plan will be apparent.

Albumenizing Plates.—I had occasion, some three months ago, to pay a visit to Mr. Blanchard, and found his method of albumenizing plates far superior to any I have yet seen. I have adopted his method at Chatham, and pronounce the "Blanchard brush" to be the discovery of the season. The brush consists of a strip of glass some 3 inches wide by 4 or 5 long. Round one end is bound a double thickness of swan's-down calico, fluffy side out. The white of one egg, shaken up with 40 to 50 ounces of water, is filtered, as required, into a shallow saucer. The calico end is dipped into the liquid, and as much as possible of it is pressed out of the brush against the sides of the saucer. A pneumatic holder holds the plate, and the moistened brush is drawn down the face of the plate in parallel strips till it is covered to within one-eighth of an inch of the edges. The plate is then reared up to dry, and in from two to ten minutes is ready for coating. Swan's-down calico is 1s. 4d. a yard, consequently it is not ruinous to have a new brush every day.

Blisters caused by Albumen.—At Chatham we use an

albumen substratum for all large-sized plates for the wet process, and for all sizes for the dry. I was puzzled at first to account for blisters in some dry plates I had prepared. I was then using the white of an egg to 20 ozs. of water. I increased the water to 40 ozs., and have ceased to be troubled with them. I believe all blisters to be due to imperfect coagulation of the albumen. If spirits of wine be washed over the albumen surface (of whatever strength the albumen be), the coagulation will be more complete.

Ammonia in the Fixing Bath.—This prevents blistering in albumenized paper, and has the advantage of dissolving the size of the paper to an appreciable extent. I find that a couple of ounces of ammonia added to 2 quarts of fixing bath is sufficient. Paper which has been robbed of its size can be more thoroughly washed, loses none of its brilliancy, and is very easily mounted.

Argentometers not to be trusted.—Recently we were troubled with poor weak prints. The paper was condemned, the toning bath abused, and so on. The argentometer gave us a strength of 50 grains of silver to 1 ounce. I took an ounce of the bath, precipitated it as chloride, washed and dried the precipitate, and found the real strength of the silver to be only 26 grains to the ounce. The cause of the inferiority of the prints was apparent at once.

NOTE ON THE RETOUCHING AND ETCHING OF NEGATIVES.

BY R. EICH.*

THE great perfection required now-a-days in the retouching of negatives, and especially in the case of the so-called enamel pictures, where no finishing of the positives takes place, has rendered it desirable that the colour of the negative should be closely imitated, and that the retouching should be as permanent as possible.

Many bewail the circumstance that it is impossible to retouch always equally well upon one and the same varnish, even when the latter has been prepared for the special purpose, and for this reason I have thought that the publication of some points of progress and improvement in connection with this branch of the art, to which I have given attention, might be welcome. In order to render a smooth porcelain surface capable of being worked upon with a pencil, the porcelain painter proceeds in a very simple manner: he covers it with thickened oil of turpentine to which a few drops of the ordinary oil are added, or with a mixture of copiava-balsam and oil of turpentine, subsequently removing the superfluous liquid by means of a silk duster or rag; in this way only a trace of the oil remains, which is sufficient to afford a tooth for the pencil, and which, moreover, very soon dries.

The thickened oil of turpentine to which I have alluded is easily prepared by placing a little of the oil in a saucer, and exposing it to the open air for a few weeks.

In this manner I can work upon all varnished surfaces equally well, and am not tied down to any particular method of preparing the negative, the coating of oil allowing the manipulation of the pencil to be carried on with such certainty and delicacy as to leave nothing to be desired. In order not to be limited to the use of soft pencils, but to be able to use hard leads when desirable, I add to the retouching varnish half the quantity of shellac varnish, and coat the well-heated plate therewith; after cooling, the portions of the negative to be retouched are coated with the finger with the thickened oil, and rubbed as above described, and then Faber's pencils 3, 4, and 5, may all be used for remedying defects on the plate.

Before varnishing, there are many improvements which may easily be made in the picture, as, for instance, the concentration of the high lights and the strengthening of the iris of the eye, correcting exaggerated light upon the hands, hair, &c. An ordinary sewing needle, held for convenience

in a wooden holder, will be found suitable for this kind of work. The unvarnished plate is placed upon the retouching stand, the hand upon the mahlstick, and the silver precipitate then carefully erased.

If, as in the case of cabinet and other larger sized pictures, it is desired to render the foreground more vigorous and defined, it is well to adopt the plan followed by Riedel. The unvarnished negative is coated with oil of turpentine to which some tallow (dissolved by heat) has been added, as likewise a few drops of dammar varnish; the collodion film may then be scraped in lines by means of a needle point, or in the finer parts—such as in grass, foliage, &c.—a stumpy bristle brush, or a pointed wood splinter, may be used for the purpose; the latter removes the pyrogallic silver precipitate, but does not damage the collodion skin.

When the retouching is finished, the plate is coated with French oil of turpentine, to free it from any trace of grease, and is then warmed and varnished. Rabending, of Vienna, used to retouch some time ago very successfully with pyrogallic silver precipitate. This method I have also practised for some time, but now proceed in a simpler manner, using for the purpose of retouching graphite obtained by rubbing a black lead pencil upon a ground glass surface; this powder is used with French oil of turpentine to which a few drops of oil of lavender have been added to facilitate the drying of the liquid. Applied with a brush in the ordinary manner, the colour of the negative is closely imitated.

Transparent spots may be easily removed if the pencil point is dipped into thickened oil of turpentine, and the plate then manipulated.

In order to prevent misunderstanding, I should mention that it has never been my motive to prepare negatives specially suited to retouching, but by means of soft thin negatives to render retouching with the pencil more easy. Recently I have been enabled to reduce negative retouching to a minimum, and intend very shortly to say a few words regarding the matter.

HOW TO PREPARE DURABLE SENSITIVE ALBUMENIZED PAPER WITHOUT WASHING OR FUMING.

COMMUNICATED BY L. G. KLEFFEL.*

At a recent meeting of the Berlin Photographic Society, the President, in my absence, exhibited a specimen of silvered albumenized paper, the advantages of which were explained at the time; it is necessary for me, therefore, merely to communicate the method by which the paper was prepared, the process of sensitizing being one recently devised by a business friend of mine.

In six ounces of distilled water is dissolved one ounce of nitrate of silver (free from acid), and in another similar quantity of water one ounce of chemically pure citric acid. When both compounds are completely dissolved in their respective liquids, the latter is poured into the former, the combined solution being well shaken, and subsequently filtered. Finally, one ounce of alcohol is added.

According to my experience it is quite sufficient if the paper is allowed to float upon the liquid for the space of a minute, or, at any rate, until it swims evenly upon the surface in all parts. Coagulated paper presents more brilliancy, when printed and finished, than that which is not coagulated.

Upon the purity of the citric acid depends the clearness of the bath, for if the acid is at all impure, a greyish precipitate is formed—probably citrate of silver. At the same time I have found that if this precipitate is filtered off, the results obtained are still of a favourable character. The bath will remain perfectly clear and transparent, even after considerable use.

The durability of the sensitive albumenized paper pro-

* Licht.

* Licht.

duced in this manner appears to be quite unlimited, for some sheets of the material which were prepared by me some nine months back are as white and fresh now as when first sensitized.

The advantages entailed by the employment of the citrate-silver bath are not to be despised, for besides the convenience of always having sensitive paper ready at hand, there is obviously less chance of loss from the paper becoming yellow and useless during a lengthened period of unfavourable weather.

THE ASPHALTE PHOTO-LITHOGRAPHIC PROCESS.

BY LUDWIG SCHRANK.*

ALL photographic processes capable of yielding half-tones have, curiously enough, been hitherto kept profound secrets, and although it may be out of our power to lift entirely the veil which hides them from public view, still we hope in the present article to render many of the practical details clearer and more intelligible to our readers. Photo-lithography eclipses Alberttype in the rate and number of impressions capable of being produced, but the delicacy and finish of the Albert pictures are, as we know, far superior; each process, however, will, in all probability, have its special sphere of action.

Photo-lithographic processes are of two kinds, being based respectively upon the use of asphalté and chromium salts, and as far as the reproduction of linear designs is concerned the methods are, indeed, exceedingly well known. One fact, however, in regard to the solar action upon the asphalté film has, I believe, never been published, a phenomenon recently discovered by M. Carl Bayer, of Warschau, when engaged in the manipulations of photo-lithography. It is to the effect that when the asphalté is covered with a transparent varnish, or protective coating, which shuts out the action of the atmosphere, without shielding the light, no transformation of the soluble into the insoluble takes place. From this we may judge that the change brought about upon the asphalté by the action of light is truly an oxidation, or ozonization of the asphalté, and that, in order to render the asphalté, in the first instance, more sensitive, it is necessary only to submit the same, in the first instance, to the action of some de-oxidizing agent.

Not less interesting than the phenomena itself is the method by which it was discovered. As my readers are aware, the method of employing the asphalté upon a stone or zinc plate is to dissolve the vitreous material in chloroform, and coat therewith, in the dark, the surface to be sensitized, the same being subsequently exposed to the action of the sun under a negative. As in but very few circumstances it happens that the glass negative will be closely in contact with a stone or metal plate, it was sought to remove the collodion film from the glass, two methods being principally used for that purpose. Either the negative was coated with a solution of purified gutta-percha dissolved in chloroform, and subsequently with gelatine, the film when dry then being separated from the glass, or the method of Julius Leth was employed, which consisted in applying to the plate castor oil collodion after a solution of gutta-percha had been poured on, and placing the plate afterwards in a water bath, when the negative film quits the glass surface of its own accord. A negative image of this kind may be placed very evenly upon a stone or metal block, and, indeed, without some care is exercised, their removal is subsequently a matter of some difficulty. To prevent this adhesion and render the films capable of removal by means of water, the asphalté surface was covered by M. Bayer with a solution of gum before being exposed to the action of the sun, but after the exposure had taken place it was found, to the great surprise of the operator, that no

chemical action whatever had taken place upon the asphalté, which was still entirely soluble.

Another fact worthy of note in regard to the behaviour of asphalté in this direction is its increased sensitiveness at a high temperature, the greater the heat the more sensitive being the film.*

For photo-lithographic purposes it is customary to select an asphalté possessing a shell-like fracture, although there is no actually reliable test for the fitness of a substance beyond its practical trial from time to time; this is best done by coating a glass plate with a solution of the substance in chloroform, and printing some linear design thereon, which is afterwards developed by petroleum or turpentine oil.

The advantage of asphalté pictures over those produced by a transfer process consists in the sharpness and clearness of the lines; the latter, when produced by transferring, being frequently rough and jagged. A prepared stone, after being printed and clearly developed, is etched with gum and nitric acid, so that portions of the stone which have been laid bare by development are thus prevented from attracting and absorbing the fatty ink when the roller is passed over the image, and thus a print of only the sharply defined asphalté design is reproduced when pressed in contact with paper.

In the operation of printing it is immaterial if the asphalté image subsequently becomes damaged, as every part of the stone which was in the first instance sheltered from the action of the etching liquid attracts the fatty ink from the roller quite as readily as the asphalté itself. In fact, if the whole of the asphalté design were removed by means of benzole, the printing might be continued with equal success.

To this point—that is to say, as far as the reproduction of linear designs—the application of asphalté is well known, as also the use of bichromates in the same direction; but all methods to obtain half tones by similar ways of manipulation have, as we said before, been kept secret by their elaborators. Among other processes may be mentioned that of Marie of Paris, who competed for the Duc de Luyne's prize, but was unsuccessful by reason of his omitting to send proof pictures of the method.

The reason for keeping a process of this kind secret is undoubtedly a good one. A casual consideration of the nature of the asphalté image shows at once that its middle tones when developed upon a stone surface are distinguishable from the vigorous portions only in the fact that the latter consist of a thicker coating of asphalté, while films of a thinner nature constitute the gradations of tone. The thin layers of asphalté, however, attract the fatty ink in identically the same proportion as the thicker parts of the film, and, therefore, all gradations disappear in the printed copy. Moreover, all photo-lithographs by the asphalté process show in the half tones a certain fine grain, which is by no means inherent to the photograph itself; the reason of this grain it is difficult to guess, but we may mention that those well initiated in photo-lithographic processes have recourse usually to a middle operation, known as opening the film. In the reproduction of linear designs a polished surface is always used, while for half tone pictures grained stones must be employed. The opening of the film consists in the operation of breaking or rubbing down the asphalté surface forming the picture, so that the grain of the stone is laid bare, and is thus acted upon by the etching liquid when this comes to be applied. Where the print is very vigorous, and the asphalté film, therefore, very thick, but few points of the grained stone surface break through; but in the thinner portions of the image they appear in greater

* It may also be remarked that red rays seem to exert particular action upon the asphalté picture. In the same way as blue rays are known to act most energetically upon iodide and chloride of silver, so asphalté and other analogous substances which undergo a kind of oxidation are found to be most affected by red rays. For this reason red negatives have been experimented with for printing purposes, but, unfortunately, without, as yet, any definite results.

* *Photographisches Correspondenz;*

number. All of them, after being attacked by the acid and gum etching, refuse to take up the fatty ink, and in this manner light or dark tones are obtained in rolling up the design.

This opening of the grain must, of course, be performed with exceeding care, either by means of moist sand, such as has been used for graining the stone in the first instance, or with pumice stone or cuttle-fish powder; and it is from the fact, possibly, that the success of the results depends so much upon the individual skill of the operator that asphalté photographers have been disinclined to publish any details of their mode of working. The results are naturally sometimes monotonous and sometimes exceedingly hard, and are, indeed, as a rule, the less perfect according as the stone is the more finely grained. The depth or degree to which the asphalté film is rendered insoluble from the surface is, of course, governed by the nature of the negative employed, for according to its density or transparency the action of insolubility sinks more or less into the film. Where the negative is perfectly clear the film becomes insoluble down to the very surface of the stone, while in other places where the negative is somewhat opaque the action only penetrates half way, or less even, through the asphalté. The yellow colour of the asphalté impedes in no trifling degree the action of the light.

The results of this unequal isolation of the film are shown upon the development of the picture by means of petroleum and turpentine oil. At first the unchanged portions are wholly dissolved away, and then the picture partially appears with all its half tones; sometimes these latter are also washed away, and the vigorous parts of the image only remain behind, such as have been rendered insoluble and adherent to the stone, a state of things likely to happen when thick films of asphalté and finely grained stones are employed.

If, to prevent such a misfortune, the sensitive film is used in a very thin layer upon the stone, the contrary result frequently arises. The half tones of the negative allow sufficient light to pass to harden the film up to the stone itself, and on development the slight difference between the mezzotints and the full tones is such as to yield prints of a flat monotone character, which the operator strives to improve by subsequent retouching upon the stone with lithographic chalk.

The possibility of being able to produce according to desire lithographs either of a flat monotone character, or so vigorous that only the darker portions thereof are brought out, has led to the employment or application of photolithography in the same manner as chromo-lithography, where several colours are printed upon one another. For instance, the soft flat asphalté image containing every detail is, in the first instance, printed off to serve as the basis of a picture, and the sheet is then further impressed from a more vigorous stone, which imparts increased depth to the print, two, or any further number of printing operations, being performed to produce a finished picture. It was in this way that the photo-lithographs of Marie of Paris, the production of which has often excited the curiosity of photographers, were produced, the firm in question being very celebrated for the precision and skill manifested in the production of their chromo-lithographs. Nevertheless, the results thus produced are, as regards delicacy, very far behind silver prints, and are, therefore, only fit for use in special instances.

The difficulty of developing plates of this nature, by reason of the solvent undermining and washing away the asphalté in the half tones, to which I have above alluded, formed once the subject of a conversation between the principal of a photo-lithographic establishment and myself during a recent journey in the north of Germany.

"The development—or, in other words, the dissolution—of such portions of the film not acted upon by light," said this gentleman, "begins at the upper surface of the asphalté coating, and the action, on continuing, under-washes the half tones. For this reason it was that I soon

abandoned the fine grain stones. One may liken the circumstance to the tops of sharply pointed mountains, around which clouds will hover, while below in the valleys a clear atmosphere is found."

Whether it is possible subsequently, by means of heat, to render the loose coating adherent to the stone, or whether the film can be submitted to any other reaction during the process of warming, my acquaintance did not inform me.

About three years ago I came into possession of some half-tone photo-lithographs which seemed to have been produced by a process of a totally different nature to those hitherto known, and which, according to certain rumours that had got about, were not obtained by an asphalté process, but by means of some transferring method. While the ordinary asphalté pictures were to be recognized by means of a certain uniformity of grain partaking of a mechanical nature, these productions showed a most extraordinary gradation of tone. When examined by means of a magnifier this grain appeared similar to that seen in an ordinary chalk drawing upon stone. That it was not here a question of the old bichromate transfer process, every one at all acquainted with the matter could at once testify; but evidence seemed to show that in this instance the process rested upon the hygroscopic qualities of a compound film of chromate, sugar, and gum, such as is used in enamel photography, and which had served for the production of a transfer image.

Pictures obtained by means of a hygroscopic film, upon which enamel powders are dusted to form the tones and half-tones, equal in delicacy prints upon albumenized paper, and if the pigments are mixed with a finely powdered resin (sandrac, for instance) in such a way that in an ordinary temperature the same does not become sticky and caked together, the manipulations of photo-lithography should not, indeed, present any difficulty. The developed pigment picture may be coated with collodion, dissolved off from its basis under water, transferred to paper, and dried without suffering the slightest injury. If this paper image is laid upon the surface of a stone, heated to a somewhat warm temperature, and then pressed gently with a heated iron, the resin is at once transferred to the stone, and will thus absorb ink from the roller when the stone is subsequently inked up; the portions of the surface not touched by the resin are treated with gum and nitric acid, and thus rendered capable of repelling the fatty ink.

This process is, it is true, saddled with the inconvenience that the chromo-gum compound must be exposed to light under a positive *clique*, but the sensitiveness of the film is much greater than that of asphalté, and, moreover, the presence of much half-tone in a picture presents no difficulty in the way of manipulating; in the asphalté process, on the other hand, much subsequent retouching is necessary to elaborate the mezzotints. The melting of the resin particles by using too high a temperature may possibly be feared during the transfer of the image; but one possesses certain corrections against such a casualty in the admixture of earth pigments with the developing powder, and in graining the stone to a moderate degree.

A LITTLE TALK ABOUT PHOTOGRAPHY.

BY JOHN L. GHON.*

SOME time since I was kindly invited to contribute an article in relation to my views on the present practices of our profession. The assembling of the Association during the past week has brought me into personal contact with so many of my co-workers, that I have lost all hesitation in regard to the matter, and feel that in having some familiar chat with them I shall not expose myself to very severe censure, even though my ideas may somewhat conflict with their own. With our customers we have almost a stereo-

* Philadelphia Photographer.

typed conversation. We comment upon the weather, the heat or the cold, and then gradually but surely fall into a dissertation upon the wonders of our art—its rapid growth, and the gigantic strides that have been made in its improvement. Now, as a foundation for other remarks, I am about to be heretical enough to maintain that photography, literally speaking, has advanced but very little during the last twelve years. There are hundreds of men, daily working, who were at that time fully as able to make a negative as clean and as perfect in photographic qualities as those that they now produce. They use the same formulæ, and their manipulations are now similar in all respects to those of years ago. Before I further condemn myself, I must join with you in admiration of the modern productions, and admit their vast superiority. With the same chemicals, the same methods of working, and the same controlling hands and brain-power, we have results that are vastly different. The improvement consists in our having added to the inventory of our necessities a controlling medium—an art element. It is no longer our only desire to produce a photograph that will be faultless in its freedom from stains or blemishes, that will be sharp and perfect in detail, and that will most certainly be a likeness of that which is represented; we must now create pictures that can be hung side by side with the works of the painter, and that will not only show excellence in their execution, but also thought in their production. One after the other there are gradually springing from our midst masters, who are swelling the front ranks of our army, and whose efforts are receiving the admiration of the most cultivated tastes. Ask these men for their formulæ: with one accord they will assure you of their having no secrets—their processes are astonishingly alike, and are those publicly published, and probably used, though in a different way, by the most inferior workmen amongst us.

In this country, particularly, we have fallen into a great error. We have been endeavouring to establish photograph factories, and we have only too well succeeded in doing so. People come to our places generally in a hurry; to accommodate them we also use haste. The negative having been made, is given to the printer, almost invariably a man who has never seen the subject. The prints, when completed, are assorted with all due regard to the size of the photograph that has been paid for, and they are then mounted upon cards whose uniformity of design has but lately been infringed upon. The principle involved in all this is radically wrong. The same man that receives and poses his sitter should be the one to conduct all future operations. The position may be graceful, the expression desirable, the accessories well placed, the negative be perfect in its qualities, and yet the result may not be satisfactory to the artist if he stops here and entrusts all else to other hands, without supervision on his own part.

The next operation in order will be the retouching of the plate. It is difficult for the poser to convey to the mind of another exactly the effect he desires to be produced. Hence, the utmost efforts of the negative retoucher are usually confined to the smoothing of a face or hand. There is no branch of our art more abused. The skill and patience that are exhausted upon the production of a skin effect, unnaturally perfect, is no better directed than are the energies of the Chinamen who spend months of labour in carving upon a useless trinket.

In retouching negatives, too much labour is spent upon the face, and not enough upon the rest of the picture. Every mole, freckle, mark, or wrinkle is scrupulously removed, until expression and individuality are almost as equally destroyed. Practice and ingenuity will teach the retoucher how to lighten a shadow, to improve a middle tint, to crisp up a telling light, or to destroy the monotony of a flat background. Efforts in this direction are more to be commended than when they are confined alone to the perfection of heads, that when finished seem suitable for models to the manufacturer of waxen figure-heads for hair-dressers' display-windows.

I would also advocate more attention to our printing departments. Printers are popularly considered as holding second-class positions in our profession. An artistic printer is as desirable a man as an accomplished operator. With skill, and a thorough knowledge of the requirements of his business, he can correct many a fault that has occurred in the skylight or dark room. This branch has been made entirely too mechanical. The man who can produce a good tone, and a smooth, brilliant print, has not, by any means, acquired all the knowledge that he is capable of making useful in his vocation. In the printing-room all temperaments, ages, and peculiarities are too often treated alike. Each negative is not sufficiently studied. The most meritorious workman is too generally supposed to be the one who can the soonest fill up a washing-tank.

I am truly glad to see that so much interest is now being taken in the tasteful mounting of photographs. Beautiful designs are constantly being adopted by leading houses, and the day seems to have approached when a stranger, looking over a collection, could dispel from his mind the idea that we all belonged to some grand co-operative firm, having for its one grand motive tasteless uniformity. We cannot too highly estimate the advantages that the Association seems to have bestowed upon us. Independent of the fraternal feeling that friendly intercourse has produced, we have all unconsciously become great gainers, in point of knowledge, by having had the opportunity of pleasantly criticising each other's faults, and studying their merits. I can now but hope that our improvement may be constant, and that artistic excellence may be the goal for which we must strive, and that, to reach which, we must use our utmost endeavours.

Correspondence.

PHOTOGRAPHING CHILDREN.

SIR,—Considering the claims put forward by photographers to be considered artists, it must have struck anyone who is a regular reader of the *News* how lamentably deficient the majority of photographers are in the most pleasing of all art studies: the delineation of children. Every now and then we have a column or two of abuse of the dear little creatures, from men who evidently have not the tact and ability requisite for successful juvenile portraiture; and after having exhausted all the vocabulary of their abuse in such epithets as "imps," and describing them as resembling lumps of "putty," "cobblers," or anything the reverse of "pretty," which is their proper characteristic, and so having demonstrated to a certainty their utter inability for the task, and their entire ignorance of the requirements of the work, at once proceed to lay down rules for the guidance of other photographers. Can we wonder that the claim of being an artist should be denied to the man who could be barbarous enough to suggest that babies should be held "upside down" to keep them steady? Yet that is actually the advice of a correspondent of the *News* of July 21st, who sets down a series of rules (in a most dogmatic manner), the following out of which would most certainly result in the banishment of infant portraiture from amongst the beauties of photography. "Do not let the infant have any food for some time previous to sitting." Now, sir, I will defy any photographer to make anything like a satisfactory portrait of a hungry child; such a baby would sure to be peevish and irritable, and altogether in an unfit condition to be photographed. Indeed, I have known many instances of babies who positively could not be taken till after they had had the breast. Then he tells you to be sure to let the child go to sleep, forgetting that the mothers will very rarely have the portrait of the sleeping child; and talks of turning out the mother and nurse, and a lot of similar nonsense, proving that he is one of the "incapables," in that branch at least, and, therefore, altogether unfit to advise others on the subject.

A short time ago we had the report of a paper read before the Oldham Photographic Association by (I think) Mr. Adair. That gentleman at the outset told his audience that he had children of his own, and was a lover of children, and then straightway reads a long paper to show how utterly he had

failed in his mission as a juvenile portraitist. Now, some people have odd ways of showing their love, and, perhaps, the Oldham gentleman is one of those who adopt the method suggested by Solomon, in the advice, "He who spares the rod spoils the child." If so, no wonder at his want of success; for however wise the proverb, it was not intended for photographers. Had the Oldham gentleman let the children see half the love he professed, depend on it they would quickly and intuitively have responded to it, and he would then have saved his hearers the infliction of a detail of his disappointments.

I only remember one writer on the subject who had a good word for the little creatures, and that was Mr. Robinson, who said that he never allowed children to come into his studio without giving a good (photographic) account of themselves. That expression is one proof, if such were needed, that he is a true artist in feeling as well as in his works. That infant photography is not so utterly hopeless as those writers would make us believe, is to be found in the fact that such an artistic hand as the latter gentleman should make a speciality of it. Again, who has seen Mr. Scaife's baby photographs without being delighted with them?

For my own part I see no such difficulties in the way as they have represented. There is no "lion in the path" other than their own want of skill, and, most probably, their want of temper; for depend on it, if you once lose your temper with them, it is all over with your chance that day, at least, and very probably altogether.

I do not profess to be much of an artist. I may not be over amiable, and am, moreover, an old bachelor, yet I love the dear little creatures (perhaps the more because I have none of my own), and I find that they quickly respond to my overtures, and, in consequence, though I do not pretend that I am always as successful as the two last-named gentlemen, yet it is very rarely that I do not succeed in producing at least a passable portrait of the child, and sometimes I get as good portraits of them as can be desired.

It is not my intention to offer any rules for others' guidance, as I feel how utterly useless any such must be, every different child requiring different treatment. The most difficult I find is not the mere baby, but children of two and a-half to four years old; at that age they have a will of their own, and must be induced to believe that all they do is of their own free will; they require tact as well as kindness; one is quiet and gentle, another is altogether the reverse, and all require that you should enter into their humour, so that they may be interested in what you do or say to them.

There are, however, a few things absolutely indispensable, and some of them, perhaps, overlooked by those unsuccessful gentlemen, otherwise I should hardly have thought it worth while to mention them. However, it may help them, perhaps, so I will just remark that you must have good collodion, the nitrate bath in good order, clean glass (otherwise you cannot make quick work), a quick lens, a good light, and a suitable time of the day; and last, but above all other things, plenty of patience, and a fund of good humour for the children. The list of requisites may seem a long one to those unacquainted with the subject, but it is, nevertheless, quite true that the omission of any of them is fatal to the work. It is urged that it is troublesome work; but it is most commonly the case that baby's photograph is the pioneer of an entire series of family portraits, and should the child be brought in the first instance at an unreasonable time, I respectfully but firmly decline to "only just try it," but advise at what time it should be brought again.

But I fear the length to which my letter has run must preclude any more observations on my part. I however send you a few specimens of my work in this branch, from which you will see how far I am borne out in my remarks. Some of them (especially the group of three) being very boisterous children.

I must, however, add one more remark, that it requires two persons to ensure success; one to gain the child's attention, whilst another makes the exposure.—I am sir, yours truly,

Lyme Regis, Dorset, July 31st, 1871.

J. WALTER.

CARDS AT ONE SHILLING AND SIXPENCE PER DOZEN.

SIR,—Would Mr. J. R. Griffiths "be surprised to know" that during the quarter ending February 1st, 1871, I saved over £30 by doing cartes at 1s. 6d. per dozen, although I paid an assistant a guinea per week, and had a wife and family to support, while during the corresponding quarter in all preceding

years I had been at a loss, although I charged from 6s. to 9s. per dozen?—Yours truly, THE MAN WHO DID CARTES AT 1s. 6d. PER DOZEN, BUT WHO DOES NOT DO THEM NOW.

[We are glad to learn that our correspondent no longer works at such a low rate.—Ed.]

Talk in the Studio.

ROYAL CORNWALL POLYTECHNIC SOCIETY.—The annual meeting of this society will open in a few days in Falmouth as usual. The judges will meet to examine the contributions and award prizes on the 9th, and the exhibition will be open to the public on the 11th inst.

CHEAP AND SIMPLE APPARATUS.—Mr. Forrest, of Pontypridd, referring to our notice of his "Express Mounting Apparatus," forwards an example, and calls our attention to the simplicity and convenience of the paste or glue brush accompanying it. This consists of a piece of good sponge, cut to a suitable size and shape, and attached to a piece of wood. It appears admirably fitted to answer its purpose. He states that by the aid of the apparatus complete three hundred cartes can be mounted in an hour. He also sends an example of his "Economic" card printing frame, which he supplies at the incomprehensibly low rate of half-a-crown a dozen. It is a piece of hinged wood the size of the card negative, a pad, and two clips to hold wood, pad, paper, and negative together. It is certainly simple, and seems to be efficient.

PHOTOGRAPHING CRIMINALS.—The following letter, signed "Governor of a Gaol," appears in the *Times*:—"Sir, my attention has been called to that portion of the report of the Commissioner of the Metropolitan Police, published in your columns of the 22nd inst., in which he states twelve gaols had not yet furnished photographic likenesses to the Habitual Criminals' Office, Whitehall. As the gaol of which I am governor is one referred to, allow me to suggest to Colonel Henderson two things—first, get an Act compelling all criminals to sit for their portraits; secondly, the Government to pay a moiety of the cost for the work—and no difficulty will then be in the way, nor any objection offered."

BRITISH ASSOCIATION.—The forty-first annual meeting of the British Association met in Edinburgh on Wednesday, under the presidency of Sir W. Thompson, F.R.S., who delivered the inaugural address in the evening. The meeting is expected to be a brilliant one. Details in our next.

CABINET STUDIES.—Mr. E. H. Cox, of Torquay, has forwarded us some very pretty studies of a little gipsy girl. The model is pretty, and the treatment very pleasing.

RAPID PHOTOGRAPHY.—A correspondent of the *Photographic World* gives a good summary of the conditions of rapid photography. They are such as we have often stated, but they are here well epitomized. "The principal essentials for obtaining photographs by rapid exposure are good chemicals, well prepared solutions, good lenses, skill, experience, and a good light. The bath should be composed of the best recrystallized nitrate of silver that can be obtained. The strength and quality of the solutions should be in harmony with the bath, which should be 40 grains to the ounce. The collodion must be bromized, and the developer new, which will require but little alcohol—one containing 30 grains of iron, 15 minims of acetic acid to the ounce, and alcohol *quantum suf.* The intensifier to be the usual developer with about 10 grain of citric acid added to each ounce. The quantity of alcohol in the developer and intensifier will be about equal, therefore the washing operations of developed and intensified plates can be dispensed with, and the fixing can be done afterwards. All the solutions should be well filtered. I may add that collodions and lenses are advertised for quick exposures. . . . The next thing is to test the chemicals and apparatus to be employed by rehearsing the *modus operandi* before a final debut. Place your tent in a good position. Coat a plate in your tent: try to develop it without exposure. If the plate show bare glass, and is free from any grey deposit, the tent is all right. If light rings make their appearance on the plate, or the plate be fogged, find out the small holes in the tent, and cover the window with an extra sheet of yellow paper, and try again. If not remedied, add to the bath a few drops of diluted carbonate of soda, bleach, &c. After this delay expose another plate in the camera, and cover

it with the focussing cloth; make the exposure as quick as possible. Develop. If the image steadily but quickly appears, a good idea can be formed as to the time of exposure necessary when you get to work. Proceed to intensify, by adding the intensifier to the few drops of silver which have been placed in a vessel for this special object. The image will acquire the necessary intensity if properly exposed. Do not add much silver, but rather repeat the operation several times if the intensity comes out reluctantly. Now pour over it a solution of glycerine one part, water two parts. Fix with hypo. within a few days or so, or before, if convenient. With a good supply of clean plates, iron-weight and wrapped in papers, the tent protected from wind and dust, no sunshine on the lens and yellow window, good developing, expedition in manipulating, a good stock of patience, perseverance, and hope, in addition to what have already been referred to, you will then be on the track that can achieve, with a powerful electric light, as perfect a copy of a wheel revolving rapidly round, as if it had been at absolute rest."—P. MAKIN.

To Correspondents.

JOHN BLAKE.—Almost all samples of glass are more or less subject to the action of sunlight, and the most pure and colourless are most subject to change, becoming yellow and obstructing the passage of actinic rays very considerably. The ordinary common samples of glass change least of all, and as they are most inexpensive, they do not involve serious cost in renewing, should that be necessary. We recommend, therefore, the use of common sheet glass in the studio, which may be obtained of any glazier. It is wise once in half a dozen years, or so, to examine the glass, to see if it has changed seriously in colour, and, if necessary, have it renewed.

F. P.—We believe that most of the photographic dealers will supply you with pure sheet india-rubber; but we do not know of any specific place where it is sold. 2. Water passed through a charcoal filter cannot take the place of distilled water for preparing photographic solutions. The charcoal filter simply removes organic matter; it does not remove inorganic salts in solution, such as carbonate of lime, &c., generally present in common water. You will find that on adding nitrate of silver to the water which has passed through the filter, it will become milky, from the formation of carbonate or chloride of silver. This water, with one or two grains per ounce of nitrate of silver added, then sunned, and filtered through blotting-paper, may be used for the nitrate bath.

EDWIN ALLEN.—If you send a copy of the photograph and full particulars, together with eighteen postage stamps, to our publisher, he will register it for you. The negative need not be sent. Registration will enable you to defend your copyright should anyone copy your photograph. It will not prevent anyone else obtaining a negative of the stone and issuing prints.

A YOUNG BEGINNER.—The form of studio in the work you mention was once somewhat popular, but has been found in practice to be very unsatisfactory. You cannot do better than build a ridge-roof studio on the space at your disposal, which will be ample, and answer well, provided there is an uninterrupted light on the north-east side. In this case make the studio opaque at each end, and south side and roof; opaque for six feet at each end, side and roof of north-east aspect, and the rest roof and side glass, to within eighteen inches or two feet of the ground; height, eight or nine feet to eaves, thirteen or fourteen feet to ridge. This will give you an efficient and easily managed studio.

A. L. T.—We have often described the process of giving what is termed an enamel surface to paper prints. It consists in coating a piece of plate glass with tough plain collodion, and allowing it to dry; then coating with gelatine, and applying the print face downwards. When all is dry, the print is lifted away from the plate, bringing the gelatine and collodion, and possessing a most brilliant surface. You will find it detailed on p. 82 of our YEAR-BOOK for 1865. The NEWS ordered has been sent.

D. G.—The lighting is not quite satisfactory, the face being a little flat. We should say that there is a little too much direct front and top light. A little more definite strong light from one side would be an improvement. 2. Of what are the corners of your dark slide made? Constant washing, and the use of clean blotting-paper for each plate, are the only remedies. Possibly the wire at the corners is not silver, in which case that should be remedied.

T. H. R.—Thanks. Surely if the photographing of criminals in goals be made a duty, a means of compelling the convict to sit ought to be provided, or punishment in case of contumacy to this as to any other rule of the prison.

A WOULD-BE-PHOTOGRAPHER.—As we understand the formula, sixteen grains of nitrate of silver are added to one ounce of the bromized collodion. 2. Distilled water is preferable, and if used in a dish or bath, a fresh quantity is not required for each plate. 3. The same dish of preservative will do for several plates probably a dozen. 4. Over-exposure will give a weak flat negative. 5. Developing with the plate on a levelling-stand will answer as well as in a dish. As it is desirable not to hurry the operation, it is better not to attempt to keep the plates in the hand all the time of development. It is not necessary to lift the plate out of the dish when adding the ammonia. 6. It is not more difficult to judge of the right amount of intensity here than in ordinary development, and there is less risk of over-development.

C. G. H.—For taking groups in the studio we should prefer a portrait lens. For whole plates use either a lens for 10 by 8, or a whole-plate lens with stop. Take care to arrange the figures in a curve to suit the lens. Bear in mind that a French whole-plate lens rarely covers more than an English half-plate lens. A half-plate portrait lens of either of the best English makers does about the same work in covering as almost all French whole plates; if you have a whole-plate portrait lens of either of the English makers it will cover groups well.

C. C. F.—The mode of lowering the eaves, so as to alter the pitch, will answer the purpose. The walls at the sides of the studio will cut off much valuable light. We should be tempted to have it raised, and to twist it so as to get a pure north light. In this case you need only have glass on that side of either side or roof. It will be well, as you suggest, to increase the extent of the opaque portion near the siter. Excess of top light and abruptness in the side light are the chief characteristics of the examples sent.

THE REV. S.—We have not tried or seen any of the preparations for working collodio-bromide according to Mr. Cooper's method, and can only speak in relation to his formula published at the beginning of the year. From this we judge that his silver solution contains $10\frac{1}{2}$ grains in 2 drachms of alcohol, his collodion 5 grains of pyroxyline and 8 grains of bromide in 6 drachms. The answers to your questions are then as follows: The collodion need not be diluted. 2. Silver should be added to the sensitizer at the rate of from six to ten grains in each two drachms. The silver is added to the collodion cold.

O. M. MAJOR.—Our correspondent has scarcely considered the invidious position we should be placed in if we opened our pages to a discussion of the value of the various lenses of different makers. Considerable risk of ill-feeling would inevitably arise, and, after all, little good result could arise, as it would be impossible to avoid the risk of indirect puffing. We can understand our correspondent's dilemma in choosing. If he will mention the various lenses which have come under his attention as in any way likely for his purpose, attaching to each a letter or number, and send us the list, we will endeavour to give him some information on the characteristics of each, and its suitability to his purpose, mentioning the letter or figure attached.

GLENDERMOTT complains that he has on four several occasions written to ask questions to which no answers have been given, and he thinks it is unfair to treat a subscriber so. We should think so too, if the fact were as he states; but as we never fail to answer questions received, either the questions have not reached us, or our correspondent has contrived to miss reading the answers. His letter, we think, suggests that the latter is the true explanation, for, notwithstanding that he styles himself "a subscriber," he requests that we shall send him word on a halfpenny post card informing him in what number answers to the questions now sent appear! We shall answer his questions with pleasure, but we regret that we cannot undertake to send an intimation of the fact by post. Negatives transferred by means of gutta-percha are very difficult to keep flat. They require carefully handling, and preserving between the leaves of books. It is many years since this method of transferring was recommended, and we have published several better processes since. 2. There are no books devoted to the several processes you mention. The best information on the subject has been published in the PHOTOGRAPHIC NEWS. In working the Albert-type and similar processes, the printing is effected by aid of the gelatine surface itself. You will find an article on the subject in our YEAR-BOOK for 1871. There is no artificial ivory process of any practical value; none has ever come into use. There is a manual of the Autotype process, published by the Autotype Company, Rathbone Place. The number containing an article on Dagron's method of producing minute photographs is out of print.

R. TUDOR WILLIAMS.—We placed the prints, &c., in the hands of our publisher for immediate attention. He will write to you with some explanations.

Several Correspondents in our next.

Photograph Registered.

MR. R. BISHOP, Kennington,
Photograph of St. Mary's Church, Newington

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 675.—August 11, 1871.

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THE ORIGIN OF THE COLLODIO-CHLORIDE PROCESS.

We do not intend to occupy much time or space by further discussion with Mr. Thomas Sutton in relation to the origin of the collodio-chloride process. He, of course, returns to the subject *more suo*, and describes our simple recapitulation of the facts as a "tremendous attack" upon him. The statement of truth is, perhaps, the most "tremendous attack" which can be made on error. Ithuriel's spear, when it "touched lightly" the squatting toad, was tremendous to the Satanic sneak, for no falsehood, Milton tells us, can endure the touch of truth. As we entered into no comment, forbore epithet, and avoided making the multitude of counter accusations to which Mr. Sutton is so damagingly open, the bare statement of the facts of the case in discussion is clearly felt by that gentleman as an "attack" which seems to him "tremendous." He carefully avoids denying these facts, however. He quotes, as we have before quoted, M. Gaudin's description of the preparation of photogene with iodide of silver, and his remark that the photogene with "chloride is prepared in a similar way;" but he carefully abstains from noticing M. Gaudin's subsequent statement that he experimented very little with the chloride, because he found "no possibility of succeeding with it." He avoids any reference to the fact that no other person acted upon M. Gaudin's allusion, and that until our publication of our experiments the collodio-chloride process was unknown, and after such publication became popular. It is not worth arguing the point as to what constitutes discovery. The dictum that he only invents who proves, not he who merely suggests, scarcely requires affirming. Neither need we repeat the fact that our conception and working-out of the collodio-chloride process were independent of suggestion or aid from any one. Mr. Sutton has so frequently claimed discoveries which had been published years before, that, on the principle that "they who most impute a crime are pronest to it," it is scarcely surprising to find him charging the practice on others.

Mr. Sutton, who is facetious, says it was, of course, "very naughty" of him to say the words he did, and to prove them. He generally does say much more than he proves; but here he proves nothing that he says; but he does afford proof or illustration of some things he does not say. He affords curious illustration of his unfitness for discussion on points of photographic history. He wonders where M. Gaudin has used the words which we have quoted, and affects to doubt the fact, notwithstanding that we have more than once referred in detail to the article in question. He has had the good fortune to see a single copy of the PHOTOGRAPHIC NEWS—that containing

the "tremendous attack." Now, if this imperfect familiarity with current photographic literature be fact, and not affectation, it explains Mr. Sutton's repeated sins of ignorance, or apparent want of veracity, and his loss of influence and final failure as a photographic journalist.

PRUSSIAN PHOTOGRAPHIC OBSERVATIONS DURING THE WAR.

We have just received a short pamphlet containing the report of the photographers attached to the Prussian staff during the recent war. The report is from the pen of M. Meicke, whose name is well known in connection with the Berlin Society for the Advancement of Photography, and who was one of the three photographers engaged to make photographic observations under the auspices of the Prussian Engineer Corps.

We are promised a further account from M. Quidde, who, with M. Hiutze, completed the trio; and this document will treat more especially of the travels of these gentlemen. At the beginning the staff were ordered to Strasburg, where they first went under fire, and before this fortress they made a series of military plans required by the authorities. Their field party consisted of a captain and lieutenant of engineers, one serjeant as draughtsman, ten sappers, and two drivers, the officers being, we believe, unfortunately quite ignorant of photographic manipulations.

From Strasburg they moved off into France, and after a lengthened halt in the provinces, proceeded to Versailles. Here they were attached for duty to the army of the Crown Prince, and under his orders proceeded to take surveys and also pictures of the enemy's batteries in the immediate neighbourhood, and of other points of importance.

The photographic outfit was, unfortunately, ordered upon the requisition of a photographer who subsequently threw up the appointment, and, consequently, some difficulty arose from the fact of the operators being occasionally ignorant of the precise nature of their stores, as also by reason of special articles peculiar to individual operators having been omitted. On the whole, however, the operations cannot be regarded otherwise than as having been perfectly successful.

ALUM IN THE PRINTING BATH.

Our readers are familiar with Mr. H. T. Anthony's proposal to use alum in the printing bath, by which he believes economy, convenience, and excellence of result are better attained than by the ordinary printing bath.

The claims of this new form of bath have recently been subjected to a careful scrutiny, and some details of the circumstances and report will doubtless prove interesting to our readers. Messrs. Scovill and Holmes, extensive stock dealers, having offered a gold medal and a silver one for the two greatest recent improvements in the art, to be decided by a committee of the National Photographic Association, Mr. Anthony put in a claim for his bath with alum, summing up his advantages as follows:—

"1st. Economy in the use of silver.

"2nd. Uniformity of the condition of the bath.

"3rd. Prevention almost entirely of the solution of the albumen in the silver solution.

"4th. Economy of time in the operation of ammonia fuming.

"5th. Great economy in hot weather by avoiding the discolouration of the sensitized paper.

"6th. Increased ability to print from thin negatives.

"7th. Economy in the use of gold in toning.

"8th. Improvement in tone, the same paper being used.

This claim was submitted to Mr. Charles Wager Hull for examination, and after careful testing he admits the important claim as to keeping qualities in hot weather of the paper excited in the bath, but denies or doubts the validity of the other claims. We subjoin extracts from Mr. Hull's report. In examining the alum bath he tested it by the side of two others. In the report he refers to Anthony's as bath A, and to the others as bath "one" and bath "two." These were made as follows:—

Bath "one."—To $\frac{1}{2}$ gallon of 35 grs. silver solution add about $\frac{1}{2}$ of an ounce (fl.) muriatic acid; shake well; make alkaline with ammonia.

Bath "two."—10 grs. nitrate of silver to one ounce water.

Taking the claims categorically, he says:—

"Claim 1st. *Economy in the Use of Silver.*—I cannot admit this claim, so far as I have worked with Anthony's bath, at the same time working bath "one," hereafter described. Anthony's bath, made exactly as he directs, containing 40 grs. of silver to the ounce. Bath "one" containing 36 grs. to the ounce. Practically an equal amount of paper floated upon each. Anthony's now contains 37 grs. to the ounce; bath "one," 33 $\frac{1}{2}$ grs. Claim 1st cannot, therefore, be allowed.

"Claim 2nd. *Uniformity of the Condition of the Bath.*—This I cannot exactly understand; it is somewhat vague; however, I fail to discover greater uniformity in Anthony's bath than in bath "one."

"Claim 3rd. *Economy of Time in the Operation of Ammonia Fuming.*—In all cases, whether of my printing or in that of Fredericks or Kurtz, the fuming was the same as was given to prints made by the Anthony bath; and unless it can be claimed that the Anthony prints would have been improved by less fuming, this claim cannot be allowed. In my opinion they would not have been improved, and with less would not have been any better. In all cases the fuming was for ten minutes with ammonia conc.

"Claim 5th. *Great Economy in Hot Weather by Avoiding the Discolouration of the Sensitized Paper.*—So far as I have been able to test this claim I believe it to be well founded. I have silvered repeatedly the following papers on Anthony's bath exactly one minute, and have found that all keep well at this season of the year for forty-eight hours without discolouration; in sixty hours or seventy-two hours all have changed to a greenish yellow; in ninety-six hours all to a brownish-yellow—even then not worse than much paper printed by most photographers in the summer months. Paper silvered in bath "one" was about equal to that of Anthony's of ninety-six hours, in twelve hours."

With only one sample of paper the keeping qualities failed, and he adds, "I am therefore in favour of allowing this claim 5th.

"Claim 6th. *Increased Ability to Print from Thin Negatives.*—This I cannot admit; see prints by Kurtz, all very thin, particularly that of two girls so marked; and to some of my stereoscopic prints.

"Claim 7th. *Economy in the Use of Gold in Toning.*—This I cannot positively deny, not having made any quantitative test; I, however, doubt its validity, inasmuch as the prints by Anthony's bath did not tone any faster than those by other baths. I saw every print toned as well as silvered at Kurtz and Fredericks'. I am therefore opposed to the 7th claim.

"Claim 8th. *Improvement in Tone, the same Paper being Used.*—This I also oppose, and refer to prints for proof of my position. Some are best of one kind, some are best of the other; the difference in all cases being due to either more or less printing, as may have been the case. Of prints inclosed there are 8 pairs (16) of Fredericks's, 5 pairs (10) of Kurtz's, 8 pairs (16) of Hull's stereoscopes, and 4 single ones. All are marked as to paper and bath. Each pair was, except as stated below, silvered, fumed, printed, and toned the same, and upon the same day, except the Fredericks, which were silvered three-quarters of a minute upon bath "one" (his bath), and are upon his paper, the 'Economic' Steinbach. Kurtz's prints were all silvered one minute on bath "two," and are upon Fredericks's 'Economic' Rive. The toning of Kurtz, Fredericks, and my printing, where marked with an S, was all done in a bath made slightly alkaline with sal soda; those of my printing marked A were toned in Anthony's bath." (Mosaics for 1870, p. 26.)

Finally, Mr. Hull says: "My conclusions are, therefore, to admit claim 5 as proven for this season of the year, and comparatively so for the summer; all other claims I cannot agree to as proven by my trials."

The committee awarded to Mr. Anthony the silver medal.

That the bath possesses the advantage of keeping the paper clean, and of keeping clean itself, is confirmed by various testimony. Mr. Carl Meinert says that with this bath:—

"1. Any kind of good paper will keep white two or three days even after fuming.

"2. Twenty to forty grain silver bath with one half minute's floating, and ten minutes' fuming, gives as fine prints as a 120-grain silver bath.

"3. The bath keeps clear without the necessity of clearing it up with clay, chloride, or permanganate (except, of course, when a foul paper is floated).

"4. The prints can be taken out of the gold toning bath before they are half toned, and the hypo will not attack them so much as without the alum, and a beautiful tone will remain.

"This is my experience in practice. Of course I cannot enter so much into chemical research as theorists and amateurs who have time and leisure to do so; and, after all, practical trials prove facts for the practical operator."

Mr. Meinert makes the bath as follows:—

Silver	...	...	1 ounce
Water	...	...	4 ounces

When completely dissolved, add—

Nitric acid	...	...	5 drops (stir well)
Ammonia, conc.	...	8	" "
Saturated solution of alum	2	drachms	" "

Shake up well, and add eight ounces water and half an ounce alcohol. When wanted for silvering, filter; but leave the sediment in the stock bottle, into which filter back the solution after silvering. Float thirty seconds. Dry quickly and perfectly. Fume five to ten minutes.

Accompanying his claim, Mr. Anthony sent the following details:—

"To use this process, first make a strong solution of

nitrate of silver, add a little ammonia, shake well, and allow to stand and settle. Pour off the clear solution, and add a very small quantity of alum. The proportion I am using is two drachms to three pounds of nitrate of silver.

"I will state here that it is not absolutely necessary to add the ammonia to the silver solution, because I have used the alum in connection with an acid silver solution, and find that as thus used it is far superior to the plain nitrate of silver solution. It has two remarkable effects: first, it sensitizes the paper in an exceedingly short space of time; and second, the prints tone with most remarkable ease, and require very little, if any, over-printing. The only objection to the use of the acid silver and alum solution is, that the bath will become brown or red. Where the ammonia is used before adding the alum, I have never found the bath to become discoloured. In fact, the action of the solution is to prevent the dissolving of the albumen; as a consequence, the skimming of the solution is almost entirely done away with, thus saving a great loss of time and of silver. As a further consequence, the paper keeps perfectly well in hot weather.

"After the strong solution above spoken of is prepared, it is reduced by adding water to the strength of thirty-five or forty grains to the fluid ounce. I find one minute ample time for floating, and from five to ten minutes sufficient for the ammonia fuming. In fact, very good prints can be made without fuming at all.

"In all cases I use my process for washing—*i.e.*, soaking the prints from ten to fifteen minutes in a very weak vegetable acid solution, and subsequently rinsing in two changes of water. The toning is very easily effected in any good bath, and is finished when the prints have still a rich brown colour; it is not necessary to carry it to the blue stage; thus there is a great saving of gold. By a calculation of the quantity of paper and gold used for two months last fall, I found that it took only $\frac{37}{100}$ of a grain of our chloride of gold to a sheet of paper. Another advantage I find is, that I can make good prints from thin negatives without difficulty, and consequently have much less loss of paper by imperfect printing. In fact, the saving from this cause has been with me very large.

"As the committee may have read of failures in using this process, I will merely state that the failures have arisen in all cases from the use of too much alum. Mr. Taylor advises the addition of two grains of alum to one fluid ounce of a thirty-five grain nitrate of silver solution; our practice is to add about two grains to an ounce of the salt, a considerable less than his proportion; and considerably more than mine can be used without special difference in the result."

In the *Bulletin* Mr. Anthony subsequently adds:—

"The quantity of alum, or some compound it makes with the silver, taken up by the silver solution, is exceedingly small. From an analysis made by our chemist of a bath that had been used for months, bath forty grains to the ounce by the hydrometer, there is contained only one-third of a grain of other soluble matter than nitrate of silver. In making up the silver solution for use we dissolve three pounds of nitrate of silver at the rate of one hundred grains to the ounce of water; a little ammonia is added, so as to produce a small quantity of oxide of silver; this is well shaken up, and allowed to settle. It is then decanted, and two drachms of powdered alum added. When required for use it is reduced in strength to thirty or forty grains to the ounce. We are now using thirty grains to the ounce for the E. A. paper with perfect success. In fact, forty grains, or even thirty-five, was found too strong, the shadows printing too dark and massed."

With the testimony which is afforded above, Mr. Anthony's improvement unquestionably deserves trial, and the advent of hot weather gives it at this moment a special interest.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

THE WEATHER AND PHOTOGRAPHIC INTELLIGENCE—THOMAS SUTTON AND THE COLLODIO-CHLORIDE PROCESS—THE CLAIMS OF REAL DISCOVERERS—SPIRIT PHOTOGRAPHS—THE PRESIDENT'S INVITATION TO THE SOUTH LONDON SOCIETY.

JULY is usually a month of stagnation so far as photographic intelligence is concerned. Lucky amateurs are generally enjoying some rural retreat where they can expose their dry plates and make memoranda for discussion at the next session of their respective societies, or, where they have stamina enough for the task, are tramping over desolate wilds like your northern correspondent, who has been lucky enough to photograph by the light of the midnight sun. Professional photographers are generally sufficiently busy in the hot studio to render all experimental work impossible. Meetings are suspended. The task of the photographic journalist must, I imagine, be as heavy as that of the Israelites in Egypt when they were compelled to make bricks without straw. My task as an echoist ought to be very simple and easy; only there is scarcely anything of interest to echo.

I fancy that to this paucity of subject of photographic interest we owe the gratuitous little attack of Mr. Thomas Sutton on the originator of the collodio-chloride process. Mr. Sutton is a joker of jokes, and when he does anything offensive, says it was only his fun. Unfortunately, his jokes often take the form of slander, and sometimes subject him to actions for libel, but as he contrives to live out of the jurisdiction of English law courts, this only adds to the fun of the thing. He now says he could not help laughing when he penned the fibs which the Editor of the *NEWS* recently refuted. But Mr. Sutton likes his joke, and it often must strike him as one of the best standing jokes he has met with for a long time to find himself living in a remote provincial town in France, and installed as "French Correspondent," and indulging in his pugnacious propensities, in a journal which for years was the object of his bitter animosity and constant attack. Having played out two or three journals upon which he has been first fiddle, does the sly dog think to take his quiet revenge by doing the same kind office to the journal which was so long his favourite aversion?

The affected concern for the claims of true discoverers which sits with so little grace on Mr. Sutton—few men in connection with the art having claimed so much and done so little—is, when not affected, a worthy sentiment. The claims of true discoverers should always be carefully conserved by the communities concerned in such discoveries, and the genuineness of the claims should be carefully discriminated. He who suggests a possibility which he does not prove or realize is not a discoverer. He who experiments and fails to produce a result is not a discoverer. The President of the British Association, in his address at Edinburgh, admirably puts this idea in reference to the discovery of the lines in the solar spectrum, when he observes, "Wollaston saw them, but did not discover them," the discovery being "due solely to Fraunhofer." The steam engine was not discovered by Watt, but he gave it all the practical value, and its discovery will be for ever associated with his name. Bingham and Le Gray both suggested and tried collodion in photography, but its discovery as a process is legitimately accorded to Archer. Bellini, Gaudin, Captain Dixon, and others experimented with emulsions of haloid salts of silver; but no practical process arose out of their labours, which were unknown to many, unheeded by more, and forgotten by others, when the collodio-chloride process was discovered and introduced in a practical form by Mr. Simpson, and the collodio-bromide process by Messrs. Sayce and Bolton, the absolute initiative being, I believe, due to the first named of these two gentlemen. This

reminds me, by the way, of the somewhat comical remonstrance by "An American," which I notice in a contemporary in reference to Col. Stuart Wortley's phrase "my process," in connection with collodio-bromide. "An American" claims the collodio-bromide process as Mr. Carey Lea's. In fact, everybody seems to forget the claims of Messrs. Bolton and Sayce. Mr. Carey Lea has given the subject so much attention, and made such important modifications, as to acquire a certain property in the process, and his claims are generally handsomely acknowledged. But the Liverpool gentleman, who was the practical originator, should not be forgotten.

The subject of so-called spiritualism, or rather "psychic force," as in a pseudo-scientific investigation it has recently been phrased, keeps cropping up in connection with photography. I find in the *Spiritualist*, a journal devoted to spiritualism, the following letter:—

SIR,—I have a suggestion to make about spirit photographs:—

Firstly. The material body of the spirit must be capable of reflecting the sun's rays, or the plate could not be impressed.

Secondly. The body of the spirit being quite invisible, it evidently does not reflect the rays of ordinary light.

The picture must therefore be formed entirely by the ultra spectral and dark (to our eyes) rays. Hence, perhaps, its faintness.

Would it not be possible, by using a plate prepared for the purpose, to make the image of the spirit in the camera visible to the eye, inside the instrument? For instance, if a slab consisting of a sheet of paper soaked in sulphate of quinine, or decoction of horse chestnut bark, were placed in the camera, could not these dark rays be rendered visible by the well-known phenomena of fluorescence? The refrangibility of the rays would be reduced, and they would then be able to affect the eye. The thought has also occurred to me that it might be possible in this way to render visible in the camera forms visible only to the medium himself outside, and if so, why could not photographs be taken in that way? You will know whether all this has been already done, and with what result.—A. B.

The editor of the journal adds the following note:—

In the case of the authenticated spirit portrait taken by Mr. Mumler, of New York, which Mr. Livermore, the New York banker, swore in court to be a good likeness of his wife, and which formed one of the points on which Mr. Mumler was acquitted of the charge of fraud, the spirit form produced a thicker deposit of silver on the glass than did the face of Mr. Livermore. Hence, if the extra-violet rays had anything to do with it, they must have been emitted from the body of the spirit, and not reflected, because their intensity was so abnormally great. Several of the chief London mediums have been photographed, but the spirits about them have not made an impression on the plate, except that in one instance some very feeble indications are said to have been obtained. Probably the work of producing them is all done inside the camera, for Mr. Mumler always stands near the camera while they are produced. The photographers who tested his mediumship brought their own cameras, chemicals, and plates, and would not let him touch them. This kind of manifestation is very exhausting to the medium. Of course it would be easy enough to try the suggestion of our correspondent, and to paint the ground glass with solution of quinine or resucine, or to use a square of ground uranium glass. Any photographer can easily produce much better spirit pictures than the real ones by a well-known plan.

Although Mumler was acquitted of the charge of fraud by the Court, I thought that the investigation made at the time by the photographers of New York had satisfactorily proved that the so-called spirit photographs were very palpable impostures; but I find that at a recent meeting of the Edinburgh Photographic Society a very respectable photographer gave an account of Mumler's alleged spirit photographs, apparently with a conviction that there was some foundation for the alleged spiritual origin of the pictures. The argument in such cases appears to be, that because certain results are produced of which an immediate explanation cannot be offered, it is of necessity produced by spiritual causes. If this argument held good, nine-tenths of the tricks of clever professional conjurers would possess an equal claim, for certainly many of the tricks of Hermann, Houdin, and others, are still unexplained. In relation to the alleged spirit portraits, of which I have seen several, they afford strong evidence of the credulity of those who profess to recognize likenesses in them, as the majority are more like a child's rag doll than anything else I know.

Whilst the meetings of the two London societies are sus-

pending, the President of the South London Society, the Rev. F. F. Statham, carries out an admirable practice. He invites the members of the Society to spend a social evening with him, and entertains them with delightfully liberal hospitality. Such an invitation was given, and largely accepted, on the last Saturday in July. I am not going to report proceedings, however; I simply record the pleasant fact.

CAUSTIC POTASH AS A SOLVENT FOR ALBUMINATE OF SILVER.

Amongst the claims submitted to the medal committee of the American National Photographic Association, was one by Mr. W. H. Sherman, for an improvement in fixing collodio-chloride prints on porcelain or opal glass, which consisted in getting rid of the albumen used as a substratum by means of caustic potash. Mr. Sherman distinctly recognises the albumen as a source of fading, but, instead of abandoning its use, he proposes first to use and then eliminate it. We pointed out years ago that the albumen substratum was a source of fading, and also insisted that our original aim in proposing collodio-chloride of silver for use in printing was to supersede albumen, which, in conjunction with collodio-chloride at least, is altogether unnecessary. Mr. Sherman's proposal is ingenious, but, we think, with Mr. Carey Lea, appointed to examine the claims, scarcely of practical value. Mr. Sherman describes his plan as follows:—

"After toning and fixing the print made on the collodio-chloride film on a substratum of albumen, the porcelain is immersed, after thorough rinsing, in a solution of caustic potash or soda, about one ounce to water one quart. The albumen is softened or dissolved by the alkali, and by a law of osmotic action all crystallizable matter is expelled, the collodion film being the septum. By this means the hyposulphite of silver and soda, and any sub-salt of silver remaining, are undoubtedly ejected. The object in view, and which I sought to accomplish in addition to the removal of the hypo, was to render the print, if possible, like a developed picture, in respect to the quality of the silver deposit. The print must have sufficient body and vigour to admit of being fixed in a strong bath of hypo-soda. The bane of porcelain prints is weak hypo. They should be able to stand at least eight ounces to the quart, with half to one ounce sal ammoniac. The formation of any insoluble sub-salt will thus be prevented. Every trace of the fixing bath may be afterwards displaced from the print, leaving nothing to disturb the future peace of the precious metals remaining. After removal from the alkali, the picture must be thoroughly and carefully washed; preferably by leaving under the tap, and allowing the water to drip upon it for several hours. It is then, after drying, varnished with a varnish made by dissolving—

Gum elemi ...	...	...	...	1 ounce
Alcohol ...	...	...	...	8 ounces

"This varnish possesses peculiar excellences for porcelain or other pictures which are to be protected by a covering of glass. It seems to be absolutely and for ever impervious to water, in which a picture varnished with it may remain months without the least effect. Potash that will remove paint readily, or dissolve ordinary varnish from negatives in a few hours, does not affect it. It also admits of being coloured with oil, water, or dry colours.

"The picture, when enclosed between the porcelain on one side, and this perfectly waterproof varnish on the other, without anything to form the basis of future disturbing or disorganizing chemical action, imprisoned with the metallic deposit, may reasonably be expected to be permanent under ordinary conditions. We know from experience that a sulphide of silver print on paper is very unstable; but a sulphide of silver negative on glass, when varnished with a durable varnish, seems capable of any amount of exposure to direct sunlight without change.

"From such experience as I have been able to acquire while using the above process, I am led to believe that pictures so treated will not, under ordinary circumstances, suffer change. If required, I will send some of these pictures by express; but as, perhaps, time is the only test that can prove anything of real importance in relation to the value of the process, would it not answer every purpose if I should take them with me when I attend the convention? The value of the varnish can at least be tested, so I will send on samples at once."

He subsequently sent a further note as follows:—

"I enclose a print (the soiled condition of which please excuse) on which I tried the effect of the application of caustic alkali, as set forth in my porcelain process, which I offer to the committee on discovery, &c., as an evidence of the benefit of the process.

"I first flowed the print with plain collodion, dried, and then placed in the lye for an hour or more. The print was only partially washed before, and only rinsed after, being in the lye. It was then half covered by placing thick cardboard in contact, in a line indicated by the pencil marks, and placed in a window, where it has remained until a few days ago. Certainly the exposure would have changed the exposed portion, had it not been in the lye.

"Does not the alkali change the metallic deposit from a suboxide to a metallic state, or to a form more closely allied to the developed picture? If oxidation of the organic matter with which the metallic deposit is associated is a cause of the spontaneous fading of photographs or porcelain prints, will not the alkali serve to prevent oxidation and the fading consequent thereon?

"Let me further submit, that certain varnishes cause rapid fading of porcelain prints; also, that the coagulated albumen on the porcelain plate will not, by any amount of washing which it usually receives or is ever likely to receive, part with the hyposulphite of soda and silver retained by it. Hence the importance of the softening and solvent action of the alkali.

"The only excuse for sending this print is that it is the first experiment with the alkali on an albumenized paper print, and that it seems to me to promise beneficial results."

Mr. Carey Lea reports on the proposal as follows:—

"Mr. Sherman proposes to increase the permanence of collodio-chloride prints on glass, when made upon an albumen substratum, by treating the picture with a solution of caustic potash. As his claim is for greater resistance to the destructive power of time, it is impossible here to make a report of a decisive character; this could only be done by taking a quantity of specimens, some subjected to the treatment proposed, and others not, and by placing them aside under ordinary conditions for some years. Any other mode of trial would be wholly inferential in its nature, and we know very well that such modes of reasoning are not admissible in photography. It seems allowable, however, to make the following observations connected with this subject.

"An albumen substratum is a well-recognised source of fading in the case of collodio-chloride prints on glass. Nevertheless, it has the attraction that it secures the film solidly (collodion made with the chlorides never adheres so well to the glass as that made without them does), and it also gives with more ease a rich tone. The first of these difficulties may be avoided by either edging or coating with India-rubber varnish, and the second is not very serious. Mr. Sherman, however, prefers to use the substratum, and believes that all its dangers may be removed by subjecting the plate to the subsequent action of caustic potash. As already said, time alone would determine with certainty what degree of advantage the treatment confers, and whether plates so treated are as permanent as those made without the substratum.

"The following experiment may, however, throw some light on what takes place when the compound of albumen

and silver is treated with the alkali. Some white of egg was coagulated by adding it to a solution of nitrate of silver, and the excess of the silver salt was washed out by successive decantations. A portion of the coagulum was then thrown into a strong solution of caustic potash. For a time, little or no action was evident, but on examining the liquid some hours after, the whole coagulum was found to have dissolved, except a few shreds and a little brown powder, which last was, of course, oxide of silver.

"The conclusions to be drawn are as follows:—Caustic potash is capable of decomposing the compound which silver forms with albumen, the albumen dissolving in the form of albuminate of potash. But this action is not rapid, and it seems evident that if, in the case of an albumen substratum, the action of the caustic solution were to be carried to the point of causing this decomposition, and thus rendering the albumen soluble, then the hold of the film upon the glass would be destroyed, and it would slip off, because it is only in its insoluble (coagulated) form that albumen can act to give adhesion. Mr. Sherman, therefore, certainly does not carry the action of the alkali this far, but only to partial decomposition. And as I have already said, how far the protecting action thus obtained would go, could only be determined by the actual trial of putting aside specimens until the influence of time should indicate on which side is the preference. Mr. Sherman holds that collodio-chloride work which will stand a strong fixing bath will, other things being equal, be more permanent than those fixed in a weaker one. I expressed some years ago, in print, the same opinion with regard to paper prints, and the principle evidently extends to both descriptions of prints."

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE forty-first annual meeting of the British Association for the Advancement of Science met at Edinburgh on Wednesday, August 2nd, under the presidency of Sir William Thomson, F.R.S. The attendance has been large, and the proceedings of considerable general interest; but, probably, on no previous occasion has there been less matter of special interest to photographers. Year by year, for some time past, the papers relating to photography, directly or indirectly, have become less frequent at the Association, and on this occasion they appear to have reached a minimum. The President, in his inaugural address, and the various presidents of sections, in their opening addresses, referred to various subjects connected with solar science, but in no case with special allusion to photographic action.

From the report of the Council it appears that the British Association is about to resign the charge of the Kew Observatory, and its facilities for solar observation, into the hands of the Royal Society, by whom it will be managed in accordance with the terms of the Gassiot Trust, and £600 have been set aside from that fund for working the Observatory during the coming year. From the Kew report we learn that the Photoheliograph in charge of Mr. Warren De La Rue continues to be worked in a satisfactory manner. During the past year 362 pictures have been taken on 205 days. The prints from the negatives alluded to in last report have been taken to date, and the printing of these has become part of the current work of the establishment. A paper by Messrs. Warren De La Rue, Stewart, and Loewy, embodying the position and areas of sun-groups observed at Kew during the years 1864, 1865, and 1866, as well as fortnightly values of the spotted solar area from 1832 to 1868, has been published in the *Philosophical Transactions*, and distributed to those interested in solar research. A table exhibiting the number of sun-spots recorded at Kew during the year 1870, after the manner of Hofrath Schwabe, has been communicated to the Astronomical Society, and published in their monthly notices. An apparatus is being constructed, under the direction and at the expense of Mr

Warren De La Rue, and it will shortly be erected on the Pagoda in Kew Gardens, in order to be employed in obtaining corrections for optical distortion in the heliographical measurements.

The one paper referring to photography read before the Association appears to have been intended as a practical joke. It was entitled "An Account of a New Photographic Dry Process, by Thomas Sutton, A.B.," the "new process" which Mr. Sutton has discovered being the collodio-bromide with an alkaline preservative. We append the paper:—

AN ACCOUNT OF A NEW PHOTOGRAPHIC DRY PROCESS.

BY THOMAS SUTTON, A.B.

The process which I am about briefly to describe under the title of "An Account of a New Photographic Dry Process" appears to be the simplest and most satisfactory solution of a problem which for twenty years has occupied the attention of many leading photographers, viz., that of the preparation of dry plates.

Hitherto the invariable custom has been to prepare dry plates at home, ready for use on a tour, to pack them very carefully so as to exclude the access of air and moisture, and to trust to their good keeping qualities. By the method about to be described this trouble and risk are avoided, and the tourist can prepare his plates *en route* on the morning of the day on which they are to be exposed by simply pouring upon them a sensitive collodion emulsion—an operation which might be conducted at the rate of one plate prepared per minute, after which they can be put at once into the dark slides ready for exposure without being washed or any preservative applied to them.

This emulsion will keep for many weeks, and perhaps months, without losing its good qualities, or varying in the slightest perceptible degree. The development of the exposed plate is effected on the same day as the exposure, and is a very cleanly operation, requiring no nitrate of silver, and producing no stains upon the fingers, articles of furniture, &c. Thus by this new process the practice of landscape photography is rendered so simple and certain that any intelligent person may quickly master it and realise much success without the amount of fog, expense, dirt, and disappointment which, more or less, accompany other methods.

It only remains to describe how the emulsion is made and how the development is effected. This can be done in a very few words. The emulsion is a collodio-bromide of silver, made by adding to an ounce of plain collodion eight grains of bromide of cadmium and ten grains of nitrate of silver. It is then carefully "corrected," by which is meant tested and treated so as to contain a very slight trace of unconverted bromide of cadmium.

The development is effected thus:—The plate is placed, film upwards, in a dish of common well water for a minute or two, and then the well-known alkaline developer is employed. This produces in a few minutes a bright and dense negative, requiring no intensification with silver. The sensitiveness of plates thus prepared is about the same as that of ordinary dry plates. If rapid dry plates are required they must be specially prepared over night for use the next day. The method consists in placing the plate in water, after coating it with the emulsion, for at least five minutes; then pouring over it an alkaline preservative, composed of one part of albumen to four parts of water, to every ounce of which ten minims of ammonia are added, washing this off after it has remained a minute upon the plate, and then putting the plate into a box to dry during the night. Plates thus prepared are quite as sensitive as wet collodion ones. It has been proved possible to make an emulsion which shall, without this treatment, yield equally sensitive plates, but I am not able at present to give an exact formula for it. Plates washed and treated as above described with an alkaline preservative may be used wet, and are equally sensitive. Thus a new wet collodion process is originated without a nitrate bath—a bath of water being substituted for one of silver. The many advantages of such a process will be obvious to intelligent photographers, the principal one being that there is no free nitrate upon the film to attack the haloid salt of silver, or crystallise on drying.

A wet film prepared as described might be exposed under water, or in a camera filled with water, a suitable lens, of course, being employed.

The key to success in the processes described will consist in there not being any trace of nitrate of silver left in the emulsion, nor too large a trace of unconverted bromide of cadmium. In the former case fog, in the latter case insensitiveness, would result.

After the reading of the paper,—

Dr. Reynolds, in a few remarks, called attention to the advantages of the process described, but stated that in his hands it had not yet been successful.

Mr. J. T. TAYLOR said that he too had been unsuccessful in working the process, but as it was so simple, in consequence of the freedom from washings and preservatives, the method of operating has much to recommend it, provided good results could be obtained.

MICROSCOPIC PHOTOGRAPHY.

L'ABBE MOIGNO detailed a description of the "Poste Photographique" as adopted during the late siege of Paris. In some introductory remarks, the venerable Abbe gave to Sir David Brewster, of Edinburgh, the parentage of microscopic photography. He exhibited copies of newspapers reduced by photography, and also of films sent by pigeon or ballooned out of Paris for the purpose of re-transmission. By this latter system 50,000 despatches of 20 words each might be brought back by one pigeon.

Prof. KELLAND tendered the thanks of the Section to Abbe Moigno for his very interesting reminiscences of the troubles through which Paris had so lately passed.

Mr. TAYLOR gave the credit of microscopic photography to Mr. Shadbolt, of London, and Mr. Dancer, of London.

The Edinburgh Photographic Society availed themselves of the occasion to organize a photographic trip to Almond Dell, which passed off very pleasantly.

The next meeting of the Association will be held at Brighton, under the presidency of Dr. Carpenter.

PHOTOGRAPHY AND PHYSIC.

MR. H. H. SNELLING, one of the earliest photographers in the United States, and the editor, if we remember aright, of the first photographic journal which ever existed, gives in our Philadelphia contemporary some experiences in connection with the use of photographic chemicals as therapeutic agents. After referring briefly to the services of photography to art and science generally, he says:—

"My intention is to present a phase—if I may be permitted the expression—of photography not hitherto touched upon; namely, photography as a physician. And I wish to do this for two reasons: first, because it will show the extent to which photography can be carried; and secondly, because I know that many of the sons of the sunbeam are sufferers by the almost universal diseases for which photography is the special physiciau. What think you of neuralgia, rheumatism, toothache, and kindred excruciating torments, being entirely under the control of photography? Esculapius may laugh at the assertion, and so may Galeo, but it is, nevertheless, true, and I will tell you how I discovered it, and then give you Doctor Photo's 'Practice of Medicine' in a very few words.

"In the year A.D. 1853 I laboured under a severe attack from the demon toothache, who for eight days discharged his batteries into the stronghold of my citadel, and did considerable damage. During this time I waited upon a dentist, and had a tooth extracted which he asserted was the damaged molar, but which, on examination, proved to be perfectly innocent of any conspiracy to make me uncomfortable. A day or two more of suffering took me to another 'dental artist,' who, after pulling and hauling, and jerking and twisting for an hour, declared that the enemy was impregnable, having secured himself by 'four hooked prongs,' so that nothing could part tooth and jaw-bone, but if one must come the other would follow. Here was a precious prospect ahead—an indefinite period of suffering without the least hope of any known remedy being capable

of effecting a cure, as I had tried them all. I returned to the store, and worked until four o'clock P.M. in most 'excruciating agony.' At that blessed hour, the good little invisible sprite, Doctor Photo, at my elbow, suggested 'Try so and so.' Instantly I acted upon the suggestion, and in five minutes all pain had ceased, and before the hour of 'shutting up shop' arrived, the swelling in my face, which made me look like a 'double header,' had subsided, and 'Richard was himself again,' and the 'fiend toothache' has never troubled me from that day to this.

"A dear friend had suffered for two years with neuralgia, and had spent much substance upon the doctors, who did her no good, but she rather grew worse. So, when I experienced the magical effects of Doctor Photo's prescription, I said to myself—'If so good for the toothache, why not for neuralgia also?' I took some home—just a two-ounce vial full—which was 'applied as directed,' and all traces of the 'demon neuralgia' disappeared in two weeks, and never returned afterwards.

"Old Rheumatism, that arch fiend who so delights in tormenting poor human nature, and usually, when he gets hold of you, gives you an idea of the 'thumb screws' and 'coats of mail' of the old 'Inquisition,' took up his abode in the framework of this poor tabernacle of flesh, and for years refused to vacate at the behests of several M.D.'s; and there he remained, pinching and gnawing, scraping and nipping, until Dr. Photo again came to my assistance, and advised me to use such and such things in connection with the prescription given me for the toothache. Of course I compounded the prescription, and took it 'according to directions.' The old scoundrel Rheumatism departed, 'horse, foot, and dragoons;' and although he has made several attempts since to effect a lodgment in his old quarters, I have successfully foiled him by Dr. Photo's artillery practice—for we must confess that there is considerable war material in his practice.

"I have, since these days, been the happy 'medium' of driving these vindictive and malicious spirits of evil out of a great many into whom they have entered and sought to destroy, and I hope this communication will be the means of driving them out of many more.

"This is what Dr. Photo said to me on the first occasion.

Take—Alcohol	...	...	...	1 ounce
Sulph. ether (Const.)	..	..	..	1 "
Iodide potassium	...	...	...	5 grains
Bromide potassium	...	...	...	5 "
Gun cotton	...	...	...	3 "

Mix them, and put a little of the solution in your tooth on cotton, and rub the gums well every day, as often as possible, for two weeks. This done, the result you have stated.

"You will perceive that the prescription is almost identical with the photographic collodion formulas of the present day; and also, that I have a show of right to claim priority in the use of ether as a 'pain killer.'

"The second prescription of the good little doctor was—

Iodide potassium	...	...	...	1 drachm
Bromide potassium	...	...	...	1 "
Proto. sulph. iron...	...	...	...	1 "
Citric acid...	...	...	...	1 "

made into 2½ gr. pills; to be taken every morning, half an hour before breakfast for six or ten days, then stay four days; repeat, increasing the intervals after each repetition until old 'Rheumatism' has evacuated the premises. While using these pills, use also the solution freely, rubbing the parts affected frequently. Observe the same rule for neuralgia. These pills are also an excellent tonic and powerful invigorator.

"Hundreds have blessed Dr. Photo for these prescriptions, and, doubtless, many among 'The Fraternity' will do so also, if they follow his advice—especially those who are most 'sensitive' to the 'manipulations' of those ancient enemies of the human race, Rheumatism, Neuralgia, and 'Toothache.'

FRENCH CORRESPONDENCE.

Paris, August 9th, 1871.

It is easy to understand that during the disastrous struggle in which we have been involved for a year past, all science which had not war for object and end was completely left aside. However, if photography, so progressive till then, had, for that period, no step forward to notice, its applications received an useful development. I do not speak of the large number of portraits that have been made for all the National Guards, Mobiles, and Mobilisés who wished to keep a remembrance of their military dress, but I mean the more interesting works originated by the defensive plan and the want of news from without. I dare say you know better than we do all that has been done in this last way by M. Dagron; but there is one thing that you cannot know: it is the enthusiastic welcome given to the blessed despatches brought in by travelling pigeons. Poor birds! Sometimes they arrived to die, more often they could not arrive at all. The letters brought by the aerial mail were at once incomplete and defective. It was not easy to reproduce so many different letters—applied on the same screen, and reduce the whole to the size of a card four inches square—with sufficient sharpness to allow, after enlargement, of easy reading. The best vehicle was also difficult to find. All these questions received in practice a very satisfactory solution; and we had occasionally the happiness of hearing from our dear absentees, thanks to photography.

The military service was also indebted to our art for exact reproductions of maps and views taken from different stations whence observation was more profitable. Col. Laussedat offered to the general staff a series of excellent pictures made especially on military purpose, and I had myself the satisfaction of being employed on several occasions in the same office. But photographers were all in the ranks of our army or National Guard, and when I was to begin my work, I was obliged, for procuring an operator, to go as far as the *avant postes*, next Le Bourget, where I knew M. Berthaut, a young artist of skill and goodwill, was incorporated in the eighth battalion of Mobiles de la Seine. It was in the beginning of November, and we were to see many things until the end of December, when he was compelled to take again the bag and chassepot. We obtained forty-seven negatives on dry collodion plates, in which number are included two large panoramic views from the Chateau de la Muette, embracing the Bois de Boulogne, and all the hills around from Chatillon to Montmorency. Besides all the difficulties which were due to actual circumstances, we had to suffer a great deal from the most unfavourable weather, and sometimes were exposed to the Prussian fire; but it was of little consequence in such a moment. Poor Commandant de Milly, the able director of the photographic department at the War Office, was not so happy; he was killed when carrying an order during one of the last attacks against the savage army raised by "La Commune."

If photography has been almost inactive during the Prussian war, and if it had only to retrace afterwards the likenesses of Federals standing upon their barricades—which portraits are now very good testimonials for military courts—it had a great deal to do after the sad events which followed the entrance of the regular troops into Paris. Fire had prepared the most interesting and varied subjects for our artists, and they are still very busy. Every ruined building has been reproduced, inside and outside, in all proportions, from portrait card to extra size; and especially in the first two weeks, it was not possible to walk a step without meeting with M. Leon Levy, Disderi, Marville, Frank, Liebert, and many others, either on foot or in special carriages, going to work as quickly as possible to arrive each before his neighbour. The finest collection is certainly Levy's stereoscopic transparent views on albinized glass. You would never think those ruined monuments had been so recently destroyed; they seem to bear the stamp

of time, and the heavy dust of ages. "La Commune" was a great artist in destruction, and a few hours were sufficient to its genius for leaving many perfect works!

The French photographic societies have not yet resumed their sessions; perhaps they will not do so before next autumn; it is not easy to meet again after such a storm. However, you are informed that a photographic exhibition will be opened in Versailles next month. M. Leon Vidal is always ready to take in hand good resolutions, and he lost no time in addressing French and foreign artists on that unexpected occasion. I hope he will succeed, for we must try to find our way in every suitable direction, and the best plan to repair the harm caused by war is surely to promote the beneficent works of peace.

ERNEST LACAN.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.*

DISCOLOURING OF THE PAPER IN SUMMER—DRY PLATE PHOTOGRAPHY—ON SENSITIZERS—TAKING A TRANSPARENT POSITIVE IN THE CAMERA.

The summer season brings generally the question of the permanence of silvered paper on the *tapis* again. And this leads me to again call attention to the importance of employing washed silvered papers, which, according to my experience, will keep white for months.

For three months no other paper has been used in the atelier of the Royal Academy in Berlin; the paper is sensitized on a bath containing eight per cent. of perfectly neutral nitrate of silver; it is washed immediately four times, and hung up to dry. In the printing-frame the paper is backed by a pad filled with dry carbonate of ammonia, as has been explained in my former letters. The paper prints more rapidly, and the results are more brilliant than with ordinary albumen paper, and turning yellow is out of the question. I have kept the prints for a week before toning them, and still obtained excellent results. For the summer season I cannot recommend anything better to prevent the discolouring of the paper.

Lately another method to produce permanent sensitive paper has been recommended; the method is by no means new, for it can be found in my Handbook (American edition, page 163); it consists in the employment of citric acid. The following is the formula:—

Nitrate of silver	...	...	...	1 part
Water...	...	...	...	12 parts
Citric acid	...	...	...	1 part
Alcohol	...	...	...	1 "

It is best to dissolve the citric acid by itself, in water, and to add it to the silver solution. Paper prepared on such a bath does really keep white for a long time, but it is doubtful if these papers furnish as brilliant prints as the washed papers.

To the other means of keeping paper white which are stated on page 162 of the Handbook—as, for instance, oil-cloth or waxed paper, &c.—I only refer here incidentally; but another question I have to mention yet: how is it that blue papers turn yellow slower than white or red? The colour can hardly exercise an influence on the chemical change. The matter is, however, as easily explained as the influence of the blue colour on linen; for blue furnishes, with the proper proportion of yellow, white, and the yellowish colour of our linen appears whiter by a slight admixture of blue; in a similar manner does the blue in the coloured albumen paper neutralize the yellow which is produced by the decomposition of the silvered albumen paper.

The dry plate question is, for landscape photography, of vital importance. As long as we aim for a new and reliable process, the question remains unsolved. The process of Mr. Carey Lea meets here with much favour. The landscapes which have been taken on plates prepared according to his method are undoubtedly amongst the best. I myself have obtained excellent results with it, but prefer the gum preser-

vative process of Wortley to the cochineal preservative process. Our friend Simpson will, no doubt, have reported to you the latest developments in England, where a number of experimenters are at work, and I will therefore not further enlarge upon this subject; but I must remark that I have not been able to produce plates which possess the sensitiveness claimed by Mr. Wortley. He states that his collodio-bromide dry plates are, with the same developer, as sensitive as wet plates. I have followed his formulae exactly, and obtained, in spite of all my care, plates which required four times the exposure in order to yield a picture which was similar to a wet plate. I think that it is better to confess this openly instead of representing the sensitiveness greater than what it really is, for the latter will only produce erroneous impressions, and cause disappointment and a wrong criticism of an otherwise good process.

Partly induced by the agitation of the dry plate question, I have recently recommenced my investigations in regard to the sensitizers. Six years ago I demonstrated that all bodies which absorb iodine (*i.e.*, those which chemically combine with it) accelerate the change of the iodide of silver by light, or, which amounts to the same thing, increase its sensitiveness. To this class belong nitrate of silver, tannin, pyrogallic acid, ferrocyanide of potassium; and the presence of these bodies exercises a favourable influence on the photographic plate. Full advantage has been taken of this discovery. It is curious, however, that there are some iodine-absorbing substances which do not exercise this favourable influence—for instance, hyposulphite of soda and arseniate of soda. Iodide of silver when exposed with these does not appear more sensitive, but, on the contrary, apparently entirely insensitive, and it is the most surprising that with a suitably selected time of exposure we receive in the camera with these substances a transparent positive instead of a negative picture. The circumstance is not explained. It has sometimes happened that a negative, on being developed, turned out to be positive, and we have not been able to trace the causes. It has happened to me also, and the question is now, how can we explain it?

It is so abnormal, so paradoxical that that part of the picture should become darkest which has received the least light, that I must confess it, of all the strange things that I have met with in photography, this seems to be the strangest. Now, however, I have found the solution of the problem in at least two special instances. If a diluted solution of arsenic is poured on an exposed and washed plate of iodide of silver (not bromo-iodide of silver), the power of development will be considerably lessened, but not entirely destroyed, for if the plate is washed it may be developed with iron and nitrate of silver solutions.

If the arsenic solution is kept for a long time on the plate, the iodide of silver in the places which have not been exposed to light will be converted into arseniate of silver. If the plate is now well washed and developed with sulphate of iron and silver, the developer will act on the places which have not been exposed to light; they become darkened, and the result is a positive picture. The experiment is in so far difficult as the plate is subjected to many washings, and the film is apt to tear; further, the reaction of the arseniate of soda is alkaline, and this causes often fogging. A hypo solution acts similar, but in not near so perfect a manner. I hope to be able to find other substances. The knowledge of the causes of these phenomena will enable us to produce them in so perfect a manner that the process becomes of practical value, and we may be able to produce perfect transparencies directly in the camera.

DEVELOPERS AND DEVELOPMENTS.

BY M. CAREY LEA*

A short time since, in writing of the effects of developers of different strengths, I mentioned the advantages which could be obtained in cases of great contrast by giving a long

* Philadelphia Photographer.

* Philadelphia Photographer.

exposure followed by a weak developer. It chanced that, about the same time, Mr. Elbert Anerson recommended a similar developer to be used where there was a deficiency of contrast. This recommendation of a similar treatment for opposite conditions has seemed to some inconsistent. It is not, however, in the least so. I have always recommended a weak developer for objects deficient in contrast, and the propriety of its use in such cases has long been well understood. The other fact—namely, that a weak developer may be advantageously employed for an opposite class of subjects—is much less generally known; it is not new, however, nor did the idea originate with myself. The first person whom I knew to avail himself of it was Mr. John Moran, of this city, who employed the principle many years ago in landscape work. The apparent inconsistency in employing similar development in opposite cases vanishes, if we remember that the development is conditioned more by the exposure than by the nature of the subject. If this subject presents great contrasts, we may overcome these either in the exposure or the development. We may either try an average exposure followed by a strong development, or a prolonged exposure followed by a weak development. Both methods tend to diminish the contrast in the subject. Experience shows that the second is the most generally successful.

If, then, a weak development answers best for these two very opposite classes of combination, the question might at first be asked, then why ever use any other? The answer is, that the use of this same treatment for the opposite conditions supposes that the difficulties of the subject have been controlled by the exposure. But circumstances may render this impossible. The subject may not admit of a long exposure; or, in extreme cases, in landscape work, the contrasts may be so very great that the longest practicable exposure may not sufficiently reduce the contrast, and in these cases the stronger development needs to be resorted to.

If, however, a subject be selected in which there is a considerable but not an extravagant contrast—as where, let us say, that there are light coloured objects brightly lighted, and darker coloured objects in shadow—and if the experiment be made of giving this subject an exposure suited to be followed by a twenty-grain developer, and if then a second trial be made, with a double exposure, followed by a development with a five-grain developer, it will be found that the latter negative will generally give the softest and richest print. In making such a trial, or in employing this principle of weak development generally, it is to be remembered that the weak developer is not to be simply the strong developer diluted. The acetic acid is to bear the same relation as before to the quantity of developer, and not to the iron. The pint of developer is to contain the same number of ounces of acetic acid, whether the proportion of iron be large or small. This is essential, and a neglect to bear it in mind will injuriously affect the result obtained.

PHOTOGRAPHY FOR THE UNINITIATED.

BY CHARLES WAGER HULL.*

LETTER No. 2

MY DEAR SON: In my first letter I wrote to you only in a general way as to the art; now I shall, without more ado, at once proceed to give you the promised instructions.

Before commencing operations, it is quite evident that you must have the tools to work with; or, I should say, more properly, in this art, the apparatus and chemicals. You, my son, do not require more than is at your disposal, having the full use of all my "traps," the best in use, and the result of nearly fifteen years of experience; nevertheless, I shall direct you in this letter how to arrange your dark-room or closet, and name in detail the material required, for the benefit of others not so fortunate as yourself.

* *Photographic Times.*

If possible, secure to your own uses a room in the house, preferably one well ventilated, and into which the water has been or can be introduced, as photography is lavish in its requirements of this all-important article; it requires not only considerable of it, but, as well, good quality. In one corner of the room which you have secured for your uses, have erected by a carpenter a closet about four or six feet square; it may be made of ordinary boards, either tongued and grooved, or covered where they meet by a wide batten, to prevent the entrance of light from without. Inside, at convenient height from the floor, have constructed, a sink about eighteen inches square and four inches deep, the overflow pipe of which should be placed at the side, say two inches above the bottom, that there always may be water in the sink, to prevent its shrinkage and consequent leakage. Over the sink have the water faucet, and over the nozzle stretch a piece of ordinary rubber hose, of length sufficient to allow you to easily wash the negatives after development. In front, and just above the sink, have one pane of orange-yellow glass of about one foot square. Next place in your dark room just shelf room enough to accommodate your bath, plate-shield, collodion in use, and developer; do not on any pretext use the room for closet purposes, as every bottle and every shelf adds only to the dust collecting capacity of the place, and will just in that ratio add to your troubles, for nothing will bother you more than dust.

Before we proceed to make up our various solutions, let us see what apparatus and chemicals we require. In the list of such which follows, I have endeavoured to name all that will be needed and sufficient in quantity to last for a long time; indeed, of some there will be enough to last you for a year or more, but of such I shall only order the least quantity that is usually sold. Let us meet our wants in the order in which we require them in actual use.

Glass and Cleaning.—2 dozen 5×8 negative glass; 1 plate vial; 1 yard Canton flannel; 4 ounces rottenstone.

For Collodion.—1 quart alcohol, 95 per cent.; 1 pint sulphuric ether; 1 ounce pyroxyline; 1 ounce iodide cadmium; 1 ounce iodide potass.; 1 ounce iodide ammonium; 1 ounce bromide potass.; 1 ounce bromide cadmium; 1 8-ounce glass graduate; 1 small glass mortar and pestle; 1 8-ounce collodion filter; 2 4-ounce collodion vials.

For Negative Silver Bath.—8 ounces nitrate silver; 2 ounces nitric acid C. P.; 1 16-ounce glass graduate; 2 64-ounce wide-mouthed glass bottles; 1 32-ounce glass funnel; 1 8×10 glass bath, tight-fitting cover; 1 dipper (rubber); 1 actino-hydrometer; 1 sheet blue litmus paper.

For Developing.—1 pound sulphate iron and ammonia; 1 pound acetic acid, No. 8; 1 4-ounce Wedgewood mortar and pestle.

For Fixing Bath.—2 pounds hyposulphite of soda; 4 ounces of cyanide of potass.; 1 8×10 deep porcelain dish.

Varnishing Negatives.—1 alcohol lamp; 1 4-ounce bottle of negative varnish.

Sundries.—1 flat camel's-hair duster for plates; 1 drying-rack; 2 5×8 plate boxes, holding 2 dozen each; 1 pound clean cotton-wool for filters; 1 ounce pyrogallie acid; 1 ounce citric acid; 1 pound common nitric acid for cleaning plates; 1 pound sal. soda; 2 ounces bicarbonate of soda; 1 pound aqua ammonia, best.

For General Use.—1 8-ounce glass graduate; 1 4-ounce glass graduate; 1 2-ounce glass graduate; 1 minim glass; 1 8-ounce glass funnel; 3 32-ounce bottles (ordinary); 3 16-ounce bottles (ordinary); 3 8-ounce bottles (ordinary); 3 4-ounce bottles (ordinary); 3 2-ounce bottles (ordinary); 1 pair scales to weigh from one to one thousand grains, with weights.

For the Printing Process.—1 dozen sheets albumen paper; 4 5×8 printing frames; 1 8×10 deep glass dish, for silvering paper; 1 8×10 deep porcelain dish for toning prints; 1 8×10 deep porcelain dish for fixing prints; 1 cedar tub, about 18 inches diameter and 8 inches deep, for washing prints; 1 glass pattern 3×3½ inches for cutting stereoscopic

prints; 100 cardboard mounts for stereo prints; 1 flat paste brush, $1\frac{1}{2}$ inches wide, for pasting the same.

Camera, &c.—1 5×8 American Optical Co.'s reversible camera box, for stereo or single views, complete; 1 pair American Optical Co.'s achromatic meniscus lenses of about 8 inch focus; 1 piece cotton velvet cloth, about four feet square, to cover the bead while focussing; 1 American Optical Co.'s portable box tent, with tripod, water tank, &c., complete; 1 tripod for camera box; 1 American Optical Co.'s focussing glass.

The above forms a fully complete first-class outfit for making views, with chemicals in sufficient quantity to produce quite a large stock of negatives and prints. But little is left for you to desire; indeed, all that you can now wish for can be purchased at any time after you have become a really good photographer. The few articles yet needed would be a pair of stereoscopic lenses of shorter focus, say about five inches, for subjects which are too near the camera for lenses of such long focus; one half-plate portrait tube for making portraits of the carte-de-visite size, and one head rest; with these you will be complete for all work. The portrait tube and head rest, if purchased, would add to the cost, of course; the other lenses could be bought when you really found need for them.

Now that we have fully considered all our wants in apparatus and chemicals, and are supposed to have them all nicely cleaned and arranged upon our shelves in the room set apart for our photographic labours; and having also completed our dark-room and placed upon the shelves the few articles which belong therein, I will in my next letter begin with you to make up the various articles required in the production of our negatives.

This letter, I fear, has been a tedious one to you, made up as it has been only of lists of articles wanted; and so it has to me; thinking, as I have done, intently, fearful of forgetting some item, and thus upsetting our smooth working when we shall have begun our compounding operations; however, I promise you more pleasure soon, when we shall have commenced our picture-making in right good earnest.

You must never become discouraged in photography; though a truly beautiful and most enchanting art, it nevertheless requires of all who practise it not only much system, but as well much patience.

A QUICK METHOD OF FREEING PRINTS FROM HYPOSULPHITE OF SODA.

BY HENRY J. NEWTON.*

SINCE photographic prints have been made on paper, there has existed a consciousness of their unstable nature, and continuous have been the complaints, from manufacturer, vendor, and purchaser, of the transient nature of the beauty, with which they charmed and fascinated when first produced. Many and ingenious have been the theories advanced to account for this unpleasant fact, and the hypothesis that hyposulphite of soda retained in the paper after fixing was the primary or main cause was generally received. But it was probably a mistaken idea, advanced by some, that the cause of fading was due to the formation of sulphide of silver by decomposing the hyposulphite of soda remaining in the paper in contact with the silver print. The strong affinity existing between silver and sulphur would seem to suggest the probability of some action when the two were brought into close contact. There are two facts, however, standing in the way of this theory, the first of which is, that the sulphide of silver is one of the most permanent and stable mineral salts, and next, it is always black, or nearly so. If the prints should continue to grow darker instead of whiter, and finally lose their outline and beauty in that direction, it would seem plain to my mind that the prints were combining with sulphur. And, still further, it has been advanced and believed that in the

toning a radical change was effected in the composition of the picture, and that the silver to a great extent was displaced by the gold. If this be true, then, of course, all the previous speculations fall. It seems to me far from a settled question. I am suspicious that albumen plays or works an important part in the destruction of our most beautiful and cherished productions of silver and the solar ray.

I have seen prints on plain paper twelve to fifteen years old, that exhibited no evidences of change; such prints were usually toned in what is known as the hypo and gold toning bath. Whether prints on albumen paper treated in the same way at the same time would continue to give the same evidence of permanency is a question which I am not prepared to answer, although from the above facts it seems quite important; but that bath had gone entirely out of vogue, and been superseded by those now in use when I commenced photographing, so that I know nothing about it except historically. There is one thing, however, well established in reference to the action of hyposulphite on prints, which is, that it should not be used but once. Just in the ratio of the time it is used do the prints appear to lose their permanence. The bleaching property of hyposulphite of soda, and a critical examination of the process by which sulphur and some of its compounds discharge colour, would, undoubtedly, be a fruitful field of inquiry in connection with this subject, as sulphur is one of the allotropic elements, and, under certain conditions, when damp air or oxygen comes in contact with it, will generate ozone (the modern mystery), which is the great bleaching power in nature, and it is not impossible may work its destructive influence in this as in other fields.

Washing long and washing well is one of the fundamental laws of photography, the first learned and the longest remembered by every photographic printer. This may be necessary, but I do not practise it, for two reasons: first, I do not believe the necessity for it exists. Second, I am sure it injures the prints. My method of cleaning my prints of hyposulphite is as follows: I dissolve in sixteen ounces of hot water two ounces of acetate of lead; this solution contains about fifty-five grains to the ounce. After I have washed my prints in three or four changes of water, I place them in another dish, containing four quarts of water and two ounces of the lead solution; this will give you less than one grain of lead to the ounce. Great care must be taken not to make your lead solution much stronger than I have indicated, as it has a decided toning action, and would not only make your print blacker than you would wish, but their beauty and brilliancy would be seriously impaired, whereas the strength that I have named adds to their beauty and brilliancy by giving depth to their tone and preserving the surface of the paper. As soon as your prints are put into the water containing the lead, it becomes of a milky appearance, caused by the decomposition of the hyposulphite and the insoluble sulphate of lead being formed, which is easily washed off in a few changes of water afterward. The whole process need not occupy more than fifteen minutes. I have cleaned prints as free from hyposulphate as possible for them to be, in five minutes by this process. The acetate of lead is a very unstable salt, and usually contains traces of an insoluble carbonate, and, when first dissolved, will always present a milky appearance; consequently, it should be dissolved several days before using, and then it will give clear water a pearly blue tinge when added to it; but this will not be mistaken for the sulphate, for you will see a marked difference as soon as you put your prints into it. Your lead should be dissolved as soon as procured, and not accept any that is opaque and powdery, as such has changed to carbonate, and is worthless for the purposes indicated.

I should like to have photographers generally treat a few prints in this way, and save some from the same lot, marking the date on them, and laying them away together, and thereby demonstrate how the keeping qualities of such prints compare with those made in the old and destructive

* *Photographic Times.*

way. Prints washed in this way need not be toned quite as far as the ordinary way, as the lead carries the toning on somewhat. I have made very good tones with lead, without gold, but such tones are not permanent. Nitrate of lead will answer the same purposes as the acetate. If it is a fact that the presence of hyposulphite of soda in the paper is the agent mainly destructive to the permanence of the print, it would seem to follow that the degree of its eradication would be the degree of the keeping qualities of the print. If this be so, then prints treated with the lead solution should have remarkable keeping properties, as the hypo is effectually removed.

TO CLEAN GLASS FOR COLLODION AND SILVERING.

BY ALBERT S. SOUTHWORTH.*

RAS^H off the edges and corners with a coarse sandstone (a scythe whetstone is just the thing), drawing it at an angle and diagonally from the face of the glass, to avoid chipping the surface. Whether new or old glass, varnished or unvarnished valueless negatives, wash thoroughly in clean hot water, and immerse in a very strong solution of boiling potash from three to five minutes, or longer if old, hard, varnished glasses. Scrub with a fine broom brush upon a padded board covered with tightly drawn flannel, in clean hot water, rinsing thoroughly, and then rinse off in clean cold water, and coat before dripping with thinned albumen (two or three ounces to the pint of water) from newly laid eggs. Dry, and keep from dust, moisture, and light, chemically clean. Use at pleasure; time will not deteriorate.

Glasses having upon their surfaces pure metals—as silver, copper, gold, or any other metal—must have the same removed with the proper acid, or aqua regia, before using the potash; but all glasses prepared according to the foregoing recipe can have no free pure metal in contact with their surfaces.

Be at no trouble to save the silver from old negatives; it will not pay.

A common sheet iron bakepan will answer to boil the potash in, on an ordinary cooking stove. Scatter a layer of edge cuttings of various lengths, from commou glass, of the size of an oat straw, on the bottom of the pan and between each layer of glass, to prevent contact of surfaces.

Keep the hands clear of any caustic by using wooden tongs and a little skilful manipulation, and do not scratch the glass in the least.

Never pack glasses together flatwise, nor lift them so that one rests upon another, but let each support only itself.

My method of cleaning glass may not be all new, and may not be the best known; it is the best I know; the simplest, and always avoids dirty, foggy, or stained glasses.

Correspondence.

APPRENTICES AND ASSISTANTS.

DEAR SIR,—On forwarding to you my last communication I intended it should be the last on the subject of apprentices and assistants. I cannot, however, permit "A Little Photo's" last letter to pass without a few more remarks.

That gentleman asks, would it be charitable to suppose that I had not read my PHOTOGRAPHIC NEWS regularly? I beg to inform him that I would as soon want my dinner as my PHOTOGRAPHIC NEWS on Saturday. If, however, his ideas take root and sprud, that all the intelligence required to produce a photograph is only to know how to throw in a little iron, a little pyro, or a little nitrate of silver into water, or that if a man's eye is educated, although he may scarcely be able to read or write his own name he requires no more to make him a first-class photographer, there will be no necessity for the PHOTOGRAPHIC NEWS being written, or any other such publication. I can fancy such a man, on receiving the NEWS, sitting down,

placing his finger under the line, and spelling out the words as he goes along. Only the very simplest articles will be read or understood by him, and the remainder need never be written.

As "A Little Photo" hints that only when school boards begin to act will this state of things be remedied, I fear we shall have to wait a short time. Allow me, however, to inform that gentleman that in my country parents generally consider it their duty to see that their children are educated; they do not leave it to school boards; and I am happy to say that in Ireland also the same feeling is gaining ground, so that England is being left behind in the education of the poorer classes. I did not write about getting a boy out of a school of art, but out of a national model school, where the fees per quarter are only five shillings.

"A Little Photo" states that I libelled the profession. I say that I have not done so. I have stated what was the truth; I have said that there are no good assistants to be had. I have been borne out in that statement by others. I have written to respectable gentlemen in England and Scotland, as well as advertised, and those gentlemen replied to me, as I have stated, that it was almost impossible to get good assistant operators. "A Little Photo" may be right: there may be plenty of them, if we only knew where to find them.

In reply to the charitable query whether I had visited lately the English exhibitions, I may say I visited the one in Conduit Street in November last, and was delighted, and, I trust, profited thereby. I there saw much to admire and imitate, and something to avoid. I saw what I considered a decided tendency to overworking on the negative—a desire to make a picture at the expense of the likeness. On the whole, however, I was delighted. I could mention dozens of names of men whose works I admired, but I do not recollect any photographs that had been produced by assistants; besides, I only complained of assistants entitled to from twenty-five to thirty shillings per week. Of really first-class assistants I believe there are plenty.

I send one specimen just to show that we are not so very far behind, even in the small town of Newry. I would ask you to remember that it is not the likeness of an actress accustomed to preserve a graceful pose and natural expression, but that of a young lady selected from my ordinary specimens.

There might be something in the idea that first-class men do not like to come to a small town if they knew who required them, but in my case they seldom did so; and, besides, I never advertised for a first-class assistant, but for an assistant operator.

I observe Mr. Wilson, of America, in this week's number of the NEWS, considers it necessary that photographers should have a regular course of training, but does not seem to like the idea of apprenticeship. It does not, I think, matter in what way they get the training, provided they get it. What is required is, that the lad have sufficient school education (for education only begins there) to enable him to read and understand what others have written, and to make the necessary calculations in mixing his chemicals and arranging his studio, &c., and that he should then be taught how to apply that knowledge in the production of photographs. I think all are agreed that it will take some years, no matter how clever he may be, before he can learn all branches of photography properly. The branch that will require longest to learn will be the management of the sitter, from the entering of the studio till the completion of the exposure. That requires a knowledge of human nature, and an ability to converse freely on a variety of subjects, so as to adapt your conversation to your sitter, only to be acquired by much and careful reading and study and many years' observation. It will also take many years' close practice before a lad, however clever, can gain such a knowledge of his chemicals and lenses and light as to be able to always produce a good negative so far as he is concerned—that is, so far as the exposure, lighting, and chemical manipulations are concerned. I do not believe in taking two or three or four positives on one plate, and then making a selection; I consider it is much better to concentrate all your attention on one position and negative, and if the person wishes to have a second position, let it be charged for and taken separately. As you cannot always command the expression, &c., I give a proof if desired, and another sitting if not approved; but I may say that I very rarely have to do so. I believe if only one sitting were given, and the time and attention bestowed upon it that are bestowed upon several, the photographs would be much better, and the people would have more confidence, and con-

* Philadelphia Photographer.

sider a good photograph less a thing of chance than is the case at present. My sitters frequently object at first, but I very seldom fail in pleasing them in the end. My plan allows more time to the lighting and printing of the negative, and I seldom require to use either the brush or pencil in touching up.

I believe I must again apologize for the length of this epistle, but I assure you it will be the last from me on the subject of apprentices and assistants (at the present time, at least) from yours truly,
D. WELCH.

Talk in the Studio.

PRINTING WEAK NEGATIVES THROUGH A COLOURED MEDIUM.—At a recent meeting of the German Photographic Society in New York, Mr. H. Schoene recommended for the printing of weak, thin negatives, to mix the varnish with some red aniline colour, and to varnish the back of the negative with it. Mr. E. Koneyer thought he should prefer separate glasses with different colours, as it would be easier to control the printing. The chairman was of the same opinion, the more so as aniline colours fade very rapidly in strong sunlight. As a curiosity he stated further, that a few years ago they used in his establishment to colour the negatives in the fixing solution, by having a coloured pigment mixed up with the hypo. They soon were obliged, though, to give it up again, because the collodion film got completely rotten, and showed millions of pinholes. For lack of time they could not experiment any further with it, and resorted to other means again. It was finally resolved to appoint a committee, with instructions to make prints of the same negative with all the different ways and methods known, and report in next general meeting.

PHOTOGRAPHING THE INVISIBLE.—In connection with eclipses, photography has been said to photograph that which, until it was recorded on the sensitive plate, had been invisible, and it has aided in rendering visible almost undecipherable MSS., but it is expected at times to do still more. A Chorley correspondent of the *South London Press* writes:—"An Irishman called the other day at our leading photographic establishment, and tendered a piece of crumpled paper, requesting the proprietor to photograph it for him. As the proprietor could see nothing but some pencil marks almost erased, he asked him what it was. Paddy very coolly replied, 'Sure an' it's a litter from a friend of mine in America, an' its nearly all rubbed out; so I can't see the address, and I want you to photograph it me up agin.'"

A NEW METHOD OF OBSERVING THE SUN SPECTROSCOPICALLY.—A short description of this new method of P. Secchi is contained in *Poggendorff's Annalen* for June. It consists in placing a direct vision prism system at a suitable distance before the slit of an ordinary spectroscope, so that an impure but extended image of the sun falls on the slit. An extremely sharp image of the sun is then seen on focusing the latter spectroscope. The spots appear more distinctly than when a coloured glass is employed. The protuberances are at once recognised by their brilliant lines; and their height may be measured without difficulty. On fixing the line C on the edge of the sun's disc, the contour of the protuberances around the spots is beautifully seen, and the crater-like form of the latter comes out with surprising clearness.—*Academy.*

To Correspondents.

ADVICE TO CORRESPONDENTS.—We are at all times glad to advise our readers on any subject connected with the art upon which information can be given in this column; but to enable us to do so with efficiency, and without unnecessary waste of time and space, it is desirable that a few conditions should be observed by correspondents. All questions should be stated clearly, and written legibly on sheets of note paper, small scraps of paper and sheets of foolscap being equally unsuitable and inconvenient. Where several questions are asked, they should be kept distinct and numbered. Where processes and formulae have been stated in our pages, it is better for correspondents to refer thereto than to request us to do so, as we cannot, with fairness, occupy space by repeating formulae which have once appeared, merely to save a little trouble to individuals. Correspondents should use distinctive names or initials: such signatures as "A Subscriber," "An Amateur," and others of a general character being often adopted by a few correspondents in the same week leads to confusion.

LUX No. 3.—Dried egg albumen is not used in photography. We believe it is employed by dyers; but we know nothing of its market price or the other particulars you ask.

AN IGNORAMUS.—The addition of hydrochloric acid will precipitate the silver from your washing waters when the chloride has been re-dissolved by excess of salt. The addition of iron would only complicate matters.

COL. WORTLEY'S DRY PLATES.—We have received several letters, complaining that Col. Wortley's dry plates, having been advertised several weeks, and mentioned by ourselves as ready for supply to the public, are still inaccessible, the advertised agents having received no supply for their customers. We can only bring this fact under the attention of Col. Wortley, and suggest to our correspondents that in first organizing the supply of any new manufacture unexpected sources of delay are often inevitable, and can only be met by patience on the part of all concerned.

A. H.—The plates will require cleaning again to render them fit for negatives, as a certain risk will inevitably attend their use as they are. Clean them either with dilute nitric acid or with rotten-stone and alcohol.

B. L. M.—The ether with which you thinned your collodion had, doubtless, been kept some time in contact with light and air, and become ozonized. Any acid added to iodized collodion will liberate iodide, and cause the change of colour you describe. We fear that you cannot perfectly restore the sensitiveness, but the addition of bromide (say one grain per ounce of bromide of cadmium) will mend matters. If you keep ether yourself, it should be kept in a carefully corked bottle, which should be full, so as to exclude air, and it will be better kept in the dark. As a rule, it is dangerous to add to collodion the ether you obtain of a chemist not in the habit of supplying photographic materials.

N. F.—You will, of course, obtain weak prints if you employ washed paper without fuming it. It is scarcely wise or fair to employ half a process, and then blame it for not producing the results described as resulting from the process in its entirety. Carbonate of ammonia answers well, and is more convenient than liquid ammonia.

X. Z.—The sudden accession of hot weather is a frequent cause of pinholes from baths supersaturated with iodide of silver. There are various remedies or palliatives. First, you may precipitate the iodide by diluting the bath, and filtering. Or you may keep the bath in a vessel of iced water, or more, you may gain the same end more easily by keeping a wet cloth wrapped round the bath to cool it by evaporation. By thus keeping the bath cool you will check the tendency to precipitate iodide of silver, which is less soluble in a warm than in a cold solution. A very simple and, for a time, efficient plan of preventing pinholes consists in diluting the iodized collodion with a little plain collodion. The latter is very easily tried.

G. T.—The defect in your vignettes, which, as you rightly think, is very unpleasant, is due to two causes. In the first place, your background is much too dark for pictures intended to be vignettes. Whenever you intend a portrait for vignetting, use a very light background, otherwise the heavy abrupt effect and want of delicacy must inevitably be present in the picture. If you wish some copies printed fully out as well from the same negative, you must be content to have them with a light background, which will not be so offensive as the vignettes with a dark background. In the next place, the regular formal oval produced by a vignette glass is inartistic. You should supplement the vignette glass with cotton wool, to break the formal regularity of the gradation, and make it suit the character of the picture. Or you may use a card and cotton wool, discarding the vignette glass altogether.

AN AMATEUR sends a note which he wishes to come under the attention of Mr. Griffith, who recently sent us some "Odds and Ends." He says, addressing that gentleman:—"Your 'odds' were really so good and crisp in No. 673, July 28, 1871, that I was truly sorry to find an 'end' to them. Could you not every week give us some 'odds and ends?' A couple of minutes each week out of your time would, perhaps, save some of us hours and even days or weeks of plodding. I presume the Editor would not grudge the space. Let the next 'odd' state whether Harper Twelveteer's washing crystals would do as well as Mauby's, which cannot be obtained in Bristol. Also if any varnish (negative, of course) may be applied to cold plates."

H. J. C. ANDREWS, E. C. BUNTON, D. T. V. D., I. L. L. See answer above.

E. P. OGIER.—Thanks. In our next.

J. E. MADDEN.—Thanks. In an early number.

DEXTER.—The sample of india-rubber you enclose is vulcanized india-rubber, and is quite unfit for the top of a water-tight bath, as the sulphur would injure the solution. You must use pure unvulcanized india-rubber.

THOS. SINGLETON.—In our next.

A. H. P. (of Worcester).—Yes.

Some Reviews are compelled to stand over until our next. Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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STRONG AND WEAK PRINTING BATHS.

The strength of the printing bath appears to afford a never-failing subject of discussion. We fancied until recently that the practice of the majority of the most successful photographers had settled the matter in favour of baths if not absolutely weak, at least weak compared with the baths in vogue a dozen years ago. It should never be forgotten that a bath, after all, is only relatively weak or strong, the strength of the salting solution used in preparing the paper forming the practical standard to which the nitrate bath must have its due relation. We return to what we had considered a settled subject in order to quote the remarks of Mr. Carey Lea, who recently raises the question, and whose opinions, although here opposed to our own, are at all times entitled to attention. Mr. Lea says:—

“I return briefly to this subject because it seems to be attracting unusual attention just now, and there seems to be some hope of removing the delusion which exists in the minds of some photographers that they can accomplish first-rate work with a weak bath, by which I mean a bath of from twenty to forty grains.

“To combat this impression, it should be said that the opinion of the best photographers, both amateur and professional, is certainly contrary to weak baths. Not long since the entire sets of formulæ of some of the leading professional photographers of New York were published in most of the journals; all of these formulæ directed that the printing bath should contain from fifty to sixty grains of nitrate of silver to the ounce.”

Mr. Lea continues to the effect that some printers use eighty grains to the ounce, and that Mr. Pesch, writing in a contemporary, regards one hundred grains as not too strong. Mr. Lea proceeds:—

“The only greater consumption of silver in the case of the strong bath lies in the solution, which is carried away mechanically by the paper, so that if the paper be drawn over the edge of the pan, the whole loss becomes very unimportant. And it ought to be always borne in mind that the habitual use of a weak bath must always tend to injure the style of the photographer who falls into this error, as in order to get good results he will be led into making his negatives too hard. Mr. Pesch also alludes to the greater permanence of prints made in strong baths, owing to the more complete coagulation of the albumen, and here I think he is also right.

“I cannot but think that prints sensitized on strong baths, deeply printed, thoroughly toned, and then fixed in a strong fresh hyposulphite bath, have a far better chance of permanence than those produced with the aid of weak baths that dissolve and remove part of the albumen, fol-

lowed by a hasty toning and a weak fixing. The resulting power of such prints cannot but be greatly inferior.

“We all know that unless the print is kept well on the surface, it has that appearance which, when strongly marked, is called mealy, and when present in a less degree, milky. Now nothing tends more to keep the image on the surface than a strong printing bath, capable of making the albumen pass at once into the condition of a strong tough coagulum.”

There is much in these remarks deserving of attention; but there are other considerations which cannot be omitted in duly estimating this question. In the first place, a strength of from twenty to forty grains per ounce is regarded as weak, whilst one of from fifty to sixty grains is regarded as strong, eighty or a hundred also meeting with approval. If forty grains constitute a weak bath, and fifty a strong bath, one hundred grains would of necessity constitute an enormous and unnecessary strength. But it is evident that Mr. Lea regards forty or fifty grains of excess as unimportant so long as the bath is strong enough, and this is a very prevalent idea; nevertheless, we venture to think it is an erroneous idea. A certain proportion of excess of nitrate of silver is, doubtless, necessary to success; but we think the experience of skilful and observant printers will justify us in the statement that an unnecessary excess of nitrate of silver neither contributes to rapidity nor vigour, and does interfere with delicacy in the image, and renders the operation of toning uncertain. Some manufacturers of albumenized paper specifically protest against the use of a bath of excessive strength, as doing their paper injustice, and causing various troubles. Again, it is, we think, a serious error to suppose that weak nitrate baths render necessary hard negatives. The truth is, that the question rests almost wholly on the strength of the salting employed in preparing the paper. A weakly salted paper with a bath of moderate strength will give vigour with the softest of negatives, whilst a very highly salted paper with a bath of sixty grains to the ounce may give weak prints with an intense negative. The important point is to establish a relation between the strength of the salting preparation and the silver bath. As the result of observation and experiment, we some years ago stated the conclusion that, assuming chloride of sodium as the salt employed in preparing the paper, the silver bath should contain five times the number of grains of nitrate of silver which the salting solution contained of the chloride. This basis, although not necessarily quite exact in relation to all the circumstances involved, was a valuable guide. The bulk of the paper in the market at the present is known to be prepared with about eight grains per ounce of chloride of ammonium or sodium, or a mixture of the two. This preparation renders necessary a strength of about forty grains per ounce in the silver bath. Some years ago it

was customary to salt highly, twenty grains of chloride per ounce being frequently used; and then a nitrate bath of a hundred grains per ounce was not excessively strong.

We spoke of the practice of good printers having decided in favour of a moderate strength, by which we understand from thirty to fifty grains, forty being most commonly used by such men as England, and Blanchard, and others, who take high rank in the profession. There is one fact still, however, to be borne in mind: a large proportion of chloride in relation to albumen gives rapidity and softness, and hence a highly salted paper and strong bath will give the most sensitive paper and the most harmonious prints with dense negatives. The question how far permanency is affected by weak or strong baths is interesting, but, unfortunately, at present evidence is wanting upon the subject. A firm, vigorous image, built up of sufficient silver and gold, would seem to promise the highest degree of stability; but the production of such an image is more dependent upon the use of a vigorous negative than upon a strong nitrate bath.

GUN-COTTON AND COLLODION—THEIR DISCOVERY AND HISTORY.

Mr. A. Root, of Philadelphia, one of the earliest trans-Atlantic photographers, gives in his forthcoming work a chapter on the origin of gun-cotton and collodion, from which it appears that there are American claimants to the first photographic use of collodion. Speaking of the origin of gun-cotton, he says:—

"Perhaps the first chemist who investigated the results of the action of chemical substances upon ligneous matter was Braconot, a French chemist, who, in 1833, discovered that cotton, linen, and starch might be converted into readily combustible and soluble substances. In 1838, Pelouze, another of those laborious workers in the great field of science to whom practical men in every department of industry owe so much, by treating cotton, wool, paper, and hemp with nitric acid, produced explosive substances similar to gun cotton. This was made by Schönbein, a professor in one of the Swiss universities, in 1845; he, however, kept his process a secret, until, soon afterwards, the discovery was announced by Dr. Fr. Jul. Otto, a German professor of Caroline College, Brunswick. The several steps in this discovery have, doubtless, been the subjects of separate original investigations, and the claim of no single chemist would pass unchallenged to the honour of discovering the process for making explosive cotton and its conversion into a solution in ether and alcohol.

"An examination of the scientific journals on the Continent of Europe might find many a savant preferring the claim to this important discovery. As one example, we may mention Professor Böttger, of Frankfort-on-the-Main. Pithily sings the bard—

"Seven cities claimed the birth of Homer, dead,
Through which the living Homer begged his bread"—

a claim even yet in abeyance.

"Whether the assumed discoverers of gun-cotton will ultimately be included within the same category with the father of the epee, I am not prophet enough to foreshow. It is, however, sufficiently manifest that, with our present lights, the honour of the discovery must remain in doubt.

"Much of the same uncertainty hangs over the discovery and first production of collodion. Despite what the foreign authorities say in behalf of Schönbein's claim, the probabilities are strong that Dr. Josiah Curtis, then of Boston, made the discovery early in 1846."

Mr. Root then quotes a letter from Dr. Curtis, in which he says:—

"I made collodion, while experimenting in the manufacture of gun-cotton, at Lowell, Mass., in September or October 1846. I never heard of its being manufactured by

or even known to, any except those to whom I spoke on the subject, till 1847.

"The name collodion originated with Dr. John K. Palmer, who is now employed in the laboratory of Dr. Thayer, of Cambridge, Mass. The application of this name, however, did not occur till some months after I had produced the article, and not until a Mr. Maynard, of Boston, had commenced exposing it in the shops for sale, under the title of 'Liquid Adhesive Plaster,' a title which he relinquished only after considerable opposition.

"Dr. Palmer, looking, one day, over a Greek lexicon, in the office of Dr. A. A. Gould, decided upon the name collodion, and by this the article has been known ever since.

The name of Dr. Curtis, now of the U. S. Army, is now well-known to photographers in connection with some admirable photo-micrographs, and we read with interest this record of his early labours. Mr. Root, in proceeding, remarks:—

"Collodion was, doubtless, 'discovered' by other experimenters elsewhere, but, like every other discovery which has no apparent practical value, passed into the arcanum of unavailable, and hence valueless, facts, until it was recommended as an adhesive substance adapted to the wants of the surgeon, in an article in the *Boston Medical and Surgical Journal*, under date of March 22nd, 1848, by S. L. Bigelow. He stated that he had accidentally discovered its remarkable adaptation to the rapid union of wounds by the first intention, and had proved its efficacy by numerous experiments. The next number of the same journal, issued one week later, contained an article on the same subject by John P. Maynard, of Dedham, Mass., in which he claims to have been the first to use the preparation as an adhesive plaster, and proceeds to detail its advantages, as attested by numerous physicians and surgeons in Boston."

In this country bromides were used from the earliest days of collodion photography; Dr. Diamond employed bromides in collodion as early as 1850, when experimenting in conjunction with Archer.

"But who first employed collodion in our art?

"To this query I can reply that, within my personal knowledge, Charles S. Rand, Esq., of Philadelphia, in 1848, suggested to F. Langenheim the use of collodion in place of albumen, in producing sun-pictures. Mr. Rand prepared a quantity of collodion, which Mr. Langenheim tried, but without success.

"The cause of his failure was, most probably, the excessive thickness of the material employed, it having been of precisely the same consistence as when applied for surgical purposes. Why the experiment was not repeated I am unable to say. At all events, Frederick Scott Archer, the English photographer, and Le Gray, the French photographer, are now generally accredited as the first to lay down reliable formulas and employ collodion successfully for photographic purposes.

"Archer gave his process to the public two years subsequent to this application of it in Philadelphia.

"Dr. Cresson [one of the earliest American collodion photographers] in 1852, and Dr. Langdell, in 1853, appear to have been the first in the United States to employ bromide of potassium in combination with the iodide of potassium upon collodion. By the use of the bromide Dr. Cresson was enabled to get portraits within doors, at a small window, in from ten to twenty seconds; out-door views in one or two seconds, and even less time; and copies of statuettes, illumined by gaslight, in thirty seconds. This occurred in April, 1852."

PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.

The greater portion of the coloured photographs at the International Exhibition have not been exhibited before. The examples are not very numerous, and there are not

many which strikingly command attention, either for size or style. The discrepancies between the pictures as hung and numbered on the wall, and as given in the catalogue, are here very troublesome to the visitor wishing to make a careful and intelligent scrutiny of the work in this direction of various artists. Amongst the coloured specimens which first attract attention are several of Continental artists, in a style which has never been taken up to any extent by English photographers: we refer to the class of pictures in which the photograph having been made transparent, is then coloured at the back. The distinction between a picture in this style and a photograph coloured in the usual manner consists in the fact that in the latter the work of the photographer is covered, and, to some extent, concealed, by the work of the artist or colourist, whilst in the former the work of the colourist is covered, and to some extent modified, by the photograph. By the latter method it is clear that more of the literal photographic truthfulness of the portrait is retained, the work of the colourist being subsidiary and supplementary, adding colour, but never altering drawing. Where the photograph itself is really good and satisfactory, such a method of adding colour possesses many advantages, and as the process is tolerably simple, easy, and inexpensive, it is somewhat surprising that it has received so little attention in this country. A frame of very pleasing whole-plate examples in this style, chiefly of charming women, is exhibited by M. Streliszky, a Hungarian photographer. The photographs are good, and the colouring is effected with delicacy and taste. Another very effective portrait, apparently coloured in the same style, but hung too high for minute examination, is a large portrait of Countess Elizabeth Esterhazy, by M. Borsos. This picture, although possessing more vigour and boldness of style than most photographs coloured at the back, has the special softness and mellowness which the superposed transparent photograph generally gives to the colouring, and is altogether very effective.

A frame of coloured miniatures by E. G. B. Monti, of Hereford Road, Bayswater, are well worthy of attention for delicacy, richness, and transparency. At first glance we took them for enamel paintings on a photographic basis, as they possess much of the especial quality of enamel painting; but in a brief examination we found them to be very highly wrought miniatures, with some very excellent qualities, the only fault being a slight tendency to over-elaboration in some instances. Mr. A. Debenham exhibits some coloured photographs on porcelain, which possess considerable delicacy. Mr. E. Sutton has some very fine work of a similar kind, the photograph being produced on opal glass or porcelain, and then coloured. Mr. A. Walker has a frame of card portraits very prettily tinted. A frame of charming Hungarian beauties, admirably coloured, is exhibited by M. Schrecker. Messrs. Disderi and Co. exhibit various examples of effective colouring, some of which, bearing the name of Mr. D. Mossman as artist, are worthy of especial attention. The only example of oil coloured photography which has come under our attention is a large group from Austria, by M. Mayssl, and the painter's work appears to us heavy and ineffective. To what cause the absence of English work of this kind is due we cannot say. We know that many of the leading English photographers have a very large practice in the production of life size oil coloured photographs, many of which we have seen, we have no hesitation in saying might take rank with much of the portraiture to be found from year to year on the walls of the Royal Academy. Whether lack of spirit and interest in the Exhibition, or lack of time to produce amongst the photographers, or whether lack of space to hang such pictures when sent, is the explanation, we cannot say; but we hope that in next year's exhibition our English photographers and artists will contribute some worthy in this direction.

With the exception of the examples contributed by Mr. Henderson, we do not see any photographs painted in enamel colours, and, on the whole, we prefer his very excellent plain enamels to the coloured work.

A MODIFIED PHOTO-LITHOGRAPHIC PROCESS

IN the last number of the *Archiv* there appears a suggestion in regard to a new method of preparing photo-lithographic stones, by availing oneself of the Autotype manner of printing. The plan detailed was essayed, we remember, some time since at the Royal Arsenal Photographic Establishment, but was discontinued from the fact that it presented no advantages over the photo-lithographic process already in use at Woolwich. As, however, the plan has doubtless much to recommend it, we subjoin the details of the process.

An ordinary carbon print developed upon a lithographic stone, instead of glass or zinc, may be rolled up and inked in the same way as an ordinary lithographic impression. As there is at present to be obtained in commerce most excellent pigment paper in sheets of considerable size, a method of photo-lithography—or, in other words, a means of producing by photography images upon stone capable of being printed from—should be capable of being devised of a much simpler nature to that at present existing, providing such a process could be practically worked with the required ease and certainty. Satisfied that no difficulty will be encountered in the manipulations, the writer has decided to publish the process herein described, and this he does with the greater confidence, seeing that an application of a similar nature has recently been patented in England:—

In the first place, a solution is prepared of—

Bichromate of potash (chemically pure) 1 part
Water 20 parts

and upon this the carbon tissue is allowed to swim for a couple of minutes. It is dried in an air-tight box, containing fused chloride of calcium, within the space of twenty-four hours, and may be preserved many weeks without losing its sensitiveness.

The negative should be absolutely clear and transparent in the lines, and otherwise as opaque as possible. The development is conducted, after brief exposure, with an ordinary iron developer, and the negative subsequently intensified with bichloride of mercury and sulphide of ammonium in the usual manner. The margin of the negative is covered with Indian ink, or with a paper mask fastened upon the reverse side of the plate. In this way the development of the picture is much improved, the pigment paper extending well beyond the unsolarized margin. The exposure varies from three-quarters to one minute in the sun, and from four to ten minutes in diffused light.

For the development of the picture, an exceedingly smooth lithographic stone is employed, together with a sheet of fine filter paper, a squeegee, a dish of rain water, and a supply of hot water.

The print is first dipped into cold water, the air-bubbles dissipated, and then placed face downwards on the stone. Without losing time, the filter paper is at once placed upon the tissue, and rubbed over well with the squeegee, a new supply of paper being subsequently applied in the same way, until the tissue is half dry. After waiting two or three minutes, the stone is put in a sloping position into a dish, and warm water allowed to flow over the whole surface; and under this treatment the unsolarized portions of the pigment paper begin to swell visibly under the paper in a very short time. The application of warm water is continued until the paper backing begins to leave the stone, and as soon as there is not much resistance to the operation one may proceed to draw it off. Upon the stone is seen a dark mass of black gelatine, which disappears as

the washing goes on, until a sharply defined image is the result. Upon the picture itself the water must never be poured, but only allowed to stream over the surface, as the lines are easily injured, and for this reason the warm water is applied from the edge of the stone.

When the image stands out clear and free, the stone is immersed in cold water until it has become cool, which necessitates an interval of some minutes. It is then leaned against a wall and allowed to dry spontaneously, when lines which, in a moist state, were soft and hazy, become sharp and defined.

The dry picture is now covered with a solution of gum, as in the case of an ordinary lithographic impression, and, after drying, again moistened, and the lithographic ink repeatedly applied. The stone may then be rolled up and printed from in the ordinary press.

AMERICAN CORRESPONDENCE.

PRESERVATION OF SENSITIZED PAPER—NOVEL PATENTS— DR. VOGEL'S HAND-BOOK.

Preservation of Sensitized Paper.—Photographers have worried for a good many years over the discolouration of their paper during the heated weather, usually despairing of any cure. For some time past, however, unusual efforts seem to have been made to eradicate the evil not, only to secure the paper from changing until it could be turned into finished prints, but also to preserve it sensitized and in good condition for printing for some length of time. While such efforts are going on in one direction, parties in another make the statement that they have no trouble whatever when they carefully practise the well-known formula. I have such a man in my mind now, who daily, during our most heated term, has no trouble whatever with his paper discolouring, while his near neighbour is all the time complaining and grumbling at his paper manufacturer, which luckless individual is one day one party, and the next day another. The "process" of this provokingly (to many) successful man is simply the following:—

Neutral Silver Solution.

Water	...	...	...	32 ounces
Nitrate of silver	...	...	...	4 "

Float according to temperature, from half a minute to a minute and a-half, according to the temperature. Draw the paper from the solution across a glass rod fastened at the end of the dish. Now place the sheet in a book of blotting-paper, rub well, change it from one part of the book to the other three or four times, and then hang it up to dry. When thoroughly dry, fume eight or ten minutes. Paper thus treated will not turn yellow in a reasonable time in the hottest of weather.

I find that a very common cause of the discolouration of the paper is fuming it before it is thoroughly dry. On sultry days, when the air is very hot and oppressive, yet murky and damp, this thing is very likely to occur. Albumen paper is not alone in this trouble; plain unalbumenized paper is also apt to cause annoyance in the same direction. A correspondent seems to think he has found a remedy, and sends me the following notes on the subject. He says:—

"I made a silvering solution last September for a special purpose; that is, for the preparation of sensitized paper suitable for the development of paper prints. This solution has preserved its clear and limpid appearance to the present moment, quite unchanged in colour, and there is but little, almost an imperceptible, quantity of deposit at the bottom. The bottle containing the solution is of coloured glass, of a slightly greenish hue. Furthermore, some plain paper, sensitized with this solution now six weeks ago, remains unchanged in colour. I recollected having sensitized the paper, but finding it so colourless I had some doubts on

the subject, and exposed it and produced a picture with it. The paper is not albumenized. Perhaps the result may be of service. I will see. In the meanwhile the salting and silvering solutions are as follows:—

"Salting Solution.

Water (distilled)	...	...	20 ounces
Chloride of ammonium	...	...	100 grains
Gelatine	...	...	25 "
Citric acid	...	...	100 "
Carbonate of soda	...	...	100 "

"Silvering Solution.

Water (distilled)	...	...	20 ounces
Nitrate of silver	...	...	10 drachms
Nitric acid	...	...	2½ "
Acid tartaric	...	...	1 drachm."

Any information we can get on this grievous subject is, of course, useful. A paper that will keep ready sensitized for use at any time is desirable, but I do not think a quality has yet been produced that meets every requirement.

Novel Patents.—The Yankee photographic mechanic is constantly at work trying to make photography easy, while his less inventive neighbour jogs and plods along patiently, securing good work only by severe labour and trial. One or two novel patents have been granted recently to talented members of our craft. The first is to a woman, Mrs. May A. Thornton, of Ohio, for a "Photographic Refrigerator." The invention consists in arranging apartments in an ordinary household refrigerator for the reception of collodion bottles, the bath, holder, &c., in order that that they may be kept at a proper temperature during hot weather. Certainly a useful idea, but an expensive way of meeting it, when the cheap little device I described in my last, and a bucket of ice water, will answer every purpose.

The next novelty is an apparatus for photographing children. A quotation from the specifications of the genius who invented it will give you a good idea of what the apparatus is like. He says:—

"The object of my invention is to overcome the difficulty at present experienced by all photographers in taking small children; and my device consists in swinging the child and the camera in such a manner that, while they both move, the relative position of the two will remain during the time the picture is being taken. Actual experiment has demonstrated the fact that, while the swinging motion will please the child and keep it steadily in its relative position to the instrument, the camera will do its work just as faithfully as if at rest.

"In order to enable others to understand and use my invention, I will proceed to describe the manner in which I have carried it out. I make a skeleton or frame of any suitable material, in which is suspended a swing by the means of cords. On the one end of this swing is secured the seat or chair, having an adjustable backpiece to support and steady the head of the child, while at the opposite end of the swing is secured the rest, on which to place the camera in front of the child. When the instrument is once adjusted it is evident the swing may be put in motion without affecting the relative position of the instrument and the child, while a good expression of the child is secured."

I enclose you also a drawing of the invention, which you may find useful to show to those of your readers who have trouble in making faces of babies.

Dr. Vogel's Hand-Book.—It is gratifying to see the NEWS give such a cordial endorsement to the excellence of Dr. Vogel's "Hand-Book of the Practice and Art of Photography." I can say with you that I have never read its equal for good, practical, penned down, concentrated information on the subject of photography. I know it is the result of much labour on the part of its talented author, and the great success his work is meeting in this country and in Germany he deserves. Dr. Vogel is an eminently practical man. He fears not to work. He accepts no theories, but reduces all to practice. What he does not

know, he works to find out. This, with his constant contact and working with and among practical photographers, enables him to put a power in his book which he could not otherwise give it. I hope it may meet a good reception in England also.—Truly yours.

Philadelphia, August, 1st, 1871. EDWARD L. WILSON.

THE EXHIBITION OF THE ROYAL CORNWALL POLYTECHNIC SOCIETY.

[FROM OUR OWN CORRESPONDENT.]

THIS Exhibition opened on Friday, the 11th inst., but, notwithstanding that the Society placed an increased number of medals at the disposal of the judges in the photographic department, yet the number of exhibitors in the professional section was still less than last year.

R. Michell, of Bolton, commences the department, in the catalogue, with three frames, and is rewarded by the judges with a first bronze medal for his "Winter Sunrise," an exceedingly clever snowy wooded landscape, 8 by 10. R. T. Williams, of Monmouth, comes next with two frames of exceedingly beautiful cabinet views, clear, crisp, well-lighted and selected, but which seem to have been too *petite* for the notice of the judges, although they certainly deserved commendation of some kind. Ralph Ludlow, Camden Road, London,* has a single picture, "A Bridesmaid," which obtained the highest prize—a first silver medal. This picture would have been equally as effective without so much shadow, and with more exposure, which would have tended to have made the ladies' expression appear less sombre and more in keeping with the title; less retouching the negative would have been necessary, the excessive use of the pencil having given the flesh a waxy appearance. Adam Diston, of Cupar, has four 8 by 10 compositions, which are very effective, more particularly the one entitled "A wee customer," the pose and expression of both the child and the old shopwoman being faultless. Perhaps if the accessories and backgrounds of these pictures had been a little less sharp and distinct, an improvement would have been effected. The second silver medal, which they obtained, they certainly deserve. Lafosse, of Manchester, is also a contributor of twelve fancy subjects, most of them from Richard III. They are good specimens of artistic photography, particularly "A Spanish Lady," and "Isabella and the pot of basil—Bocaccio." H. Ashdown, of London, is marked for his six exhibits (figures) with a first bronze medal, but most of these exhibits have the anomaly of a plain dark background and a made-up studio landscape foreground. The three figures of Warwick Brookes, Manchester, are splendid examples of photographic manipulation, the figure entitled "A Study" being especially noticeable: awarded a second silver medal. Three frames of transparencies for the lantern, sent by Frederick York, London, get (and deservedly) a first bronze medal; but neither "Sketching," "Moon and clouds," and some stereograms, by a local exhibitor (Griffiths, Truro) are quite up to the mark. T. L. Howe's (Cardiff) "Little Annie" is most elaborately coloured, and therefore is excluded from competition. Robinson and Cherrill send two very fine figure photographs—"Down to the well" and "A load of ferns," both figures being distinguished by the graceful life-like ease of the pose, as I do not remember ever seeing a photograph which conveyed the idea of a person in motion so much as these do. These gentlemen also contribute three landscapes and a sea piece, no way inferior to their last year's exhibits (but rather the reverse), for which they received the first silver medal for landscapes; but on the present occasion the judges retrograde, and give them a second silver medal, and not taking any notice of the exquisite figures. The enlargements by Duprez

and Co. should not have sent except as foils for work worth looking at. K. Slingsby, of Lincoln, has four magnificent pictures on whole sheets of paper 17½ by 22½. One of these, the half-length of a lady, is from the same negative as one in the International, and which, I am informed, is pronounced by what may be termed the highest authority in our (photographic) world as "the best photograph in that exhibition." The award is a second silver medal, which does not do justice to its merits, as this and the "Bridesmaid" should change places. Vandyke and Brown, Liverpool, obtain a first bronze medal for a very fine (untouched in print or negative) portrait of a gentleman. They also exhibit a very exquisite coloured enlargement vignettted, and some very fine cameo-vignettes, album and cabinet. A large collection of Vaughan's photographs of carvings are contributed by the Department of Science and Art, and F. R. Elwell, Weston-super-Mare, has some very good cabinet portrait compositions and some sea and cloud pictures.

The amateurs are better represented in this than last year's exhibition. Mr. F. Beasley, Jun., has twelve pictures, his view at Powercourt being marked for a second silver medal, although I think preference should have been given to the two Grindelwald subjects, which remind one of England's pictures. Lieut. Abney, R.E., contributes six pictures, and is awarded with a first bronze medal. One of this collection is about the richest and sweetest bits of cloud and sea that I have seen, and should have obtained a white medal instead of a brown one. The ten pictures on whole sheets of paper by Robert Crawshaw, Esq., are almost an exhibition of themselves, and although entered in the amateur section, very few professionals could show better results, either in regard to manipulation or artistic feeling, although, certainly, it would, perhaps, be very difficult for professionals to obtain such charming subjects for sitters. The pictures are each titled, and very appropriately. The expression is particularly applicable to "Earth or Heaven," and "In thought," to which a first silver medal is given. Mr. Grant, of Collumpton, sends four pictures worthy of the company they are in; but as everyone cannot win, he must fain be content with the above consolation, and try again another year.

PHOTOGRAPHY IN THE SOUTH OF ENGLAND.

BY AN OCCASIONAL CORRESPONDENT.

LOW PRICES.—FADING PRINTS.—PHOTOGRAPHING FLYING GULLS.—MR. DAT'S STUDIO, AND VARIOUS USEFUL PHOTOGRAPHIC HINTS.

Bournemouth, August 10th, 1871.

A YEAR ago I submitted to your inspection a goodly series of the small carte views of places of interest on the south coast, which were to be bought retail at the price of three-pence each. The excellence of these little pictures secures for them a rapid sale, and they are now to be met with in the shop windows of Christchurch, Poole, Swanage, and Weymouth, besides the town from which I am writing. A few of these pictures bear the name of the photographer on the mounting card, but in many cases they are made the medium of advertising "A. B.'s Fine Art and Fancy Goods Repository," or "C. D.'s Library and Reading Rooms," with other particulars printed on the back. This consideration has, no doubt, had the effect of keeping down the price, and the sale this summer is, I am told, greatly augmented. The wholesale price (which, I understand, is only eighteen pence per dozen) does not allow sufficient remuneration to the photographer when the retail dealer gets the advantage of his advertisement. There are to be had also a capital series of local views, size 6¾ by 4½ in., mounted on plate paper, with indistinct margin, and sold at one shilling each, besides several of Frith's series of larger dimensions.

On looking over a collection of the carte views a few

* Have we to congratulate metropolitan photographers on the advent of a new star amongst them, or is "Ralph Ludlow" a nom de guerre?

days since, in one of the principal establishments of this town, I noticed several instances of fading, and particularly remarked this defect in some views of Corfe Castle, bearing the name of a well-known Richmond firm. The dealers should scrupulously avoid offering such pictures for sale, inasmuch as the producers would gladly exchange them to save their own reputation, and the confidence of the public in these low priced articles is easily shaken. The illustrations of Christchurch, with its grand old monuments and ancestral chapels, may be quoted as being highly satisfactory work, of apparently permanent character; and some views of Bournemouth, with natural skies, taken by R. Day, of this town, are equally good.

One of the most picturesque spots on the Dorsetshire coast is Lulworth, which I had the advantage of visiting last week under peculiarly favourable weather. It is reached by excursion boat from Poole or Swanage, and, though well known to the geologists, is apparently an unexplored region to the photographers. Visitors will find good accommodation at the Cove Hotel, and commencing at the Coast Guard Station immediately in front of that house, and following the course of the cliffs westward, a glorious succession of rocks (chalk and purbeck) are to be met with. When mounted here on one of the high downs I had an admirable opportunity of studying the habits of the sea-gull, and feel confident that no difficulty would be experienced in photographing them if, after placing the camera and focussing for near objects, a shrill whistle were used to drive them from their nests. The flight of these birds is characterised by noise rather than rapidity, and after the first few moments the action of their wings becomes much retarded. Fantastic rocks and caverns are also to be met with between Lulworth and Swanage, and St. Alban's Head is a bold feature on this coast.

Poole Harbour, at the time of high water, is remarkably picturesque, with good foliage on the banks and island, and gulls and herons contributing to make a picture. The best view is that seen from the sandy hillock near the mouth of the harbour, and Branksea Castle then comes into the centre of the picture, together with the best features of the island on which it stands. Near this point (which is, at most, three miles distant from Bournemouth along the sands), is a glen or "chine" within the grounds of Branksome Tower. There is here abundant scope for the camera in the way of depicting the succession of little lakelets, which, shaded with firs and evergreens, run for some distance inland. Alum Chine, next to it, with the Herbert Convalescent Home at the end, is also well worth a visit, as is also Durley Chine, still nearer to Bournemouth. On the east we have some good bits of forest scenery and sandstone cliff, Boscombe Chine, and Mudeford, at the mouth of the Christchurch river, famous for its salmon. From this last named place we get a good view of Alum Bay and the Needles, in the Isle of Wight. Swanage, although made known by the photographs of Frank Good and others, is capital ground for the amateur, who should not fail to see the natural cavern and blower at Tilly Whim. Corfe Castle, again, is not far from this place.

Reverting to matters of special photographic interest, I proceed to give you a few practical suggestions, which I learned from Mr. Day when visiting him a short time since. He still used the lance-wood dippers, but has nothing further to add to his description of the gum-coffee process which was published in your own and the Society's journals last spring. I have heard of a whetstone being used for roughening the edges of glass plates, but never of the manner in which Mr. Day proceeds. He cuts the sandstone tool into short blocks, and with a file makes a couple of notches at each end, forming grooves, with which he can very quickly roughen the margins uniformly, and for any required distance all round the plate. For cleaning the glasses he prefers to rub them over with whiting moistened with methylated

spirit, and, when thus ready for use, they are stored, or carried into the field, between squares of hard blotting-paper nicely fitted into a wooden box provided with separate divisions for the reception of different sized plates.

A new operating box, on wheels, which Mr. Day is now constructing, promises to be a very complete apparatus for working the wet collodion process. Ventilators are provided, and for the non-actinic window two thicknesses of yellow glass, combined with one of grey glass, will be used. For negative varnish, a mixture of two parts of best orange shellac and one of gum sandarac, together with some fragments of glass, are introduced into a bottle of cold methylated spirit, to make a stock solution somewhat stronger than required for use; this is filtered through blotting paper, and mixed with two or three drops of castor oil per ounce, and finally diluted with more or less spirit, to give a heavy or thin coating, as may be desired. Three years' experience with this formula has convinced him of its superiority over the Sœhnee varnish, and he has never seen a cracked film, which may be partly attributable to the system of keeping his negatives. Each glass has its printing surface protected with a leaf of thick red blotting-paper laid in contact with it, and brought round to the extent of one-eighth of an inch upon the lower face of the negative, being there permanently fastened by glue. When placed in the frame, it is not necessary to tear off the paper, but merely place the sensitized sheet (single or double) between the glass and this fly leaf, and after the required number of copies have been printed, the negative is stacked with others in the alphabetical pigeon holes or plain boxes—edgewise preferred—by which expedient contact with cold or damp air in winter is practically avoided. I was shown a few novelties in the way of camera fittings, and Mr. Day pointed out the want of side screens in the construction of the instantaneous shutter, which he would prefer to have made larger, so as to give more shade in all directions to the lenses.

VISITS TO REMARKABLE STUDIOS.

[BY OUR OWN CORRESPONDENT.]

JOHANNES GRASSHOFF'S STUDIO, BERLIN.

IF I were asked to which of our London photographers M. Grasshoff bears a resemblance, I should at once answer Mr. Blanchard, or, on further reflection, perhaps, Mr. Rejlander; and yet in many particulars his photographic work is unlike that of both these gentlemen. He certainly exhibits some of that bold enterprise and indifference of photographic difficulties which characterise most of Mr. Blanchard's work, while at the same time he appears, like friend Rejlander, to concentrate his energies especially upon artistic effect, and to give little heed to perfect manipulation. Not that I would have it understood for one moment that M. Grasshoff's pictures betray any trace of carelessness, or want of photographic skill; what I would say is, that they excel in freedom of pose and artistic merit rather than in extreme perfection of photography.

I was heartily pleased with my visit to M. Grasshoff, for during the whole time of my stay he was untiring in his efforts to show me everything of interest. He bewailed much the circumstance that carbon printing was (for the time, at any rate) at a standstill in Berlin, owing, unfortunately, to the recent death of M. Beyrich, who had, it appears, been the working pioneer in this branch of the art. "If it were possible," said M. Grasshoff to me, "to obtain good carbon tissue, I would in future resolve to prepare portraits of larger size only, and print them in carbon."

Some early specimens of carbon printing which he possessed, produced from tissue made experimentally by hand, were of rare merit, and endowed with a most pleasing tone,

obtained, so I was told, by means of Vandyke red, which M. Grasshoff recommends above all other pigments as being very suitable for carbon printing. He had, of course, no experience of the Autotype process, but expressed a conviction that a varnish over the print was invariably necessary, and the invention of a suitable lac of this kind was no easy matter. He trusted that the time was not far distant when permanent printing would be generally introduced for portraiture.

In his portfolio were some fine landscape pictures printed upon blue albumenized paper, which had a very charming effect, for the blue tints imparted a most real atmospheric appearance to the prints. Some photographs of the Thiergarten, or park of Berlin, by Dr. Vogel, which I had not previously seen, were also shown me, and included in the series several real masterpieces. The effect of the sun's rays through the foliage seems to have been especially studied by Dr. Vogel, and in many cases with capital results.

M. Grasshoff's studio, like many others of note, is exceedingly small, measuring only twenty feet in length; and so limited, indeed, is the accommodation, that the printing has to be carried on in the glass room itself. The manner of lighting adopted has been so often and so clearly described in the photographic journals by M. Grasshoff himself, that it is almost unnecessary for me to go into particulars. The light (which is north) is kept out in the usual manner by curtains rising from the floor, the glass for the most part being dulled, either by a coating of starch, or by one of white paint and starch combined. In this way injurious reflections are avoided, and the materials, being laid on from the inside, are easily removable in winter, or at any time when there may be a lack of light. The background generally employed is one of a dark blue colour, shaded by a thick curtain of amber stuff; but there are, of course, other backgrounds and floorings, painted mostly in distemper, with dark scenery of the most sketchy and undefined nature. Opposite the amber curtain may be adjusted one or more reflectors of more or less power, as may be deemed necessary. Very great pains are taken in the illumination of the model, as in this, and in the suitability of the background, M. Grasshoff believes success mainly to depend. To show the marvellous influence which light and artistic surroundings exert upon the human figure, M. Grasshoff has prepared thirty different pictures of one and the same model, all of them bust portraits; and although the series is mounted in one frame, it is simply impossible for the casual observer to trace a resemblance between any two of the photographs. The frame is truly a marvel of photography, and I only trust the artist may be induced to forward it to London for exhibition in Conduit Street in November next.

M. Grasshoff's portraiture reminds one much of that of Fritz Luekhardt, but his style is somewhat more free. He also delights in the preparation of enlargements, which, when finished under his practised hand, are very beautiful indeed, for you must know that in this case the photographer is also an accomplished artist in oil colours. As regards his method of retouching I need say little, as the same has often been published; but an exceedingly practical lamp fitted up for the purpose may be here mentioned. It is an ordinary lamp covered up except at one side, where the light shines feebly through a paper disc; close against this disc the negative frame is placed, and where the head of the portrait approaches the paper a drop of oil is applied to render it transparent at that spot. Thus the negative is only illuminated in that particular part where the retouching is carried on.

The dark room and laboratory is not, of course, very large. Some of the stock solutions which will keep are stored ready for use in large vessels provided with glass taps, so as to be easily drawn off when required—a very good arrangement indeed. No pyrogallic acid whatever is

used, development, as likewise intensification, being carried on with iron. A collodion filter—if, indeed, it can be so called—which has recently been devised by Romain Talbot and Dr. Vogel, I believe, and which is found to answer its purpose thoroughly, is an exceedingly ingenious affair. It consists of two glass vessels, an upper one and a lower one, the latter being a deep cup into which a collodion bottle, having a narrow opening at the bottom, accurately fits. The collodion to be filtered is poured into the bottle, and some portion at once escapes into the receptacle below—not much, however, because the bottle fits into the cup like a glass stopper, and prevents the escape of air. As a matter of course, the impurities sink to the bottom of the collodion, and thus pass into the small quantity of the liquid in the lower vessel, which, therefore, always contains the dregs of the liquid.

M. Grasshoff wisely sets apart one day in the week for doing experimental work, executing studies, portraits, &c. Many of his unfinished essays and sketches I was permitted to see, and these demonstrated very well the care and study which had been devoted in many cases in the elaboration of successful results. Some photographs of groups of puppets, very artistically arranged, and appropriately clothed, were not the least interesting and attractive of these proofs.

The retouching and finishing of the portrait is a department of much importance in M. Grasshoff's studio, and perhaps there are few photographers who understand this branch of the art so well. His skill as an artist enables him, if desirable, to work upon the portraits to any extent, and some charming heads, fully coloured in oil and water pigments, that were exhibited, fully testify to his familiarity with the palette as with the camera.

I do not know what Mr. Dallmeyer would say if he knew the cruel strain to which some of his lenses are put. I fear, however, that eminent optician has long ago given up photographers as a bad lot, for the complaint against overtasking lenses is a very old one, and in this respect we are most of us habitual criminals. Any way, M. Grasshoff puts the patent cabinet lens to a very severe test, and produces by its means some capital nine-inch group pictures. I did not see any of the Salomon style of portrait, or, indeed, any at all of a large size except enlargements, and these were, of course, much touched with crayons. The general demand would still seem to be for cartes-de-visite and cabinet portraits.

PHOTOGRAPHY IN BELGIUM.

[FROM OUR OWN CORRESPONDENT.]

NOTWITHSTANDING the intense heat (83° in the hall of our hotel), I have obeyed instructions, and visited the chief studios in Brussels. I must confess that it was only the ardent love for the art that made me toil through this glaring city, as my inclination bade me sit in my shirt sleeves, and drink heed "brandy pawnee." Through the courtesy of M. Cerf, I was enabled to introduce myself to various members of the profession, and to see all I wished in the photographic line. I first visited M. Geruzet's studio. It is situated in the Rue de la Montagne de la Cour, the most prominent street in Brussels. Through the introduction of M. Cerf, I was most kindly received, and shown all over the premises. The waiting rooms were furnished with every article luxury and art could suggest; the walls being decorated with noble studies in "Linsin," by M. Geruzet himself. The glass house is of the ordinary ridge-roof class, but of large dimensions, from the floor to the ridge being some thirty feet, and the length about fifty feet. The slope of the roof is so arranged that the sun never strikes into the studio; thus a degree of coolness and purity of light are obtained quite foreign to many with which I am acquainted. The studio can be used from either end. The glass portions are

furnished with convenient roller blinds. M. Geruzet kindly showed me a quantity of his negatives, and the prints from them. Both are most delicate, and have a greater relief than I should have imagined would have been given them, considering the character of lighting that is employed. Large reflectors are used in every case, and dark backgrounds. Every negative passes into the hand of a retoucher, the king and peasant both having their modicum of lead pencil applied to them.

The rustics who are turned out from M. Geruzet's are far different to those ordinarily to be seen portrayed in our country, the pose of his sitter and the finish of the print being most carefully attended to. The negatives are washed with gum and water before retouching, and a *very hard* pencil is used for the stippling. The faces are left of a natural texture, and not of that marble character so significant of an excess of retouching. M. Geruzet takes eight negatives on one plate by the ordinary repeating back, and prints the two best as specimen pictures. I saw several solar enlargements finished in crayons. They were fine specimens of art, and spoke well for the character of the work furnished by this photographer.

I next turned my attention to M. Ghemar's work. It is very excellent, and he is a general favourite with the natives of Brussels on account of his bonhomie, and also for the general good qualities of his work. There is not that refinement in his portraits I should have wished, but as photographs they are perfect. I should hope we may see specimens of his and M. Geruzet's work at our next exhibition.

I next visited the large establishment of Messrs. Simonau and Toovey, who are solelicenees for Woodburytype in Belgium. Mr. Toovey is an Englishman, and kindly allowed me to spend several hours in his establishment, admitting me into the mysteries of the Woodburytype, and also of a photo-lithographic process peculiar to himself. This latter I shall discuss fully in your columns on my return. The firm are the largest and best chromo-lithographic publishers in Belgium, and the specimens of their work are far superior to most French chromos; their system of registration being superior, and the colours better chosen. I was informed that Mr. Toovey had been at work at the Woodburytype some eighteen months, and that for one year he had laboured almost in vain. He is now, however, in full swing, except when stopped by the excessive heat, and is in the midst of illustrating several books. He is also producing fac-similes of a series of very old original etchings by various masters. The originals belong to the Duc d'Artemberg, the well-known collector of pictures and works of art.

To sum up, the general run of portraits in Brussels are of a very mediocre type, with one or two exceptions, and, I think, as a whole, the city may be said to be badly off for artistic portraiture.

Landscape photography may be said not to exist. The fine architectural photographs I have seen are out of focus, badly lighted, badly printed, and generally inferior. Were the structure of the cathedral as it is portrayed, nothing would have induced me to enter its doors; I should have expected to be buried in its ruins. Swing-backs seem unknown.

The Royal Society of Photography devotes itself chiefly to copying old paintings and works of art; in this it has achieved great success, some beautiful productions being displayed in the shop windows.

I am off to Antwerp to-morrow, and will furnish further reports.

W. DE W. A.

ON SOME CURIOUS EXPERIENCES IN PRINTING.

BY GEORGE CROUGHTON.

In the early part of this year Mr. Dunmore read a paper at the South London Society, entitled "Dodges," in one

part of which he stated that by putting a yellow glass over the printing-frame during the printing the tone of the resulting print would be much improved. This called to my mind an experience in the same direction, where some parts of a negative, having been protected with a yellow varnish, the parts so protected toned much richer than the others. There was a discussion among the members present upon the matter, during which Mr. Taylor stated that he had tried various coloured glasses over negatives during printing, and, from experience, was decidedly of opinion that the colour had a marked influence upon the tone.

The whole had passed from my memory till a week or two back, when (a necessity arising for some modifications upon a negative) I resorted to the old dodge of coating the negative upon the glass side with a yellow varnish (made by adding tincture of iodine to the ordinary negative varnish), and scraping away with a knife those parts wanted to print quickest, repeating the operation till some parts of the negative were covered with three coats of the varnish, while those parts wanted to print deepest were scraped quite away. The resulting print showed a curious diversity of tones, according to the depth of varnish; but all parts that were protected with the yellow varnish were decidedly richer in tone than the others; in fact, so different in tone were the parts not protected with the varnish, that had the print not been coloured it could not have been sent out.

Now came the question, was it the colour or the time of printing that influenced the tone?—for we all know that a certain class of negative, if printed in a slow light, will produce a much more brilliant print than if printed quickly; so I at once set to work to decide the question, and am quite satisfied that it is to the colour, and not the time, that the richness is due; and I proved it in this way: I coated one half of a negative (on the glass or reverse side, of course) with yellow varnish; the tone of the two portions were totally different, one side, of course, being more printed than the other. I next covered the unprotected side as soon as printed, but the paper under the protected half was as deeply printed as the other, with a still greater difference in favour of the side protected with the varnish. But this proves nothing, because they did not have the same time in printing; but now I covered up the unprotected half with tracing paper, but both sides took the same time printing, and the difference, both in printing and after toning, was quite as decided, the half protected with the yellow varnish toning quicker and richer, with a more extended scale of tone, than the other.

I do not pretend to explain the cause of this effect; I leave that to abler hands; all I know is the fact that light coming upon the negative through a yellow medium exerts a beneficial influence upon the tone of the resulting print. I must leave to others better acquainted with light and its actinism to explain the cause.

RESTORING OVER WORKED BATHS.

BY ELBERT ANDERSON.

In Mr. Anderson's last lesson to his pupil he initiates him into the mystery of restoring over worked baths. He commences by referring to a visit to Vassar College, a ladies' school, where he prepared several hundreds of plates, and so heavily tasking his baths.

Mr. Anderson. Here is my Poughkeepsie bath, and I am going to put it in thorough order.

M. By Jove! that's just what I want to see done.

A. When I went to the college, I took with me a one-gallon glass bath-holder, and four gallons of bath solution. I averaged twenty to twenty-five negatives a day. At the close of the second day's work the bath showed slight signs of mistiness, so the third day I filtered it, when at night it be-

came weak, misty, and over-iodized. This I decanted and set in the sun, and took a fresh gallon of solution, which, being from the same lot, acted about the same as the first gallon I used. This then was put in the sun, and the third gallon put to use, and by the time I had used up the fourth gallon I had worked about twelve or fourteen days, during which time I had dipped about three hundred plates. I commenced work at 9 A.M., and stopped indoor work at 3 P.M., then I took groups in the woods and on the lake until 6 P.M. I availed myself of a rainy day, and took in the bath from the sun, and boiled the whole four gallons for about two hours. When cold, I reduced it to forty grains, and filtered it without further treatment. The solution then lasted me until my return to town, say about two weeks more. It is now saturated with iodide, charged with ether and alcohol and organic matter, and reduced in strength; so I now propose showing you to-day how I shall entirely overhaul it, and make a bath better than new.

M. And that is just what I want to see and understand.

A. Nothing can be simpler. And as you have attended pretty faithfully to all I have heretofore said, you can no doubt tell me yours—If how to proceed. Make the attempt, any way, and I will correct you if you go astray.

M. Well, thanks; it's a go. I will review the present condition of the bath. Case 1st. It is over-iodized. Case 2nd. It contains dust and foreign matter (*mechanical*) introduced with each plate, and through the agency of the atmosphere at such times when the bath-holder was open. Case 3rd. It is charged with ether and alcohol. Case 4th. It contains considerable albumen, obtained chiefly from the back of the albumenized plates, the albumen being drawn up by capillary attraction. Case 5th. It is reduced in strength. And last, though by no means least, Case 6th. It is charged with organic matter (*chemically*).

A. That is about the state the bath is in at present, and I want you to rectify all this for me. What's first to be done?

M. To remove half the iodide. I shall pour into the bath its equal volume of water. Eh?

A. Better still, pour the bath into its equal volume of water.

M. That's so. I remember something of this. Why is that the better plan?

A. Look. Into this bottle I pour eight ounces of bath solution, and into this other bottle I pour eight ounces of water. To the first bottle I add eight ounces of water. See the result.

M. It has thrown down a quantity of iodide, and turned of a bluish colour.

A. Now, upon shaking the mixture, a considerable portion of the iodide is redissolved, on account of the stronger solution having been in excess during all the time of adding the water. Into the other bottle I pour eight ounces of the bath solution. Observe the effect.

M. Yes, I see. It appears to have thrown down a much greater quantity of iodide, as the solution has turned as white and creamy as milk.

A. And upon shaking the mixture it even becomes still more creamy, and none of the iodide is redissolved; for, in the latter case the weaker solution (water) was continually in excess, and the bath was so weakened at the outset that none of the precipitated iodide is redissolved.

M. Still, I should think that so long as the same amount of water was used in both cases the result ought to be the same.

A. Your theory seems fair and reasonable. But, alas! like many other theories advanced from time to time, it fails completely when put into practice—"eccc signum."

M. Well, let's get on; I am still a little shaky on this point.

A. Marshall did you ever drink a gin cocktail?

M. Did I! Ask me once, and you won't long be kept in doubt.

A. Well, I do ask you now. Not on account of the drink, but—

M. Come, now, Anderson, that's too thin—

A. But, to show you another experiment which relates directly to what we have been just discussing, come down stairs to the gin-mill. There—here's a tumbler, some sugar, gin, and water. See, I put the sugar in first, then the gin, which I stir a little, and finally the water. So now stir away until you are tired; you will fail to dissolve the sugar. But dissolve the sugar first in the water, then add the gin, when you will have it all hunkee doree.

M. I'm blamed if that ain't so. Well! here's looking at you.

A. In making your collodion, dissolve the bromide of potassium in a little water, and add it to your alcohol. Now, if you add the alcohol to the ether, the whole of your bromide will be precipitated; but if you add the ether little by little to the alcohol, the bromide will be completely retained in the solution.

M. That's just what's the matter with Hannah. Let's go up-stairs again and attend to the bath. I add then the bath solution to its own volume of water, and shake thoroughly. Now half the iodide is precipitated. We next filter the solution, when the precipitated iodide remains behind on the filter, so that this cures cases No. 1 and 2. Now I put the solution in this evaporating dish on the stove, and gradually turn on the heat; as the bath begins to evaporate, the ether and the alcohol, being lighter, rise to the surface, and are gradually expelled, which cures case No. 3. Whilst this is taking place, the heat coagulates the albumen, which, rising to the surface forms a metallic-like scum, and this cures case No. 4. Now, when it has evaporated down to its original volume, it has regained its original strength, which cures case No. 5, and also, I presume, case No. 6.

A. That's pretty good, Marshall, but, unfortunately, you have omitted the most important operation of all, since the worst part of the bath's disorder is from the organic matter (chemical) accumulated, and this you fail completely to remove by this means. When the solution is placed on the fire, wait until it begins to evaporate; at that moment, and not before, introduce a piece of blue litmus-paper, which will gradually turn red, on account of the acidity of the bath.

M. Would it not have turned red when the solution was cold?

A. Certainly, but when the bath is hot it is in better condition for the next operation, which is as follows:—Make a weak solution of aqua ammonia and water (say one part ammonia to four or five parts water), and add this gradually drop by drop, stirring continually; a brownish precipitate (oxide of silver) forms at each addition, which, however, is redissolved upon stirring, because oxide of silver, though only very sparingly soluble in water containing nitrate of ammonium, which salt is continually accumulating in the bath, being introduced by the ammonium salt contained in the collodion. Continue to add the ammonia until the litmus paper is just restored to its blue colour, when the bath will be either just neutral, or rendered slightly alkaline.

M. What is the object of neutralizing the bath?

A. Because acids, as I have previously told you, exercise a retarding effect, not only upon the reduction of salts of silver by the developing agents, but also prevent the precipitation of organic matter by holding them in solution, especially nitric acid. On the contrary, alkaline liquids produce an opposite effect, and favour precipitation. The organic matter will now begin to fall down abundantly in the form of a black powder or sand, and will cling to the sides and bottom of the dish. The boiling may be continued any length of time beyond forty grains, and reduced to this strength when cold by the addition of pure water. After it has been brought to its proper strength, and is cold or warm, it may be filtered through several

thicknesses of filtering paper, after which it may be acidified with C. P. nitric acid.

M. Why after filtering?

A. Because the acidifying of the bath with nitric acid before filtering allows the acid to dissolve a portion of the very organic matter you wish to remove; and, of course, which would otherwise have been carried back again into the bath. It is not improbable that upon trying a plate in the bath so treated, the negative may flash out suddenly, and be black and white—i.e., very intense in the high lights, and devoid of details in the shadows; an addition of a little more acid will soon set matters right again.

M. Thank you, old fellow. I wish you would tell me how to make collodio-chloride and print a porcelain picture.

A. Well, I will next time we meet; I must go now. Good bye.

ON THE INFLUENCE OF HEAT AND MOISTURE UPON PHOTOGRAPHIC PRINTING.

BY LUDWIG SCHRANK.*

It is all that has ever been written regarding the subject of photography in tropical climates, and the influence of heat upon the various compounds and solutions, only the question of the negative process has been taken into consideration and discussed. There is, however, scarcely a preparation connected with our art that should be shielded from the influence of heat so carefully as albumenized paper, whether in its normal or sensitized condition. And my remarks on the present occasion, which, by the way, are not offered on the score of novelty, but simply as useful memoranda, will, I feel sure, find an echo in the minds of all practical operators.

It would be of great importance to the photographer when engaged in the purchase of his papers, or busy in conducting his printing operations, to know the circumstances attending the preparation of the material in which he is interested, and one would be thankful, indeed, for the publication of a detailed account by a practical man of the method followed in manufacturing albumenized paper. Unfortunately, however, the information afforded by this chapter of photographic literature is particularly scarce.

Some time ago I remember M. Frederick Beyrich discussed in the journals the injurious influence of dry heat upon albumenized paper, and recommended at the time that, after being sensitized, the material should for a short period be preserved in a cool and damp locality. According to this gentleman's opinion, no preparation is so difficult to manufacture perfectly as albumenized paper, upon the ground that the two raw materials necessary to its preparation—the paper and the albumen—are never to be obtained of strictly uniform quality. In his remarks, M. Beyrich says: "The manufacturer of the paper works with organic substances, such as linen or cotton rags, starch, resin, soap, &c., which are never of a constant nature, and this element of uncertainty is even more pronounced in the white of egg, which actually in a fresh condition is apt to differ according to the season of the year, and other material circumstances, and which, after keeping for a short time, undergoes the most radical change by reason of its unstable nature and great tendency to ferment."

It is to the different amounts of moisture which the albumenized paper contains that is due, thinks M. Beyrich, its repellent action of the silver bath and the dissolving off of the film; the albumen, namely, becomes, by exposure to a dry warm atmosphere, of a horny character, which is but difficultly affected by water. The yellow tint assumed by the paper, both before and after printing, may be well accounted for by the reasons given above, especially when the matter becomes complicated by the application of the nitrate of silver.

If the pictures of a show case are minutely examined

where the specimens have been a long time exposed to the action of light, the most varied tints will be found to have been assumed.

It is a known fact that sensitized paper which has become yellow by long keeping is less sensitive than the freshly prepared material. If the excess of silver is removed by careful washing, then the paper may be kept in a less sensitive state for several weeks. In winter and in hot seasons of the year, silvered paper will remain good for a longer time if always preserved in a cool locality. After fixing, yellow paper is apt to assume a reddish tone, which has been assigned, and not without cause, to the action of the nitrate of silver upon the organic material, from which it of course follows that the latter plays some role in the sensitiveness of the paper. These changes are not wholly inherent to albumenized paper, for they were wont to take place in earlier times, when the sensitive paper had neither been treated with starch nor albumen. Among plain papers of this kind those of English manufacture exhibited a yellow tone, and the French more of a greyish black tint, even when both materials were toned and manipulated in the same bath. And this change was ascribed to the behaviour of the nitrate of silver in the presence of the organic substance contained in the papers, and particularly the sizing thereof.

To these circumstances must be added the fact that nitrate of silver suffers a reduction and blackening of its colour when placed in contact with organic substances, and without the presence at all of iodine or chlorine compounds, a reaction serving to prove the important influence that organic substances exert in connection with the creation of a photographic print.

From these facts it appears to us that heat and moisture have, before all, a marked influence upon sensitive albumenized paper, an influence which cannot be definitely explained or defined, because its degree depends, in a great measure, upon the nature and amount of organic substances contained in the raw paper, and upon the action of the nitrate of silver upon such substances.

Upon unsensitized albumenized paper a moist atmosphere has but little action, except in so far as to give rise to the marbling of the surface; it would also appear that the formation of air-bubbles in the fixing bath is due less to the influence of heat than to the glazed character of the paper, which does not allow of the albumen penetrating beyond the surface.

NEGATIVE MANIPULATION.—PINHOLES.

BY R. J. CHUTE.*

MR. PRESIDENT AND GENTLEMEN,—Having concluded to accept the duty of preparing a paper for this meeting, I determined to face the subject, and tell you something of what I know about pinholes. These are generally very small holes, but to a photographer they are the most perplexing ones he can get into. Wormholes, ratholes, knot-holes, or holes in the day, are nothing to be compared to them for annoyance. They come in such variety of forms, and such "questionable shape," that it is difficult sometimes to find the cause or apply a remedy. The causes may be summed up somewhat as follows:—Unsettled or unfiltered collodion; dirt floating in the air from a collection of dust in the dark-room, or from some chemicals, such as hypo, having crystallized, and being ground on the floor till it floats in the atmosphere, and, coming in contact with the plate, forms the worst kind of pinholes; from dust on the plates before they are coated; from a dirty bath; from an excess of iodide in the bath, caused by the bath being worked below its regular strength (one of the most common causes); from the plate being drawn from the bath too slowly, causing the seam and particles of dust floating on the surface to be taken up on the plate; from a dirty plate-holder, stirring a dust when the slide is drawn, or

* *Photographische Correspondenz.*

* Read at the June meeting of the Pennsylvania Photographic Society.

when the holder receives an unusual jar; from dirty developer; sometimes from a dirty fixing bath, and often from letting too strong a stream of water run on the negative after fixing; and sometimes from a vulcanized rubber bath after it has been a long time in use. These are some of the more common causes, and of the twelve enumerated, eight of them are from actual dirt, which it is easy for every operator to dispense with.

The question is not, how can we get rid of pinholes? but, what is the cause of them? This question answered, and the remedy is apparent. But the operator is often puzzled to know the cause, especially if he is not particularly clean and careful in every motion he makes. I have a vivid recollection of my first pinholes from a weak bath. I used it along, day after day, dipping little plates that did not take much silver, till one day pinholes began to appear, and in looking for the cause I found my bath filled, as it were, with a frostwork of fine crystals. I discovered the cause and the remedy, and since then have considered it as necessary to feed a bath when it is worked as it is to feed a horse.

But the most perplexing cause of pinholes I ever had was from a rubber bath. It took a good deal of speculating and experimenting to discover the cause. I would filter my bath, and for two or three plates it would work clean, then pinholes would come as bad as ever; till finally, I filtered my bath into another vessel, and my trouble disappeared, not to return. I condemned my rubber bath-holder, thinking it worthless; but the difficulty can be easily overcome by rubbing the bath inside with paraffine till the roughened surface is filled; or, it has been recommended to coat the inside of the bath with albumen. It will be observed generally that the rubber seems to be affected only at the surface of the solution, as we might say, between air and water; the vulcanized rubber, being acted upon alternately by the silver solution and the atmosphere, crumbles away, forming continually fine dusty particles that seem to float in the bath, and settle on every plate dipped, unless kept constantly in motion during the coating. The origin of this trouble being near the top of the bath, the remedy is easily applied. The dipper will be found to require the same treatment.

Most of the prominent causes of pinholes are easily discovered, and as easily disposed of; but some are produced so slightly, or are so minute, that they escape detection, while the photographer sees his negatives are deficient, but does not perceive the cause, the pinholes only being seen with a magnifying glass.

I have here three negatives showing pinholes, each from a different cause. The first was developed with a dirty developer, and shows pinholes so minute that they can only be seen with a glass. Or a large portion of the little spots to be observed are not really pinholes, but rather semi-transparent spots on the film, giving it a rough appearance. To the naked eye scarcely anything can be perceived, and herein lies the danger; the negative may lack that smooth, velvety appearance we find in a clean, perfect film, from this very cause, and yet it requires a minute examination to discover it. We cannot be too careful to have the developer filtered perfectly clean before using. On the second negative the holes are very small, scarcely perceptible to the naked eye, and are mostly on one side of the plate. These were caused by drawing the plate slowly from the bath, the particles of dust and scum on the surface adhering to the plate. This manner of taking a plate from the bath has been recommended because it carries off all the surplus solution, requiring no after-drawing of the plate. This method may answer if the bath be kept perfectly clean, but better draw the plate quickly, drain it well, and have it clean. The third and last negative would arouse an investigation with any operator, though the cause might not be readily discovered. It was made in the same bath as the others, one that had been well worked, but immediately before this plate was dipped the bath was well stirred; the plate was lowered gently into it, and allowed to remain

without motion until coated. The remedy for this, of course, is obvious: the bath needs filtering; though a bath in this condition may be worked cleanly and successfully by being careful not to stir it from the bottom.

In conclusion I would say, these little matters that many might think of too little importance to deserve attention are just what we must look after if we would attain perfect success in our operations. I am more and more convinced every day of the necessity for the utmost cleanliness, care, and skill in the manipulations of our negative process. Watchfulness is constantly necessary, and when we can discover nothing with our eyes wide open, we should put on our glasses and make sure that no enemy is lurking unseen. The little foxes are the ones we are to look out for the sharpest. The man who attains the greatest success in any direction gives his attention to the small matters of business equally with the large. The successful photographer will look after the cleaning of his glass with just as much interest as he will his finances.

"Little drops of water, little grains of sand,
Fill the mighty ocean, and form the solid land."

TEA DRY PROCESS.

BY M. CAREY LEA.*

SOME time back, Mr. H. J. Newton proposed an infusion of black tea as a preservative for dry plates. I included this preservative in the very extended examinations that I have given to preservatives for dry work, and found it very successful. Next to the two which I specially prefer, pyrogallie acid and the cochineal preservative, I place the tea. It is, in my opinion, altogether preferable to tannin, coffee, and the older and more known preparations, and it seems to have scarcely been tried as extensively as it deserves. It is more sensitive than coffee or tannin (though less so than pyrogallie acid or cochineal), and gives clean bright images, and pleasant looking negatives. In using coffee, though it generally works easily enough, I have sometimes had surface-markings of a sort quite peculiar to that preservative; these have never shown themselves with the tea.

In one particular, tea acts differently from almost any preservative that I have tried. Cochineal, pyrogallie acid, coffee, tannin, flavin, and many others, are improved by the addition of gum arabic and sugar; indeed, the best results are only to be obtained with them when this addition is made. Tea, on the contrary, did best without. Hot water was poured on the tea (say about ten or twelve ounces on half an ounce of black tea), and this was set in a warm place for some time to infuse. At the end of an hour or two the infusion was filtered, and the washed plate was slipped into this bath without any other addition of any sort, taken out, dried, and backed.

As compared with pyrogallie acid, tea gives equally clean bright plates, and perhaps rather brighter than cochineal. But when all three are given equal exposures on the same object, more detail is found in the pyrogallie acid and the cochineal than in the tea. Similar comparative trials made with the tea against coffee, against tannin, giving these the advantage of gum and sugar, which aids them greatly, showed a marked superiority in the tea.

Correspondence.

GALLIC ACID AS A PRESERVATIVE:

DEAR SIR,—Can you, or any of your numerous readers, inform me whether gallic acid has ever been employed in Major Russell's process instead of tannin? The difference between them seems to be, that the former is simply the latter decomposed and oxidated by the action of the atmosphere and moisture.

It strikes me that plates well washed and soaked for some time in a solution of salt and water might, if flooded with a gallic acid solution, acquire greater sensitiveness than the ordinary tannin plates; but it may be a question whether this

* Philadelphia Photographer.

solution, from its reducing or de-oxidizing property, could be employed where keeping qualities are required. I have not much spare time for experiment, and it is very probable that the results of my suggestion are well known. I have tried various processes in dry plate photography, but still prefer, all things considered, a modification of the tanuin, which has afforded me plates that have kept well for more than a year and a half.—Yours faithfully,

W. L.

[Gallic acid has repeatedly been employed as a preservative. About ten years ago we published details of a very rapid dry process by Mr. Window, in which a five-grain solution of gallic acid was employed. But, except in Mr. Gordon's gum-gallic process, gallic acid has never come into general use as a preservative. Used as a final wash in the Fothergill and collodion-albumen processes, gallic acid gives indefinite keeping qualities to the plates.—Ed.]

Talk in the Studio.

ARTISTIC LIGHTING.—We have recently been favoured with a visit by Mr. P. C. Storz, whose name is well known in connection with artistic photography. The object of Mr. Storz was to bring under our attention a model of a system of lighting which he has spent some time in perfecting, which admits of application to the majority of studios. It would be difficult, without diagrams and a somewhat extended descriptive article, to give any just idea of the system which Mr. Storz has worked out, and it would be unfair at the same time, inasmuch as the aim of the inventor is to instruct photographers, for a reasonable consideration, how to construct and use the system of lighting he has devised. We have used the word *system* advisedly, for the whole scheme of Salomonesque and Rembrandtesque modes of lighting is here reduced to system and tabulated, so that a person with no artistic knowledge may produce facsimiles of most artistically lit pictures, as a person knowing nothing of music may produce exquisite melodies and harmonies on a barrel organ or musical box. A numbered series of blinds or shutters, controlling any amount of light in any direction; a series of varied and artistic examples of lighting; and a tabulated plan referring to the numbered apertures for light, for each especial style, constitute the chief elements of the system, and its perfect working was demonstrated by the lighting of a plaster bust in the model studio. To the fertile and artistic mind an infinity of effects will be possible with the method in question, and to the duldest or most pre-occupied a variety of good effects become possible, on simple mechanical principles not requiring forethought or study to work out.

SARONY AND Co.'s STUDIO AT SCARBORO'.—A correspondent of the *Daily News*, speaking of the amusements of Scarborough, says that, next to balls, the favourite occupation is having your photograph taken. "Great people come down to go through this ceremony. Mr. Sarony can show a book of autographs from distinguished sitters which is in itself a powerful testimony to the attractions of Scarborough, while the palace in which he and his firm transact business is one of the sights of the place. There are worse ways of spending an idle hour than looking over a gallery of magnificent paintings, or seeing photographs of celebrities which do all but speak; and to visit Scarborough without spending some of your time with Sarony is to wilfully neglect one of the best established customs of the place."

EXPLOSION OF GUN-COTTON.—A terrible explosion of gun-cotton occurred last week at Stowmarket, the manufactory of Messrs. Prentice. About fifteen tons of gun-cotton exploded, and many cases of gun-cotton cartridges. Between twenty and thirty persons were killed, and upwards of fifty wounded. It has been supposed that the mode in which the manufacture and storage were conducted was such as to render danger impossible. The cause of the explosion remains a mystery. Fortunately, the quantity of gun-cotton generally in the possession of photographers is so small as to involve no danger; but it is worth while to be careful in its storage. A tin box with loose cover answers well.

To Correspondents.

W. REEVIL.—The sample of india-rubber enclosed is not pure india-rubber, but vulcanized, and should in no case be used to come into contact with the nitrate bath. If you cannot get a piece of pure india-rubber suitable for a water-tight top, you may use this if you coat the surface with a thin covering of pure india-rubber or gutta-percha.

A. DOHERTY.—The picture has been registered.

J. M. Y.—The grain of india-rubber which you placed in an ounce of chloroform will never dissolve if it has remained for a week undissolved. India-rubber generally dissolves in chloroform in a few hours; when it fails to do so it generally arises from the condition of the india-rubber. It is necessary to bear in mind that india-rubber is a photogenic body; that is, it is subject to change of condition under the action of light, that change consisting in becoming insoluble in its ordinary menstrua. To obtain solution, a piece of pure, unvulcanized india-rubber should be used, cutting off the outside portions which have been exposed to light. The outside will be found black looking, the inside much whiter. Reject the outside, which is generally more or less insoluble, and shred very finely the inside light coloured portion. Take this and cover with chloroform in a bottle. It will soon become a pasty mass, which will dissolve perfectly on the addition either of more chloroform or of benzole. 2. Various dry processes seem much opposed to each other in theory, and it is sometimes difficult to say why two plates prepared upon apparently contradictory principles should both work well. Success is dependent upon practical conditions discovered by experiment rather than theory.

H. MAYER.—The rich warm black tones of the transparencies to which you refer are generally obtained on albumen plates. It is very difficult with collodion to obtain even an approach to the rich depth of the imago on albumen. Nevertheless, with care and practice it is possible to obtain good black tones on wet collodion. Such a tone depends on a variety of conditions, and experience as to exposure, development, &c.; a ripe collodion of good body, a strong bath in good condition, moderate exposure, and development with an iron solution containing plenty of acetic acid. A rich good image is thus obtained before toning. The right amount of action of the mercury solution is better ascertained by experience than by the aid of instruction. It may be followed either by sulphide of potassium solution, hypo solution, or ammonia nitrate of silver. The latter gives the best colour, but is more doubtful as to permanency than the others.

VIGNETTE.—The toning bath known as the lime bath very readily yields black tones. To three grains of chloride of gold add two grains of chloride of lime, and twelve or fifteen ounces of water. The bath should not be used for a day or two, but may be used earlier if made with hot water, and then suffered to cool. Remember, however, that to secure black tones, a vigorous, deeply printed image, from a vigorous negative, is necessary.

SPRINK.—Both the Autotype and the Woodburytype closely resemble in appearance a good silver print; the heliotype more nearly resembles a good lithograph with photographic gradation. All are permanent. We are uncertain as to whether the patentees of any of the processes undertake to print from negatives sent to them. The patentees of the first named do not, we believe. Whether the Woodburytype Company, Hereford House, Brompton, or Edwards and Kidd, patentees of the heliotype process, Lincoln Terrace, Willesden, undertake such work or not, we are uncertain.

D. G.—Your chief difficulty arises from the fact that your studio is a little too small throughout for easily obtaining good results; the sitter is so close to the light that it is difficult to avoid abruptness in the light and shadow, although there is not much to complain of in this respect in No. 2. You may modify matters somewhat by giving fuller exposure and less development. You may also modify matters by placing the background slightly cross-corner-wise, and placing the sitter in the corner, so as to slightly face towards the north light.

C. M. M.—We have no hesitation whatever in recommending No. 4 on your list as by far the most suitable for your purpose, giving capital landscape results, true lines for architecture, and fine definition in portraits and groups in a good light. It is the best lens of all work we know; and we find this view confirmed by much testimony from many of the best photographers we know. One intended for 12 by 10 will answer well. We are not certain whether the 10 by 8 might answer your purpose, as when stopped down it would cover the larger plate. This will, however, somewhat depend on your taste for plates covered perfectly to the edges, which, for many subjects, we do not consider of vital importance. We have pleasure in aiding you so far as we can within the limits we are obliged to observe.

A. J. SANDERS.—We will bear the matter in mind. It will be well to advertise when you come over. The YEAR-BOOK shall be sent.

F. G. L.—Streaky lines may generally be avoided by keeping the plate in motion, especially lateral motion, all the time it is in the bath. Instead of leaving the plate still for a short time, move it at once both laterally and in and out of the solution. Allowing the film to set well before plunging in the bath is also a good plan when the defect is present.

E. R.—We prefer shellac varnish, or a varnish made by adding boiled linseed oil to collodion.

J. R. GRIFFITHS.—Thanks. In our next.

D. T. K. D.—We do not imagine that other orders were supplied and yours delayed. It is probable that the tardiness was caused by unexpected delays in initial arrangements for assistance, &c.

A FIRST-CLASS OPERATOR and several Correspondents in our next. Several Articles in type and Reviews are compelled to stand over.

THE PHOTOGRAPHIC NEWS.

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MOUNTING BOARDS A SOURCE OF FADING.

ALTHOUGH we have frequently expressed our unhesitating conviction that the progress of permanent printing processes, chemical and mechanical, must tend in greater or less degree to supersede silver printing, this fact in no degree diminishes the interest of any method tending to secure permanency in the staple products of the art, which silver prints must continue to be for many years to come. Under proper conditions, as we have often affirmed, silver prints have been found to possess, if not absolute permanency, at least a tolerably long tenure of existence. Hence it becomes very important to determine what are proper conditions. This can only be done by constant observation and notation of the circumstances under which special excellence of preservation or unusual rapidity of fading is most frequently found. We wish, at present, to recall to the attention of our readers the very marked influence of the mounting board on the permanency of the print.

In referring again to this subject, we do not, of course, introduce the notion that mounting cards and mounting materials are a frequent source of fading in silver prints, as a new idea. The suggestion has been made more than once in these pages, but our attention has recently been forcibly called to some especial points in connection with the subject. We have lately been overhauling a somewhat extensive collection of photographs from all parts of the world, and were struck with a curious disparity between the condition of various prints. In examining a large collection of card portraits in albums, we find very few done over three or four years ago which are not sicklied over with more or less of the yellow tint which is the portent of final destruction; whilst on examining larger photographs of equal age we scarcely find one changed. We mentioned the matter to a friend, a portraitist of large experience, who chanced to call upon us about the time.

"How is it," we remarked, pointing to a large collection of fine portraits and pictorial photographs hanging framed on the walls of our study, "that these large photographs by English, French, American, and German masters, some of them produced a dozen years ago, and all a few years old, scarcely in any instance show signs of fading, whilst of the card pictures in our albums scarcely one has escaped?"

"I have no doubt whatever," was his reply, "that the difference is solely due to the mounting boards and mounting materials. For large pictures, moderately good boards are used; for card pictures, a pretty, smooth-looking mount is required; but in manufacture, I believe, any kind of rubbish is employed. Competition in price usually brings such a result. In mounting all my own large portraits," he added, "I use a stout board coated with yellow enamel

surface, of the same kind as that employed for stereoscopic mounts, and I believe it to be a great safeguard against the fading of the print, so far as the quality of the mounting board can affect the matter. It is somewhat more costly, but I should use it if it cost six times as much."

"As regards the adhesive material employed," he added, "I have long noticed that prints mounted with starch or similar paste fade much sooner than those mounted with glue. Card pictures are generally mounted by the photographer himself, and he almost invariably employs starch; large pictures are often sent to a professional mounter, and he generally uses glue; hence large pictures remain permanent when cards fade."

We think that the experience of photographers generally will confirm this dictum. Certain it is that defects in mounting materials and in mounting boards are frequent causes of fading. We remember some time ago examining a stock of pictures at Mr. England's establishment, when he showed us several drawers full of unmounted prints which were in perfectly good condition, whilst the stock of the same prints, produced under all the same conditions, which were mounted, in every instance showed more or less signs of fading.

Mounting material and mounting boards being so manifestly concerned in the important question of permanence, it is clear that their quality demands a greater share of the attention of photographers than it commonly receives. The quality of the mounting board is, unfortunately, less within the control or means of testing than is desirable. The precise nature of the impurities present which produce the disastrous effects we have seen is somewhat uncertain. Hyposulphite of soda, used by the paper manufacturer as an "anti-chlor," is at times left by carelessness or inadvertence in the paper of which the cardboard is made. We have repeatedly pointed out the various simple tests by which photographers may ascertain for themselves whether any taint of this disastrous agent is present in their boards, and we should recommend that a few samples out of every fresh stock of cards should be carefully tested. Unfortunately, when this is done, there may still remain deleterious elements, the precise nature of which cannot be readily determined. Sour paste, or paste containing bichloride of mercury, alun, or other metallic salts, may be used in making the boards, and these, especially under certain atmospheric conditions, may exercise an injurious influence in the photograph with which they come into contact. For large photographs without white margin the yellow enamelled mounting boards undoubtedly present an element of safety. For small pictures, and in all cases where a white margin is required, the chief safeguard will consist in avoiding the low priced articles brought into the market by excessive

competition, which, of necessity, present the greatest probability of being carelessly made of inferior materials.

As regards the mounting material, we believe that good glue has been found the most trustworthy adhesive agent. There is a general temptation presented by the convenience of starch or gum; but we fear the safety is not equal to the convenience. India-rubber presents an especial attraction from the fact that it interposes a waterproof layer between the print and the mounting board; but it has, unfortunately, in several other points, proved a failure as an adhesive agent. Probably the safest method which could be adopted would be found in the method some time ago proposed by Mr. Blanchard, in which the print is treated on both sides with collodion, and then mounted with glue. We fear, however, that the trouble of such a plan will prevent its general adoption. Without further discussing the remedies, we commend to the thoughtful attention of photographers the evils which frequently arise from impure or unsuitable mounting boards and adhesive materials.

PRACTICAL HINTS FOR SUMMER MANIPULATION.*

With the summer there generally returns a multitude of old complaints and calamities, which, notwithstanding the ventilation they have received in photographic journals, still give rise to much anxiety and trouble. I will not on the present occasion go right through the whole list of sins that the hot weather is accountable for, but purpose simply to note down a few practical hints for the avoidance of many difficulties that are inseparably connected with a high temperature; for it is by no means a pleasant task to conduct the printing operations with the thermometer at 40° Reaumur, or to coat a plate at 30°, when we know that the ether contained in the compound boils at a temperature of 33°. And yet in some of our studios, situated high up on the third and fourth floors, temperatures like those I have mentioned are actually to be met with.

1. *The Best Time of Cleaning Plates.*—I always pursue my plate cleaning operations at the earliest hour of the morning, and then prepare glass enough to last during the day. In the cool hours of the morning this description of work is to be performed ten times better than in the hot period of noon, when the perspiration upon the hands jeopardises the cleanliness of the plates, as the glass cloths soon become soiled. It is best, I find, to work always with albumenized plates.

2. *How to Proceed with the Silver Bath and Collodion.*—A wooden pail filled with cold spring water, which is renewed as frequently as possible, is kept always in my studio, and in this I keep my bath and collodion bottle. Those who have enjoyed any experience with this method of cooling one's solutions will never again leave it. If the plate has been exposed for a considerable period in the dark slide during hot weather, it is well, moreover, to develop with a cool iron solution, for the lukewarm developer of our dark rooms often acts injuriously upon the film. In large towns a supply of ice may be obtained, but such is not always the case.

3. *How to Prevent Rising of the Film.*—When albumenized plates are employed, difficulties from this cause are rarely met with. Negatives which have received a preliminary coating of this nature withstand the strongest jet of water, but it is different with ordinary plates, and especially with reproductions that have been subjected to development and intensification for a lengthened period. In negatives of the last kind, the rising of the film is of frequent occurrence, and to prevent this the simplest remedy is as follows:—Trace round the margin of the plate by means of a brush a coating of india-rubber solution, the operation being, of course, performed after the plate has been

dusted; the solution may be obtained commercially, and is prepared by dissolving two parts of india-rubber in one hundred parts of benzole. One need only wait a few seconds before the solution has sufficiently evaporated.

4. *How to Prevent Evaporation on a Wet Plate during a Long Exposure.*—The application of a wet sheet of filter paper upon the back of a plate is a method which does not avail always; nor, in like manner, the plan of placing a moist sponge inside the camera, when the pose is a prolonged one. The best mode of proceeding is to dip the plate into distilled water; the latter must, in the first instance, be filtered into a perfectly clean dish and carefully skimmed, and, to prevent the possibility of its possessing an alkaline reaction, one drop of nitric acid per pint of water is added. The sensitive plate is allowed to remain in the water until the greasy markings on its surface have disappeared, and when this takes place the film may be exposed for hours without injury. Before the developer is applied, the plate is re-dipped in the silver bath; and again, until the greasy aspect disappears, and is then treated in the same manner precisely as an ordinary plate.

Those who work with two silver baths—and this plan is by no means a bad one—will have less to complain of in the appearance of dry spots or stains, than those who sensitize with one solution only.

5. *How to Prevent Marble Markings on Albumenized Paper.* The albumenized paper is placed some four-and-twenty hours previously to its being silvered in a cool moist locality, where it should be spread out; if this is done it will be found that the paper may be sensitized more easily and uniformly.

6. *How to Save Silver.*—A goodly portion of the silver solution taken up by the sheet when lifted from the sensitizing bath may be saved by drawing the wet paper over a horizontal glass rod, against which the under or silvered side of the paper scrapes; in this way a large portion of the superfluous liquid is removed and saved. The same end may be secured by using one of the sides of the sensitizing dish as the scraper across which the sheet is pulled, but in this case it is very necessary that the edge of the dish should be kept exceedingly clean. Albumenized paper sensitized in this manner dries very rapidly indeed.

7. *How to Prevent Paper from Becoming Yellow in the Printing Frame.*—To solve this problem many plans have been suggested. Additions to the silver bath have been proposed, such as citric acid and the like, but none of these would I recommend. According to my idea, the bath should always be maintained in a neutral condition, for in this state it always furnishes the finest prints. A sheet of waxed paper placed in the frame upon the albumenized paper will prevent the sensitive sheet from becoming yellow, but if the waxed surface has any flaws or holes, there will be yellow stains in those places. Yellow paper or prints may be bleached by adding to the fixing bath a trace of cyanide of potassium, say one part in a thousand; but it must be admitted that the tone of such prints is never very beautiful.

The best plan of avoiding yellow paper altogether is to resort to the use of washed sensitive paper. This material will keep good for months, and becomes in the presence of carbonate of ammonia more sensitive even than ordinary paper.

FIXING AT LEISURE.

The presence of hyposulphite of soda in a dark tent or box in which the wet process is worked in the field is justly disliked by photographers, and various plans for dispensing with the necessity of fixing operations on the spot have been devised, more than one of which have been found in some degree efficient. Golden syrup or similar preparations for keeping the film moist answer perfectly; but there is a certain inconvenience in the storage of moist and sticky plates. Allowing the plate to dry with

* Photographische Notizen.

the iodide unremoved has always been found to involve risk of the film leaving the glass when wet again for fixing, otherwise nothing could be simpler. Mr. Charles Wager Hull, whose name is familiar to our readers as an experienced American photographer, finds that with the albumenized glasses now commonly used, the plate with iodide unremoved may be suffered to dry, and be fixed at leisure without any risk. We quote his remarks in the forthcoming number of our Philadelphia contemporary entire. He says:—

“I never take my pen in hand to make any statement of that which is new in our beautiful art, now that its literature has become so extended, and its students so numerous and intelligent, without a fear of saying something which has been said before by some other of my fellow workers, but which has escaped my notice.

“In all directions of outdoor work we find among the ‘fixin’s’ of the photographer one or other of the three following articles: hypo solution, cyanide solution, or glycerine; one or other of the first two for fixing his negatives, or the last to coat them with, that he may fix at leisure. To my notion there is little choice: to fix in the field requires some labour and much water; to coat with glycerine requires extra plate boxes (always a bother), and loads you with as nasty and sticky a mess as need be.

“Upon all my trips to work wet plates I use glass, which I albumenize, to save the trouble of cleaning away from home—quite an impossibility for me. Negatives made upon glass so treated, and well washed after development, may be kept for many days and fixed at leisure; for aught I know, they may be kept for weeks; I have kept them for many days.

“Among all my acquaintance, I do not know of a single one who does not fix or coat with glycerine in the field. If a substratum of albumen will save this work, then we certainly lighten our load, save much time and dirty work, and, as well, keep hypo and cyanide away from our other chemicals. I thoroughly wet the dried film on reaching home, and fix in hypo; after washing, intensify if required.”

APPROXIMATE EQUIVALENTS FOR METRIC WEIGHTS AND MEASURES.

The almost universal adoption of the metric system for stating formulae renders it necessary for all scientific experimentalists to familiarize themselves with metrical weights and measures and their English equivalents, and we have more than once, both in these pages and in our YEAR-BOOKS, given the simplest means of computing one into the other. For the convenience of those of our readers who require very simple and familiar equivalents, or, rather, approximate equivalents sufficiently near the mark for most purposes, we append an extract from the *Boston Journal of Chemistry*, giving a useful *resumé* of approximate equivalents, which can be readily applied without troublesome calculation:—

“Weights.—One milligramme is equal to $\frac{1}{25}$ grains nearly; one centigramme is equal to $\frac{1}{5}$ grain nearly; one decigramme is equal to $1\frac{1}{2}$ grains nearly; one gramme is equal to $15\frac{1}{2}$ grains nearly; one decagramme is equal to $15\frac{1}{2}$ grains nearly; one hectogramme is equal to $1,543$ grains nearly; one kilogramme is equal to $15,432$ grains nearly.

“Measures of Capacity.—One millilitre is equal to $15\frac{1}{2}$ grain-measures of water; one centilitre is equal to 154 grain-measures, or 3 fluid drachms nearly; one decilitre is equal to $1,540$ grain-measures, or $3\frac{1}{2}$ fluid ounces nearly; one litre is equal to $15,406$ grain-measures, or $2\frac{1}{16}$ pints nearly; one cubic centimetre of water at its maximum density weighs $15\frac{1}{2}$ grains nearly, and is $\frac{2}{3}$ ths of a fluid drachm nearly.

“Measures of Length.—One millimetre is equal to $\frac{1}{25}$ th inch nearly; one centimetre is equal to $\frac{2}{3}$ th inch nearly;

one decimetre is equal to $3\frac{9}{10}$ ths inches nearly; one metre is equal to $39\frac{1}{2}$ inches nearly; $\frac{1}{1000}$ th metre is equal to $\frac{1}{36}$ inches, or one yard nearly.

A SIMPLE METHOD OF ENAMELLING COME O PICTURES.

BY L. G. KLEFFEL.

I FORWARD herewith, for publication in the PHOTOGRAPHIC NEWS, a simple and certain method of enamelling cameo and other pictures. It has just been communicated to me by M. F. Haarstiek, of Dusseldorf, but I can myself bear witness to the perfection of the method.

Ordinary well polished glass plates are coated with normal collodion of the usual description, and when the film has set perfectly, but has not become completely dry, the pictures, which have previously been trimmed and finished, are dipped rapidly into alcohol, and applied without delay to the plates. The prints are pressed and rubbed down with smooth writing paper, and the operation of mounting is proceeded with as soon as the back of the pictures have become white, or, in other words, as soon as the alcohol has again evaporated. The cardboard should be allowed to remain in water for at least half an hour previously to its being employed for mounting.

The more rapidly the pictures are applied and pressed upon the collodion surface, the more beautiful will be the finished result.

PHOTOGRAPHY IN BELGIUM.

[FROM OUR OWN CORRESPONDENT.]

I ARRIVED at Antwerp, and began anew my tour of photographic inspection. I certainly cannot report favourably of the standard of excellence of the art as carried on here, neither can I congratulate the photographers on their choice of landscape and architectural subjects. There are some of the most artistic bits in the old cities of Antwerp and Bruges that it has been my good fortune to tumble in with, and yet these have never met with an artist to depict them. The whole genius of Antwerp seems concentrated in producing wretchedly fore-shortened views of the cathedral, the delicate lace-work on the spire being depicted stunted and poor, though in reality it is as delicate as a spider’s web, and of most glorious proportions. I wonder if a certain celebrated optician ever instructed the photographers here in the diffusion of focus system! If so, the pupils have surpassed the master, as there seems to be no focus left in the lenses employed in views. Then, again, the distortion caused by the use of single lenses is frightful, and I now believe that not only is a swing-back unknown in Brussels, but also in Belgium.

Several photographers, mistaking me for a “layman,” assured me, on my pointing out these defects, that they were caused by the bad chemicals; and they touchingly remarked that in England, of course, we were not similarly troubled. As all, or most, of the Belgian supplies come from Paris, I doubt whether the chemicals are in fault, though the fog and obscurity visible in many views would lead one to think that such might be the case.

The leading Belgian photographer naively remarked to me, that of course the English were ahead of them, because we were “si riche,” and could afford to pay for the best of everything. My ideas of Antwerpians are, that they are also “riche,” but at the same time excessively niggardly. Their makeshifts for proper apparatus are wonderfully clumsy, and their lenses are of the most Cheap-Jack class; whilst in lenses, one novelty (to me at least) I saw, which is the “Diaphragme retro-cissant,” that is, a stop with an aperture which can be made of any size by turning a screw at the side of the lens. The diaphragm consists of six pieces of thin brass plate cut into the shape of a moon in its second quarter. These pieces are fixed by the end to

the brass-work of the lens tube, forming a six-sided opening. By a simple mechanical arrangement these strips close or open, forming a small or large aperture as required. These cheap diaphragms are patented by Gasc et Cie., Rue de Matte, Paris.

I did not see one single specimen of carbon printing. It is a process not unheard of, but in Belgian imagination is shrouded in mystery. I think the Autotype Company ought to behave haudsmoely to me: I recommended several to try it, and they seemed surprised with the simplicity of the operations, and promised to write for materials.

In the Museum at Antwerp there are pictures which are of untold value. The gallery is open to artists and photographers several days in the week, yet, strange to say, I could not procure decent copies of any of Rubens' or Van Dyke's masterpieces, with the exception of two or three which had been taken by the Royal Society of Photography, from Brussels. Oh! what food there is for the camera of some enterprising man. I believe a fortune might be made by any one who possessed a "rapid rectilinear" and a camera with a swing back. Certainly, if Blanchard or Robinson would open a studio at Brussels or Antwerp, they would open the eyes of the photographic world. Here they would be as Mars or Apollo to the heathen.

I have not visited Spa, nor shall I do so. I cannot, therefore, say if anything superior to that by the aforementioned cities is turned out by it, but I hope it is, for the sake of Belgium. The small towns abound in photography; ten francs the dozen they charge for cartes which would fetch three shillings and sixpence at home in the slums. The whole of the photographers (with one or two honourable exceptions) seem perfectly apathetic and indifferent as to improvement; the usual style of portraits turned out being posed and lighted as I was when I "sat" sixteen years ago in the good old days of glass positives. I have tried to get a few of the best men to promise to pay a visit to our photographic exhibition in November. I hope they will come. It will, perhaps, bring them out of their usual style, and, may be, next year we may have better things to report of them. I saw no portraits above the size of cabinets except enlargements. These latter are the best work turned out by most of the establishments, and, I shrewdly suspect, are the work of a Frenchman on the borders.

The weather is cooler, and consequently more pleasant than last week. I was astonished to find how non-actinic the light was; though it was so light, plates required three times the exposure they would have done on a spring day.

FRENCH CORRESPONDENCE.

Paris, August 22nd, 1871.

THE French Photographic Society held its first meeting this season on the 11th inst., when it was decided that its proceedings should not be resumed until after the usual yearly recess.

The business of the evening was almost entirely taken up by a lecture and analysis, by M. Davanne, of the pamphlet recently published by M. Constant Delessert upon a new dry collodion process (the Coffee Gum Dry Process). If I am not mistaken, you have already mentioned the advent of this communication, and have published the same in the PHOTOGRAPHIC NEWS; I will not, therefore, refer to the method on this occasion, but, with your permission, will postpone my observations thereon until my next letter.

M. Despaquis has announced that he has just patented in France, as also in England, an improved method devised by him for employing the bitumen of Judea in photography. He affirms that he has perfected in an altogether practical manner the method of heliographic engraving upon glass by means of hydrofluoric acid which was published some

time since by Niepce de St. Victor. Having succeeded in imparting to the bitumen the requisite consistence, which in the first instance it lacked, he fully believes that the progress thus made with engraving upon glass will, as a matter of course, extend itself to other engraving processes; that is to say, with zinc, steel, and other metal plates, for these do not require as strong a protective as when it becomes a question of employing a mordant as energetic as hydrofluoric acid.

If one may judge by the specimens of engraving upon glass shown by M. Despaquis in support of his communication, the progress he claims to have made is certainly of a substantial nature, and the process a truly practical one. The varnish forming the protective is sufficiently resistant to allow the acid to etch the glass to the depth of one millimetre. By filling up the cavities of the engraving thus formed with a coloured enamel powder capable of fusion, M. Despaquis hopes to secure some very remarkable results. At any rate, the idea is one well worthy of elaboration.

M. Despaquis has promised to show at the next meeting some enlarged pictures produced in this manner. He will also exhibit some specimens of engraving obtained by means of leather collodion (collodion and castor oil) that has been impressed by a relief produced in the first instance upon gelatine.

At the last meeting M. Dagron was to have described the series of manipulations that were followed to produce upon a film of collodion, measuring one centimetre square, for conveyance by pigeon courier, the numerous despatches which formed one mail or delivery. Unfortunately, M. Dagron was unable to be present on the evening in question, and his interesting communication was, therefore, postponed to another opportunity. Nevertheless, the skilful operator was enabled to forward for the inspection of the members a very curious specimen of micro-photography. It was a reproduction of a screen divided into twelve compartments, and including the printed matter of sixteen pages. Every one of the divisions contained about 1,200 letters, so that the total number included upon the screen amounted to as many as 144,000. The surface of the image amounted to half a millimetre; but with a microscope one could easily read the communications, every one of the 144,000 letters being perfectly visible.

M. Ferrier, Jun., who, during the period of the siege, was charged with the reproduction in Paris of the micro-photographic despatches which M. Dagron forwarded from Tours and Bordeaux, so that they might be read and circulated, has kindly informed me of the method of operating pursued by him, the details of which are exceedingly interesting. In the first place it was necessary, of course, to enlarge by means of electric light these minute and invisible images, and for this purpose the apparatus of MM. Mercadier and Cornu, constructed by Dubosq, was employed. The film, which was a positive on collodion, of a centimetre square, was placed between two plates of glass, and then passed before an illuminated lens. The image projected upon the screen in this manner became as readable as a small placard, but, as is always the case with an intermittent light, the inconstant illumination interfered much with the sharpness of the reproduction, and fatigued to a great extent the eyes of the readers.

These considerations rendered a change in the system necessary. A sensitive collodionized plate was substituted for the screen, and positives were afterwards produced by mounting the same upon black paper, in the manner pursued some time since in the preparation of portraits upon waxed linen. After the transfer had been effected the sheets were handed over to the proper officials to be read and copied.

The necessary exposure for one of these enlargements was simply one second, and it was possible to prepare twelve to fifteen of the sheets per hour, each sheet containing as many as two hundred despatches.

It was in this manner that Paris, when isolated from the

rest of the world by a circle of iron and fire, was kept in communication with friends outside, who, in common with the Parisians, lived in the hope of a speedy and victorious deliverance of the capital.
 ERNEST LACAN.

STRONG VERSUS WEAK SILVER BATHS.

BY W. T. BOVEY.

HAVING, by several correspondents, been requested to give publicity to my views in reference to the resuscitated question of strong versus weak silver baths, I willingly devote a few stolen moments to the work.

Mr. Lee is doubtless in the right, but this admission does not place our esteemed Editor in the shade of wrong. Right has its degrees, and Mr. Lea's right stands lowest, being limited to the exceptional conditions from whence his views were probably drawn, whilst our Editor's right is conspicuously propped by a broad and scientific principle which guides whilst it explains. "It should never be forgotten that a bath, after all, is only relatively weak or strong, the strength of the salting solution used in preparing the paper forming the practical standard to which the nitrate bath must have its due relation." My experience fully endorses the correctness of this explanation, and seeing that the rule "now-a-day" is to salt papers lightly—that is to say, from eight to ten grains of salt to each ounce of albumen—it stands as a matter of reason that the silver bath should be proportioned with the salting; otherwise, if an over strong bath is employed, a quantity of nitrate of silver crystallizes on the paper surface, and a weak, fog-like print results. A case of this kind recently came under my notice. A friend of mine, a good photographer, and a shrewd observer, noticed a falling off in the quality of his prints, they being unusually flat and feeble. Thinking it probable that his silver bath had grown weak, he applied Hart's excellent test, and found, to his surprise, that in strength it had grown double. A moment's reflection told him the reason: the bath had been for some time exposed in a shallow dish to light and air, and a quantity of water had been lapped up by the thirsty atmosphere. On replacing the aqueous loss, and thus restoring the bath to its original state, printing capability was satisfactorily restored, and, lucky for myself, it was thus discovered that it was not the paper.

The force of Mr. Lee's argument doubtless lies in the necessity of coagulation. I am firmly of opinion that silver is not so prompt a coagulative mover as is usually supposed—that is to say, when a chloride is present to divert its duties into a second channel. No matter how strong the silver solution, if silver only is used, the bath rapidly discolours and thickens, that discolouring being directly caused by albumen which has been washed away from the paper by the bath. It is on account of that solubility in plain silver solutions that I prefer and stick to nitrate of soda, and the result of my practice is an entire immunity from discoloured printing baths.

A practical suggestion must bring this paper to a close, as "time is up." Those who prefer weak silver baths should be careful to use none but a weak salted paper; and to ensure coagulation it would be advisable to employ some adjunct, preferably nitrate of potash or soda; whilst the strong bath party should stick to the old-fashioned papers—twenty to thirty grains of salt, with an accidental addition of as much as slipped through the fingers. It should, however, be remembered that a heavily salted paper never can yield the rich tones that come within the capabilities of light salted papers; for pictures printed on the last mentioned consist of a balanced admixture of chloride and the more stable organic combination with silver. The heavy salted paper is most sensitive, doubtless, but the print must be pushed deeper, as chloride of silver reduced by light is much weakened by hypo. To sum up in a

word, taking all things into consideration, I unhesitatingly give my vote for moderately weak baths and light salted papers.

ON THE CHANGE OF COLOUR PRODUCED IN CERTAIN CHEMICAL COMPOUNDS BY HEAT.

BY PROF. EDWIN J. HOUSTON.*

At a meeting of the Optical Section of the Franklin Institute, held April 26th, 1871, Dr. Wm. H. Wahl exhibited specimens of the double iodides of mercury with copper and silver, discovered by Meusel.† The colour of each of these salts is changed in a remarkable manner by the action of obscure heat rays. The author, in connection with Mr. Elihu Thomson, of the Central High School, was led to undertake an extended series of experiments, with a view of ascertaining the law by which these peculiar changes are governed. The author desires to state that Mr. Thomson's share of the investigations are equal to his own.

Familiar changes of a similar though less striking nature at once suggested themselves, among the most prominent of which might be mentioned the darkening of the red protoxide of mercury in the preparation of oxygen.

The experiments were conducted as follows: the substances were placed in the state of dry powders on strips of sheet copper, and heated by means of an ordinary Bunsen burner.

It soon became evident that quite a number of compounds underwent a change of colour when so exposed. The colours observed, however, together with those already known, appeared at first to present facts of the most discordant nature.

In some cases the colours were changed so as to approach the violet end of the spectrum, while in others they approached the red end. To avoid all sources of error, the conditions of the original experiment were carefully considered. Briefly they are as follows:—

1. A certain colour presented by the compound at ordinary temperatures.
2. A decided change of colour on the application of obscure heat rays.
3. A complete return of the original colour on the removal of the heat and the cooling of the body to its former temperature.

Bodies not presenting all these phenomena were rejected.

The largest class of bodies that was excluded by this method was that in which a permanent change of colour was produced by heat. In this case the change is caused either by the heat being raised to a temperature sufficient to cause a decomposition of the body, by a change from the amorphous to the crystalline state, by a partial sublimation and subsequent deposition of the sublimate, by a change in the crystalline form, or by some other permanent change in the arrangement of the molecules.

Changes in colour produced by dehydration were also rejected, as, for instance, in the case of the chloride of cobalt, which, when hydrated, is a pale pink, but when anhydrous, a deep blue. Hydrated and anhydrous salts are distinct chemical compounds, and have, therefore, a different molecular arrangement. A class of cases of a somewhat similar nature was also rejected. Here the change of colour was produced by a loss of the water of crystallization, as, for instance, the sulphate of copper, which changes from a deep blue to a white.

After these sources of error were removed, and quite a number of bodies discovered presenting phenomena fulfilling all the requirements of the original experiment, the law became evident. In every case the colour in its change

* We are favoured by the editor of the *Journal of the Franklin Institute* with advance sheets from the forthcoming number, in order that we may place before our readers these interesting experiments in a branch of chemistry so closely allied to photography without delay.—ED. PHOTO NEWS.

† Ber. d. deutsch. Chem. Gesell. III. 123. Jr. fur Prak. Chem. ii. II. 136.

approached the red or heat end of the spectrum. Not a single exception to this law was observed.

Before stating the explanation of the way in which these changes are produced, a few words in reference to the relation existing between light and heat may be necessary. That light and heat are produced by a vibratory motion of the molecules of bodies, and that they differ from each other merely in the rapidity of the vibrations of these molecules, the facts presented by the science of the present day leaves scarcely room for doubt. A hot body differs from another cooler than itself, not in virtue of any peculiar substance or fluid which it possesses, but simply in the fact that its molecules are in more rapid motion. Increasing the temperature of a body is equivalent to increasing the rapidity of the vibration of its molecules. As the body is made hotter, its molecules vibrate more and more rapidly, until finally a red heat is obtained, and light is emitted along with the heat. Now we know that a ray of white light, popularly speaking, is a mixture of seven different kinds of rays, viz., the colours of the solar spectrum. Moreover, we know by actual measurement that these colours, in the order of the number of vibrations required to produce them, commencing with the least, are as follows: red, orange, yellow, green, blue, indigo, and violet, those of the violet being about twice as rapid as those of the red.

If, then, light differs from heat merely in the fact that the molecules of a body emitting light are in more rapid motion than those of a body emitting heat, when that rapidity in the vibrations of the molecules of a hot body is reached that it commences to give out light along with the heat, the colour first emitted should be red, since that colour is produced by the least number of vibrations per second, and the colours which successively appear should be orange, yellow, green, blue, indigo, and violet, until finally, these by their intermixture produce white light, and the body becomes *white hot*. These considerations are fully sustained by the beautiful experiment of Draper, who viewed through a prism the light emitted by a platinum wire heated by a current of dynamical electricity. The colour which first appeared was red, and then, successively, orange, yellow, green, blue, indigo, and violet, or, more accurately, when the platinum wire became white hot, it gave a continuous spectrum from the red to the violet.

The boundary between heat and light, then, is found at the extreme end of the red of the spectrum. It is evident that though the range of the spectrum must vary with the sensibility of the eye of the observer—that is, that the heat vibrations will become light vibrations sooner to some eyes than to others—yet in all cases the colour first observed will not be a pure red, but a dark brown; a colour produced by the mixture of black, or the absence of colour, with the few red rays first emitted.

It should be borne in mind that the arrangement of the spectrum into seven colours is merely a matter of convenience. In point of fact there is an almost infinite variety of tints. The red, for instance, is merely taken at the mean of the dark red and the orange-reds, and so for the other colours.

Remembering these preliminary considerations, a fuller statement of the law of the changes may now be given.

In all cases in which the colour of a body is changed by the application of heat, and the original colour regained on cooling, the nature of the body being in no wise altered, the character of the change is as follows: the addition of heat causes the colour to pass from one of a greater to one of a less number of vibrations; the abstraction of heat from one of less to one of a greater number.

In accordance with this law, violets are changed by heat into indigo-violets or indigoes, indigoes into blues, blues into bluish-greens or indigoes, greens into yellowish-greens or yellows, yellows into orange-yellows or oranges, oranges into orange-reds or reds, and finally reds into brownish-reds or blacks; by cold the inverse order is observed. In many instances substances were noticed that ran down the scale two or more colours; for example, the green iodide of mer-

cury, which passes from yellowish-green through the yellow and orange to the red.

Among the most sensitive substances noticed are the following, arranged by their colours in the order of the spectrum.

REDS.—*Ferro-Cyanide of Copper*.—Colour at ordinary temperature, mahogany-brown; darkens by heat to brownish-black, original colour returning slowly on cooling.

Brown-Red Sulphide of Antimony.—*Kermes' Mineral*.—Colour brownish-red; changes to darker brownish-red.

Anhydrous Sesqui-Oxide of Iron.—Colour, brownish-red; changes to dark red, brown, brownish-black, and black at a temperature greatly below a red heat.

Sub-Iodide of Copper.—Colour, dark red. The changes presented by this substance are very remarkable. On the application of quite a low heat it changes to darker-red, and afterwards to a brownish-red, brown, brownish-black, and finally almost a black. The return to its original colour on cooling is rapid.

Proto-Sulphide of Mercury.—*Vermilion*.—Colour, bright red, or vermilion; darkens to brownish-red.

Sub-Chromate of Lead.—Colour, red; changes quite readily to dark red and brownish-red.

Red Oxide of Lead.—*Red Lead*.—Colour, red, changes readily to dark red.

Bi-Chromate of Potassa.—Colour, red; changes to dark red. The change in this case is best observed by heating a small crystal of the salt.

(To be continued.)

REPORT ON PHOTOGRAPHY IN THE INTERNATIONAL EXHIBITION OF 1871.

BY LIEUTENANT-COLONEL STUART WORTLEY.*

THE display of photography in the International Exhibition of 1871 shows a marked advance on any previous International Exhibition in the two points on which the future status of photography must principally depend. I allude first to the more earnest seeking after art as seen in the treatment of subjects exhibited; and, secondly, to the extreme importance of the improvements shown in the new processes by which permanence will be given to the photographic print, and greater economy and simplicity secured in its production.

In connection with the first of these two subjects, I may say that the manipulation of a photographic negative, as far as its chemical and mechanical qualities go, has hardly, for some years past, been capable of much improvement. Prints were shown in previous International Exhibitions from negatives which in all necessary qualities were as good as any produced in the present day; but the wider range of subjects now attempted, and their more artistic handling, tend to place photography in a far better position as representative of a fine art. I will venture to say that at no previous International Exhibition have photographs of such excellence been seen as, among others, the landscapes and sea views of Messrs. Robinson and Cherrill, of Tunbridge Wells; the landscapes and a composition picture by Mr. Earl, of Worcester; the large portraits of Mr. Slingsby, of Lincoln; the composition pictures of Messrs. Hubbard and Diston; and the art studies of Mrs. Cameron and the Honourable Ronald Leslie Melville.

Photography having now won its way so far as to be classed among fine arts at the series of International Exhibitions, it behoves all who have its interests at heart to endeavour, by intelligent study and appreciation of such works as those I have just called attention to, so far to improve their own productions as to assist photography in worthily upholding the status now accorded to it.

There is one point to which I may fitly call attention, that while a print from a negative of an artistically rendered

subject, perfectly manipulated, is full of beauty, a print from an inferior negative, which has to depeud afterwards upon the copious retouching now becoming so prevalent, not only is deficient in the delicacy that should distinguish a perfect photograph, but in many cases replaces that delicacy with a coarseness and hardness which inflict injury on a subject otherwise well selected and well worked out.

With regard to the processes by which photographic prints are produced from the negative, almost every collector of photographs has had to deplore the want of permanence shown in the pictures he may have accumulated. Rare, indeed, would be the collection in which large gaps would not be found caused by once beautiful photographs having faded away. This insecurity has been a by-word and a reproach to photography in general, and we must hail with pleasure the introduction of methods of printing to which such reproach shall no longer apply. That in many, I might almost say in the majority, of cases, the fading of a silver photograph is due to carelessness in the manipulation of an imperfectly understood and delicate chemical process, is amply proved by the fact that such fading is not universal; and it is certainly a desirable consummation to obtain a method of printing in which the necessary permanence is secured by the character of the materials used, and is in no way dependent on the manipulations of the photographic printer.

In describing the new photographic processes, I shall find it convenient to divide them into two classes—those in which the printing is conducted by every print being taken direct from the negative, and those in which the negative is used to produce a matrix from which the prints are afterwards mechanically obtained.

In the first of these classes we find the carbon prints exhibited by the Autotype Fine Art Company, and the enamels exhibited by Mr. A. L. Henderson; while in the second class we find the Woodburytype process, and an entirely new photographic engraving process (of which only one specimen is exhibited) by Mr. Walter Woodbury, the Heliotype process, by Messrs. Edwards and Kidd, and the Dallastype process, by Mr. Dallas. I will commence with a description of the carbon printing, as practised by the Autotype Fine Art Company and others. The foundation of this process lies in the fact that a solution of gelatine and one of the bichromates is rendered insoluble by the action of light. The practical working of the carbon process is commenced by spreading on a sheet of paper a mixture of gelatine and bichromate of potash or ammonia, together with a sufficiency of a pigment of whatever colour it may be desirable to give to the finished print. This prepared paper—or, as it is now invariably called, tissue—is then printed through an ordinary photographic negative. When removed from the printing frame it is immersed for some seconds in cold water, and placed in intimate contact with a support either of paper, zinc, glass, or such other substance as may be deemed desirable. The tissue and its support being now placed in hot water, those portions of the gelatine which were next to the paper used in the composition of the tissue commence immediately to soften and liberate the no longer required paper, the carbon and gelatine picture itself adhering to the support with which it was placed in contact. Continued washing in warm water now dissolves the gelatine in exact proportion to the amount of light which has acted upon it through the lights and shades of the negative, the shadows of the print being formed by the gelatine now rendered insoluble by the light which has passed through the transparent portions of the negative, and the lights by the washing away of the gelatine which was protected by the denser part of the negative from receiving any light, and consequently from becoming insoluble; and so delicate is the action of light on the prepared gelatine and carbon tissue, that the half-tones—those tones, that is to say, intermediate between the lights and shadows of the pictures—are rendered with perfect accuracy. The gelatine print then either remains on the support that

was selected for it, or is re-transferred to another, on which it is permanently to remain—this difference being that between the single and double transfer processes in carbon. It will be noted how excellent are the results exhibited by the Autotype Fine Art Company, and printed in this manner; and much of this excellence is owing to the labours of Mr. J. W. Swan, of Newcastle, who was the first to render carbon printing thoroughly practical, and to Mr. J. R. Johnson, of the Autotype Company, whose improvements on, and additions to, the process of Mr. Swan have enabled it to take its present high standing. Among the productions of this company that will particularly repay attention may be mentioned the frame of copies of drawings by the old masters (No. 3341); a frame of architectural views, printed from the negatives of the late Mr. C. Thurston Thompson (No. 3342), and Nos. 3343, 3359, and 3360—all copies from original oil paintings.

(To be continued.)

ON THE IMPORTANCE OF COSTUME IN PORTRAIT PHOTOGRAPHY.

BY HANS HARTMANN.*

In the first part of this paper I have spoken regarding the close-fitting portions of our clothing, and mentioned the advantages which these possess in showing up the muscular formations of the body; and I would now point out that a similar object should be fulfilled by those portions of the garment also that hang in folds upon the figure. In this instance the costume should not only cover the body, but should also indicate artistically the form of the limb, or, at any rate, allow the prominent points thereof to show beneath. This is a rule of very great importance, for on the one hand the human form is treated as the main object in opposition to the bye-work, or clothing, and on the other hand the form and position of the folds are each of them disposed in a proper manner by the underlying limbs. It is upon this simple rule that masters of all times have secured, by means of the beauty of contrast between the human form and the free play of the drapery folds, a principle of action which culminates in Grecian sculpture and Italian painting. A knowledge of the laws which govern the principles of action will be especially useful in that branch of art which is to us of special interest, for does not photography, by reproducing the forms and tints of certain surfaces, combine in some degree the art of the sculptor with that of the painter?

If we enquire closely into the nature of drapery folds we shall find that there are principally three elements that influence their character, namely, the pliability of the material, its weight, and, finally, the number of layers of stuff that there may be surrounding the limb. Numerous modifications are, of course, possible, according as the character of the stuff varies, and it will be possible, therefore, to discuss here only extreme examples, showing the character of different classes of stuffs. Let us say, for instance, that the figure is clothed with a very soft, pliable, but somewhat heavy woollen material: in this case the stuff would set according as it was supported underneath, forming soft round folds between each point of support. As it is not stiff, the tendency of its weight to form certain folds is not interfered with, and the effect is both harmonious and quiet. We possess, therefore, in this case, a stuff which is essentially suitable for plastic purposes. The figure and its action are prominently seen, undisturbed by glare, contrast of colour, and the like, without angles, creases, or cross folds. In photography such garments would be quite as suitable as they are in statuary, for let us call to mind the beautiful and harmonious effect of the Bedouin cloak, of ladies' monotone wrappers, of light, loose fitting capes or cloaks, by means of which successful pictures are secured. It is well to preserve nature in its main features, and only to alter or prevent occasional parallel lines of a prominent nature, or

* Continued from p. 290.

the formation of very large folds, as skill and taste may dictate. It is dangerous to try to improve any natural and beautiful folds, as their accidental beauty and simplicity are easily lost.

Of directly opposite nature, in all its particulars, is a heavy silken material. Here the stiffness of the stuff overpowers its weight so much that most of the folds in a garment of this nature are formed by its rigidity and the breaking up of the surface, rather than by reason of its natural weight. The large surfaces of the stuff which, from covering the form or lying upon the floor, do not remain in repose, are covered with irregular creases crossing one another in all directions, which throw back, as it were, the underlying rounded limbs, the gloss of the silk, meanwhile, giving rise to innumerable points of light and reflection. For this reason it is that this class of stuff is particularly suitable for paintings. Thus, as in other arts, only that is expected of a stuff which, according to its nature, it is capable of giving, so the photographer must choose his material according as he desires the result to partake of the character of a piece of sculpture or a painting. To obtain the effect of the former, it would be well to advise a lady to give up her crinoline, as the same interferes much, especially in a sitting figure, with the lines of the figure; while in the latter case, when, in a standing portrait, a train is shown, a hooped petticoat will not be detrimental to the pose. To show the form of the body in this case is almost impossible; but, at the same time, the vision of a foot, or point of a toe below the dress, is very charming. In the same way, when a profile of the figure is shown, the mass of folds should be pulled up somewhat from behind, to give the aspect of fullness, and to afford a beautiful line. One seldom sees at the theatre, or in antique sculpture, woollen garments with trains, which would, indeed, fall upon the ground flat and without grace; and, in like manner, we never see a silk dress perpetrated in marble, which could not obviously appear otherwise than ridiculous, so different are the spheres of these two stuffs. If their pliability and weight are out of proportion to one another, as in the case of the winter stuffs used for gentlemen's coats, then we see forms reminding us of pen-wipers, or of thick folds seen in dolls' dresses. This is an exaggeration in regard to the thickness of material. If the dullness or absence of brightness is exaggerated, then we have the depression or monotony of mourning drapery, which exercises its chilling influence, not so much by reason of its black colour, as by its particularly lustreless surface. On the other hand, if we imagine the stiffness of a silken stuff exaggerated, so as to resemble somewhat a sheet of paper, then we should have those hard broken folds which in the paintings of the German middle ages, and even in those of Durer, exert so peculiar an impression. Similar effects are observed in children's dresses, which are generally made for the purpose of being washed and starched to a high degree. From stiff materials of this nature we would warn photographers most earnestly.

A class of materials offering great contrast to these are those lightly woven stuffs—such as tulle, *erêpe*, mull, gauze, &c.—frequently used as veils, or as supports to embroidery and lace work. On account of their lightness they lie around the figure in the nature of a cloud, and derive the great part of their beauty from the fact of their being transparent. They are, therefore, useful for the draping of monotonous garments, for the breaking up of ugly outlines, for filling out seamy head dresses, &c., and are, indeed, much in vogue with photographers. In arranging, one must be careful to see that the lightness and transparency of the stuff are made use of, as much depends on the taste with which it is draped.

The points of importance to photographers in respect to the draping of the figure may be summed up: avoidance of very thick stuffs that show no fold, but fit closely to the body; avoidance of parallel folds, and such as are in antagonism to the principal features of the body; avoidance of the hoop petticoat, when necessary, as also of highly

starched summer dresses; avoidance of shapeless and inelegant black woollen garments; adoption of lace, embroidered neck-handkerchiefs, and other ornamental articles of clothing.

In turning now to the colours of the stuffs and their behaviour in our art, it is necessary to point out, in the first place, that the consideration of various photo-chemical results obtained with optical colours is out of the province of these remarks, and will not, therefore, be specially referred to. The particular exceptions are generally known. It is difficult to do justice to certain costumes, whose beauty lies chiefly in their colour, by means of photographic tones only. If, therefore, one has to do with a blue uniform with red facings, or, say, a yellow dress with violet trimmings, the result can only be obtained by retouching. Of more importance, however, is the relation of the dark or light dress to the colour of the face and the strength of the body. Ladies with very dark or red complexions will not appear to advantage in white robes. Such garments also, as we know, render the figure apparently stronger, while dark clothes exert an opposite effect. To give the right degree of exposure for the face, as also for white or dark garments, is often a very difficult task. Much may be done by the employment of screens and concentration of light, dark velvet being capable of reproduction by lengthened exposure and careful covering of the negative. Black, dark, and, in fact, all monotonous clothing, should be avoided, while coloured ribbons, girdles, lace, and the like, help much in imparting vivacity to the portrait.

The trimmings and borders must be adjusted in favourable positions, as ornaments, to separate certain parts one from the other, and must not be allowed to exert a disturbing effect. The division of the waist from the skirt by means of a girille, of the upper portion of the arm from the shoulders, and the ornamentation of the arm near the wrist, are most becoming and natural. The opening of the dress in front of the bosom should follow the line of the neck; either it should be narrow and square, leaving the shoulders covered, or run broadly and deep over the bosom without stopping in an absurd manner at the fall of the shoulders.

In the same way as details like the above named have the purpose of separating the portions of clothing one from another, so, in like manner, is it the problem of the pattern to fill up and enrich certain unoccupied spaces upon the dress. The pattern of a dress should be, both in colour and tone, so modest as not to disturb the action of the folds, or even the face or figure. In the same way as a figure in veined marble appears to be out of taste, so, in like manner, stuffs with strongly marked patterns have an unpleasant aspect when they assume forms or folds. Scottish plaids, Turkish shawls, and large-patterned trousers, for this reason, are often made to look ridiculous; in these cases, the effect of the colours is so screaming that all effect of the form is lost. It is in this direction we may generally observe the difference between the man of taste and the snob, for the latter always grasps at once at striking effects.

In closing these remarks for the present, I must point out that they should be regarded less as a finished and complete essay than as occasional remarks on the subject of good taste. Some of the ideas expressed are taken from a work by Madame Gayette Georges, and to this lady, as also to M. Petsch, from whom I have derived some practical experience, I tender my sincere thanks.

THE SALTS OF CHROMIUM USED IN PHOTOGRAPHY.*

BY J. SCHAARWACHTER.*

Chromium metal is of a greyish-white colour; it is brittle, and its specific gravity is 5.9. The air does not change it at an ordinary temperature, and even with considerable warmth it oxidizes only superficially. So far as I know,

only two combinations of chromium with oxygen have been employed, namely, sesquioxide of chromium (Cr_2O_3) and chromic acid (CrO_3).

Chromic acid (CrO_3) is of a red colour, which turns black on being treated. It is very hygroscopic, and by organic bodies, such as alcohol, glue, sugar, or paper, it is deoxidized and changed into sesquioxide of chromium. The solution of chromic acid should not be filtered through paper; with bases it forms salts of a yellow or yellowish red color. The salts which have been formed with the alkalies, as well as those with lime, strontia, magnesia, peroxide of manganese, and oxide of copper, are soluble in water; but those with barytes, oxide of lead, oxide of silver, and peroxide of mercury, are not. The neutral chromic salts are those in which the oxygen of the acid is three-fold the oxygen of the base; they are with the corresponding sulphates perfectly isomorphous. If the chromates are heated with hydrochloric or sulphuric acid and alcohol, one-half of the oxygen is withdrawn from the chromic acid, and chloride of chromium, or oxide of chromic salt, is formed.

The sesquioxide of chromium (Cr_2O_3) is a powder more or less dark green, which does not change at a very high temperature, and is principally used in painting porcelain.

Sulphuric chromic oxide of potassium, often called chromic alum ($\text{KO}, \text{SO}_3 + \text{Cr}_2\text{O}_3, 3\text{SO}_3 + 24\text{HO}$), is obtained by mixing the two solutions which are contained therein. The simplest way of making it is by mixing three parts of a saturated solution of chromate of potash first with one part of concentrated sulphuric acid, and next with two parts of alcohol. The addition of the alcohol should be made with great care and very gradually, as otherwise a great development of heat will ensue. Chromic alum, like all kinds of alum, crystallizes in octahedrons; the large crystals are deep purple, almost black; the small ones are transparent, and of a ruby color. The substance is at present used in the pigment process. Ernest Edwards proposed recently to add a small quantity of chromic acid to the chromo-gelatine solution, as it will give the film greater firmness, admitting of a larger number of impressions being taken. Edwards assures us also that with this addition, and without previous preparation, the film will attach itself firmly to the glass.

Bichromate of potash ($\text{K}_2\text{O}, 2\text{CrO}_3$) is an important substance for the preparation of *lichtdruck* plates, and for the pigment process, &c. Ten parts of water of medium temperature dissolve a part of this salt, but boiling water dissolves a larger quantity. The solution has a bitter, cooling taste, and acts poisonous, like the salt itself, the oxygen of the chromic acid oxidizing the organic structures. When the salt is mixed with concentrated sulphuric acid and gently heated, a current of oxygen will be developed (amounting to about 16 per cent. of the weight), and sulphate of chromium will be formed. The salt can be employed for making oxygen.

Bichromate of ammonia ($\text{AmO}, 2\text{CrO}_3$) is prepared by dissolving a quantity of chromic acid in water. The solution is divided in two parts: the one part is carefully neutralized with ammonia, then mixed with the other part; the solution is now evaporated until it crystallizes. On cooling, we will get prisms of orange red bichromate of ammonia, which are dried over sulphuric acid. For many photographic purposes this salt is preferable to bichromate of potash.

Chromate of potash and ammonia ($\text{KO CrO}_3 + \text{AmO}, \text{CrO}_3$). The preparation of this salt is very simple, and was stated by E. Kapp as follows:—A certain quantity of pure bichromate of potash is placed in a strong round bottle, pure concentrated liquid ammonia is added, shaking the bottle constantly until a constant smell of ammonia indicates an excess of the volatile alkali. The bottle is well corked, and placed and heated in a water-bath until the contents have entirely dissolved. The double salt, on cooling, crystallizes out of the liquid in an entirely pure state. The bottle is opened, the mother liquor decanted off, and the crystals are dried *in vacuo* over unslaked lime, and in an atmosphere somewhat impregnated with ammoniacal vapours. When

the crystallization has progressed rather rapidly, we will get fine transparent needles of a bright sulphur colour, or four-sided prisms with a rhomboidal base; with a slower crystallization, from a not too concentrated solution, we obtain rather voluminous crystals. The double salt contains no water of crystallization. For the preparation of "*lichtdruck*" plates it is excellent; it is very sensitive, and combined with gelatine it yields an excellent film; it is also especially valuable for the preparation of the positive picture which is used in photo-lithography for the transfer to the lithographic stone, as the salt, when not decomposed, does not affect the cellulose of the paper.

Chromate of magnesia has, so far as is known to me, not been employed for photographic purposes; it is rarely met with in commerce; it crystallizes, according to Graham, with five equivalents of water; the crystals are yellow, and dissolve very readily; with chromate of potash it forms a double salt. Chromate of magnesia is very well suited to photographic purposes, possessing even some peculiar advantages, but the price is rather high.

Chromate of copper and ammonia ($3\text{CuO}, 2\text{CrO}_3 + 5\text{H}_3\text{N} + \text{HO}$). It is made by mixing a boiling solution of sulphate of copper with a boiling solution of neutral chromate of potash. The brown precipitate is boiled with water until the latter is no longer coloured; it is now filtered, the residue on the filter is mixed with water, and through the solution a current of ammonia is passed. The resulting green solution gives, on cooling, the above-named green-coloured salt.

Bichromate of copper ($\text{CuO}, 2\text{CrO}_3 + \text{HO}$) is prepared by digestion of a solution of chromic acid with hydrate of the oxide of copper, evaporation, &c. The crystals are green, and easily soluble in water. For certain purposes the crystals of chromate of copper are very valuable. We obtain a picture which is suitable for galvanoplasty. Without a galvanic covering the printing plates prepared with the above salt would not be durable enough, as the oxide of copper is attacked by fat and fatty acids.

Chromate of silver (AgO CrO_3) is obtained by adding a solution of nitrate of silver to a solution of neutral chromate of potash. It has a brown colour, and is neutral. From an acid solution of bichromate of potash, nitrate of silver will precipitate crystals of a carmine colour, of bichromate of silver. This salt is partially soluble in water, and by boiling it with water it is transformed into a dark grey powder, in consequence of its losing chromic acid. By dissolving chromate of silver in concentrated warm ammonia, we obtain, on cooling, crystals which are composed according to the formula, $\text{AgO}, \text{CrO}_3 + 2\text{H}_3\text{N}$. They are useful for the preparation of sensitive chromo-gelatine films.

Several chromates—as, for instance, chromate of soda &c.—have not been mentioned, as they have no value for the photographic practice.

PHOTOGRAPHY FOR THE UNINITIATED.

BY CHARLES WAGER HULL.*

LETTER NO. 3

Now that I have given you a very full list of the various chemicals and mechanical appurtenances which are required in our charming art, let us, without more ado, begin work, with a resolve to be neat, painstaking, and, above all, patient under failure—a not unusual thing in photography if we become careless, half doing that which should be well done.

Bear ever in mind that we, unlike the carpenter, can leave no part of our work rough and poor, trusting to sand-paper and putty, for none such or their equivalents have we; all we do must be well and thoroughly done from the foundation. These few lines are the cornerstone of photography; upon them the whole superstructure is erected; without

* Continued from page 382,

them all will be failure, no matter how good your chemicals or apparatus, for you are now dealing with exact and an exacting chemical science.

Let us first prepare our chemicals, those which we require in the production of a negative, that picture upon glass from which we shall subsequently print our positive picture upon paper. This negative, when viewed by transmitted light (that is, when looked through), presents the reverse of the objects photographed in colour, so to speak: a white house looks to be black, while the black bolt on the window shutter is white, or, in other words, is transparent, no deposit of silver being seen upon the glass negative. Thus, in a negative made of a landscape, we have all shades of opacity—or intensity, as it is more often termed—from the opaque sky or high-light to the clear glass or absolute transparency, representing the deepest shadow, or the light reflected from some object of non-actinic power, like a field of fully ripened yellow grain, or the feebly lighted shadow side of a dark green tree.

First, let us make up our—

Negative Bath.—With your graduate measure put into the bath as much good pure soft water (distilled would be best) as will cover the plate subsequently to be immersed, and allow one inch above it; this determined, use that amount in making up the bath—we will suppose it to be twenty fluid ounces. In each ounce of this dissolve forty grains of nitrate of silver. Your bath thus stands:—

Water	...	...	20 fluid ounces
Nitrate of silver	...	...	800 grains

In this solution first place your actino-hydrometer, not to test the bath, but in this case to test the hydrometer. It should, of course, mark forty. If the water used is good, the solution of silver will be clear; if it contains salts of any kind, it will be milky, just in proportion to their presence; if but faintly so, it will not materially affect you, being only a trifling loss in silver, which will subsequently all filter out. In this solution place a piece of blue litmus paper; watch it closely; it should remain without change of colour; often, however, silver is somewhat acid, in which case it will redden; if but very faintly, it will not matter. If it does not change, you will next take a small glass vessel, and drop into such (say) eight drops of chemically pure nitric acid, and then add one fluid ounce of water; of this add (say) one drachm at a time to the bath, agitating thoroughly, and on each addition test with a fresh piece of blue litmus paper; cease to add as soon as the paper begins to change to a red; be very careful not to continue adding until it is a bright red, but stop as soon as it begins to redden. You will next proceed to filter the solution, which you must repeat several times, or until it is absolutely clear and free from all milkiness. Filtering may be done through cotton; better, I think, through a double thickness of filtering paper; whichever you use, always pass through a few ounces of water first, to be satisfied that all works well.

Most directions for making the negative bath recommend the addition of iodide of potassium, dissolved in water, to the silver solution which we have just made. I, however, prefer not to do so, recommending you to proceed as follows:—Place the filtered solution in the bath; next take a glass plate, clean, and coat with collodion, and immerse this in the bath, allowing it to remain for several hours, or until it has lost all its white or creamy look; by this means you will add iodide to your bath in a sufficient quantity without the danger of adding too much; the bath will soon become highly charged from fresh plates dipped.

It is no part of these letters to discuss the reasons in detail of any formula which I may give, nor to give more than one or two formulas for any article; if the chemistry of the art is to be studied and discussed, or formulas without end required, then you have only to study Dr. Vogel's Handbook, the issues of the *Philadelphia Photographer*, the *Photographic World*, and scores of others for such; those

named you should have at once for reference and study. I can only say for the formulas which I give, that they are as simple as any in use, and are reliable.

Next in order will be our—

Collodion.

Alcohol, 95 per cent.	...	...	8 fl. ounces
Ether	...	...	8 "
Iodide of cadmium	...	...	7½ grains
Iodide of ammonium	...	...	24 "
Bromide of cadmium	...	...	48 "
Gun-cotton	...	from 64 to 80	"
Alcohol, 95 per cent.	...	...	8 fl. ounces
Ether	...	...	8 "
Iodide of cadmium	...	...	96 grains
Bromide of cadmium	...	...	48 "
Gun-cotton	...	64 to 80	"

You will, in reading these formulas, wonder at the latitude in the amount of cotton. In answer, I can only say that cotton varies, and with each lot you are likely to have a collodion of varying body or thickness. I cannot be more definite. In making your first lot of collodion use, say, 72 grains, and if it be not too thick and heavy-bodied, go to the 80 grains in the next. I prefer for landscape work a heavy film, consequently advise cotton to be freely used. It will be seen that the formulas vary; the second is all cadmium, which is best for the use of an amateur, inasmuch as it keeps its good qualities for a long time. I am now (June, 1871) using collodion made in August, 1869, by the second formula, and it is prime in all respects. Mr. Whitney, of St. Paul, Minnesota, of whom I obtained this exact formula, has been with it more successful in his landscape work, as a whole, than any photographer I know of. He claims that by the use of all cadmium his negatives are less harsh in their contrasts, and are, consequently, of finer detail. In looking over scores of them made with all cadmium collodion, compared to others (some made at the same time, and of same subject), I was convinced of the correctness of his statement, and have used his formula since that time, except where I have slightly varied it by the addition of iodide of ammonium for an equal proportion of cadmium, and this only because I wanted a collodion for use at an early day, and by oversight was nearly out of that made by his formula. If made of all cadmium, at least one month would be required for it to ripen for use—possibly more—while with the other a week or ten days would probably suffice.

In making collodion, put the alcohol and ether together in a bottle, and add the iodides and bromides to be used; those named will dissolve in the mixture; when dissolved, add the cotton. You will, of course, shake well and often, to aid solution and intimate mixture. After standing to ripen, filter, by aid of your collodion-filter, through cotton placed in the neck of same. Before you filter the collodion pass the cotton through a little alcohol to saturate it, and to be sure all is right, filter slowly—a fast dropping, not a steady rapid stream, is best.

In handling ether and cotton for your collodion, never forget how dangerous they are if exposed to a flame; it is a good rule only to make collodion in the day time, and never in a room where there is a fire burning.

Next we come to the—

Developer.

Water	...	...	8 fl. oz.
Double sulphate of iron and amm.	...	...	120 grains
Acetic acid, No. 8	...	...	1 fl. oz.

Crush the sulphate in a mortar, and add to the mixed water and acetic acid. The only rule to follow in making developer is to add acid until it so retards the action of the iron upon the plate as to allow you to have it fully and evenly covered before its action of development begins. The addition of alcohol, about half a fluid ounce to the above, will aid its flowing properties, but, as it injures

intensity, I do not recommend it. It would be well for you, as a beginner, to use double the amount of acid given above, inasmuch as you will not be expert in flowing the developer at first; you can easily reduce as you improve. In hot weather, when the chemicals work quickly, more acid can be used than in winter, when all is cold, and they work slowly.

Fixing Solution.

Water 10 fluid ounces
 Hyposulphite of soda ... 2 ounces

Or,

Water 10 fluid ounces
 Cyanide of potassium ... 50 grains

These can be made and used over and over again, by pouring into a tray or dish, and placing the negative therein.

Varnish for your negatives it is quite as well to buy as to make while you are new at the art. I may give some formulas for such, but not in this place.

Before closing this, it may be as well to add the formula for collodion used by my friend Mr. Hugh O'Neil, of the firm of C. D. Fredericks and Co., New York (a better photographer than whom does not exist), and from which I have not known him to change in all the years of our acquaintance. This formula is for portrait work, and is not as well suited for landscape as either of those given, by reason of its tendency in such work to give stronger contrasts in the negative.

O'Neil's Portrait Collodion.

Alcohol 8 fluid ounces
 Ether 8 " "
 Iodide of ammonium ... 72 grains "
 Bromide of potassium ... 32 " "
 Cotton, about... .. 80 " "

Dissolve the bromide of potassium in the least water possible, and add to the mixed alcohol and ether, in which the ammonium has been dissolved; lastly, add the cotton.

The proper developer for portraits should be of about double the strength of that for landscape work. The more feeble the action of light, the stronger may be the developer.

In our next we will produce our first negative.

Correspondence.

APPRENTICES AND ASSISTANTS.

DEAR SIR.—Allow me to say a few words on the matter of "Assistants" in your journal, where Mr. Welch and "Little Photo" have had it to themselves long enough.

If Mr. Welch offers plate cleaner's wages, he must not expect to get much above a plate cleaner, for it is not to be supposed that even a moderate assistant worth trusting to coat and immerse a plate can be obtained for from twenty-five to thirty shillings a week. My maxim is, pay a man a fair salary, and you will find sufficiently good men to work for you with a will and take a pride in interesting themselves in your welfare. Unfortunately, there are too many men calling themselves photographers (and, I may add, with very little knowledge of the art) who wish to get their work done by good men at the very lowest possible price. They advertise for a "first-class operator of good education, appearance, experience in all branches of the art, thorough integrity," &c., enumerating a number of virtues few of us possess; he must send specimens and C.D.V. of self; and must finally ticket himself up with his lowest price, like a piece of merchandise, and submit himself to be quizzed and compared with, perhaps, the scum of the profession, often to find himself unnoticed, and minus his specimens.

I could address you on this subject at greater length, but will not trespass further than to observe that until a fair manly course is pursued by employers to operators, by stating in an

upon straightforward manner what salary they offer to a good man with good testimonials or reference, they will continue to be bored and bothered by the cheap and nasty stuff so many meet with. The only fair advertisement in your journal for many a day was a Canadian one a few weeks ago. Let gentlemen who require good men say what they give, and then men of experience and ability will reply if terms suit, and mutual satisfaction result.

Too many photographers are in the habit also of stating that it may be for a permanency if suitable, &c. All bosh! The lino is worn out, and it is far more honourable to tell a man at once it will be an engagement for three or five months, as the season may warrant. Then masters will be respected, and men satisfied.—Yours truly,

A FIRST-CLASS OPERATOR.

MORE ODDS AND ENDS.

SIR.—With regard to "Amateur's" remarks in ANSWERS TO CORRESPONDENTS in your last, allow me to thank that gentleman for his flattering opinion of my few jottings.

I do not find Harper Twelvtree's washing crystal so good as Manby's for plate cleaning. It he will send me two stamps for postage (or any other photographer), I will forward him a packet for trial sufficient to clean two hundred old or five hundred new plates—and, I think, chemically clean them. It will be found exceedingly useful to those who prepare dry plates. I have never, even in the hottest weather, had a dirty plate with only ordinary care, and I have used some glass five or six times over. You can get a box containing one hundred and fifty packets for seven shillings and sixpence by ordering through your grocer. If not in stock he will get it for you. It is also good for use in the house for washing, saving one-third the time and labour. I have forwarded a packet to the Editor for trial.

The varnish I have used is one of my own make, and Gethen's hard, a capital varnish, giving a film like glass. I have tried others, and found them answer as well. I let the negative dry and get cold, and then varnish, warming the plate after it is on and drained. I think the varnish has time to soak through the film, and so, when dry, becomes harder than when poured on a warm plate; and the spirit evaporating leaves the varnish only on the surface.

Try the collodio-transfers. They are the old transparencies transferred to paper, only not developed as much and toned. You may get excellent whole-plates 10 by 8 or 12 by 10, that require no colouring or touching, from an ordinary carte negative. It will greatly increase your business, as all old negatives may be made useful, and pictures may be done at a low rate to what such things have been done.

My last "Odd" brought out a letter from "The Man Who did Cartes at 1s 6d. per Dozen," &c. He said I should be "surprised to hear" that he cleared £30 profit out of cartes at that price in a quarter. I was surprised, and no doubt a great number more were also. He gave an assistant one guinea a week also. Well, all I can say is, he must have had a different process to any one else, as he must have printed 20,000 cartes in the quarter: 1,530 in the week, and 255 every day (taken 21 negatives and printed 12 from each), and that in the shortest, dullest, and worst time of the year. I just make these notes as a warning to any who may think of lowering their prices to do the same, and to show them what they will have to do.—Yours truly,
 J. R. GRIFFITHS.

RESIDUES AND REFINERS.

DEAR SIR.—The week before last I sent a parcel containing residues (for reduction to metallic silver) to a certain firm, and enclosed a parcel of chloride of silver. I have received a money order for £1, and an intimation that the parcel "supposed to be chloride of silver contained no silver whatever."

I had several gallons of bath solution, which I placed into a tall earthenware mug, and poured into it a saturated solution of chloride of sodium, until no further precipitate went down. It was then allowed to stand for a few days, the solution poured off, and the precipitate dried, and which precipitate dried was that enclosed in the parcel before named. Now, if it was not chloride of silver, I would feel greatly obliged if you would kindly enlighten me as to what other salt it could be, as I have hitherto been under the impression that chloride of sodium and nitrate of silver would give a precipitate containing a salt which

would yield some amount of "silver." I may perhaps mention that the baths were not of the exhausted kind, but such as had been made and found not to answer, and contained from thirty to thirty-five grains per ounce of water.

Apologizing for troubling you upon so trifling a subject—I remain, dear sir, yours most truly,

TIPTON SLASHER.

9, Railway Street, North Shields.

[The precipitate formed by the addition of chloride of sodium to nitrate of silver solution is chloride of silver, and, unless other causes have intervened, nothing else.—ED.]

Talk in the Studio.

MILITARY PHOTOGRAPHY.—The photographic staff of the Royal Engineers at Chatham have received orders to proceed with the photographic field equipment, printing waggon, and photo-lithographic appliances to Aldershot, to the scene of the forthcoming manoeuvres. The very complete equipment in question was designed and invented, as we have before intimated, by Liout. De W. Abney.

PHOTO-COLLOGRAPHY.—We have recently been favoured by Mr. Woodbury with some of his first results in working out a process of photo-collography in which he has made some ingenious improvements. The results are equal to most we have seen, and superior to very many produced by processes in commercial practice. We hope shortly to publish some details on the subject from the pen of Mr. Woodbury.

A USEFUL GAS FURNACE.—In the mechanical department of the Exhibition of the Royal Cornwall Polytechnic Society, held last week, there was shown a little apparatus particularly useful to photographers, viz., Fletcher's Gas Furnace, for dentists, photographers, and workers in the precious metals. It is so small and light that it can be used on the work bench, and put away on a shelf when not in use. It will melt in a crucible four ounces of 18-carat gold in twenty minutes from the time that the gas is lighted, larger quantities in five or ten minutes more; a second quantity can be melted in half the time. The cost for gas is at the rate of one penny per hour, and it can be connected in a moment to any gas pipe, used on the work bench, as it emits no smoke, and does not require any chimney. Photographers may reduce their own paper ash, &c., with no more trouble than would be required to heat a vessel of water over a gas burner, and the furnace is so small and clean in use that it could be used on a sitting-room table without inconvenience. It was awarded a first bronze medal; the maker is J. Fletcher, Bold Street, Warrington.

VIGNETTING CAMEO VIGNETTES.—A correspondent, C. J. W. Truscott, says:—"The effect of this beautiful style of photograph is to a great extent lost if the white margin is not pure, and the vignette regular. The old vignette glasses would answer the purpose if they could be obtained of the proper size and shape; beside this difficulty, they are both expensive and not so handy as the ordinary card vignette. What is required, then, is, to adapt this form of vignette to the requirements of the case. This can be done by a frame of wood or millboard four inches high, to slip on the frame while printing, the object of which is to cut off the horizontal light, and thus preserve the purity of the white exterior to the vignette. Of course, the deeper the frame the more abrupt the vignette. I write this because I see many of these pictures done in England spoilt from this cause.

OIL-COLOURED PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.—Messrs. Mason and Co., of Bond Street, referring to our notice of photographs at the International Exhibition, wherein we mention that a solitary Austrian picture was the only example of oil-coloured photography in the photographic department, inform us that the life-size portrait of Charles Dickens, No. 45 in the Catalogue, is an enlarged photograph coloured in oil. Although it was sent as "an enlarged and painted photograph," it is hung amongst English paintings, without any intimation of its photographic origin whatever. Is not this something closely approximating to dishonesty in the Exhibition authorities? The portrait is a very fine one, and is, we understand, regarded by the great novelist's family as the most satisfactory portrait of him in existence.

To Correspondents.

CAPT. WATERHOUSE.—Thanks.—We will call attention to the subject, and urge contributions.

OWEN CHESTER.—The best mode of "photographing a light complexioned person with light blue eyes" depends upon judicious lighting, and it is somewhat difficult to give specific directions how to effect this without knowing the details of your studio. A tolerably strong direct light from side and top is desirable, the face and eyes being directed to the dark side of the studio. Light eyes should never be turned towards the light. 2. The addition of gallic acid to collodion has been tried, but not with sufficiently systematic perseverance, we believe, to afford a definite decision as to its value. There are some difficulties in its use which have deterred experimentalists from proceeding with it. 3. A covering of black twill with a lining of yellow calico forms a cheap and efficient cover for a dark tent. 4. A shrill whistle just before exposure has been found useful in getting cattle to stand still; but there is no certain method of keeping the tails still.

F. D.—The stains are the result of imperfect fixation, by which patches of hyposulphite of silver are left in the paper. Those decompose in a few hours, or days, or weeks, causing the brown stains which your prints present. The hyposulphite solution has been weak or old, or the prints have been stuck together, causing the patches of imperfect fixation. 2. So far as we have opportunity of judging, Col. Stuart Wortley's collodio-bromide process is best for certainty and rapidity.

W. S. P.—We will bear your wish in mind.

A. B. C.—Try fuming a shorter time. Your bath ought to answer. 2. It is better to keep your acetic acid for general use undiluted, and add to the solution when mixed for use.

E. H. (Postmaster).—Your difficulty undoubtedly arises from mismanagement of the light. No. 2 appears to be lighted by a mass of diffused light in the room, both on the figure and entering the camera. There is no direct light, and no definite shadow. You must find means to exclude sunlight from your room. Both cards indicate the presence of too much diffused light, and too much front light.

J. W. (Bristol).—To transfer a collodion positive to patent leather, take one ounce of spirits of wine, one ounce of water, and eight or ten drops of nitric acid. Flood the positive after fixing and washing with this for a few minutes, and also flood the patent leather; then place the patent leather upon the positive, and put the two under pressure of a press or heavy weight until the film is dry. On lifting the patent leather the positive will be found adhering to it. 2. The term portrait tube is the American phrase for a portrait lens.

A. BURTON.—You should point out the fault to which you refer. There are more faults than one in the print enclosed; the light coloured patch in the coat may be due to irregular sensitizing of the paper, or to a defect in the negative. 2. We should not care to place more than a dozen card prints in a pint of toning bath at once. 3. One rinsing water is sufficient for prints before toning. 4. We use ourselves a printing bath of from 40 to 50 grains of nitrate of silver per ounce, as nearly as possible neutral, without addition; but you may use with advantage the addition of sugar and nitrate of potash, as often recommended in our pages.

A. J. SIMPSON (New South Wales).—Thanks; we shall shortly make use of your communication.

GEORGE MACKIE.—The general plan of your studio is not bad, but eight feet are not sufficient for convenience and efficiency. With almost any of the lenses you mention your studio should be twenty-four feet long. We are not personally familiar with the working of any of the lenses you mention, but we should prefer to try No. 2.

JAMES SHORT.—Our publisher has no cameras for sale except those occasionally advertised as placed in his charge. The one to which you refer is still in his hands at the price advertised.

W. HARWOOD.—We should think that almost any of the commercial collodions used fresh from the stock bottle would answer for large plates. Of course a bottle which has been frequently opened in warm weather gets too thick for use on large plates. If you wish to prepare collodion you cannot do better than try the formula we gave in our YEAR-BOOK. 2. Acid solid at 60° is glacial acetic acid, and of the strength commonly employed in English formulae.

A. B.—The first meeting of the Photographic Society is in November; we can then propose you, so that you may be elected in December. You must be so good, however, as to write again and remind us at that time, otherwise it may escape our memory.

F. G. O. STUART.—The formula in detail would occupy too much space to give in this column. If you have our YEAR-BOOK for 1864 you will find an interesting article on the subject by Mr. Blanchard; if you have not, let us know, and we will refer you to some other source, or else reprint the formula. We regret that we cannot write private letters on such matters.

F. M.—The collodion you describe is evidently decomposed, and we fear that you cannot restore its sensitiveness. It may be utilized in cleaning plates.

Several Correspondents in our next.

Several Articles in type and Reviews are compelled to stand over until our next.

THE PHOTOGRAPHIC NEWS.



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SOME NOVEL BACKGROUND EFFECTS.

In a recent number we described a novel and effective treatment of the background in portraiture, which had been brought under our attention in our Philadelphia contemporary. The effect in question consisted of a medallion portrait with a somewhat dark background. The oval medallion was surrounded by a spandrel of delicate warm grey, which was, of course, the natural tint of the lighter middle tints of the picture. The especial novelty consisted in the fact that this surrounding grey tint was traversed by darker lines about one-twentieth of an inch apart. The result was effective, the lines slightly deepening the tint of the grey, but with less heaviness than a deeper grey would have done. It also added somewhat, by contrast, to the softness of the picture. The sharp, regular, straight lines gave value to the variety of curve and undulation and the soft gradations in the picture. As we pointed out at the time, a similar treatment was familiar in old portrait engravings, where a tint formed by fine regular or interwoven lines or diaper effects were not uncommonly used to surround and give value to the background proper of the portrait.

No information appeared at the time as to the mode in which the effect was produced in the portrait in our American contemporary. We hazarded certain conjectures at the time as to the method by which such a result had been or might be produced, pointing out that a slight modification of the method usually employed to secure a grey margin to a medallion picture would answer the purpose, suggesting, amongst other plans, that over the plate of glass to which the opaque oval mask was attached, a piece of thin paper with fine lines in water-marking should be placed, and we added that "probably, better than all, would be the production in the camera of negatives to be used as masks. Many of the diaper designs of wall papers might be reduced in the camera for such a purpose, and produce very pleasing and telling effects." In effect, it appears that this latter is actually the method employed. The use of water-marked paper proves scarcely satisfactory. A few days ago we saw a print produced by Mr. Robinson previous to the publication of our former article, in which such paper had been used to produce a similar effect. The result was not unpleasing, but the lines were somewhat lacking in sharpness, and a general fuzziness in the design was apparent, due to the texture of the paper. A communication from our esteemed Philadelphia correspondent, Mr. E. L. Wilson, who favours us with early proof of an article by Mr. Gihon, which appears in another page, informs us that the photographic mask, with suitable design produced in the camera from ruled paper or from some textile fabric, is the agency employed by Mr. Gihon in

producing the effect we have described, and various modifications of it, which at once suggest themselves to the ingenious photographer.

A packet of examples by different American photographers reaches us at the same time. These have varied designs of different degrees of excellence, and afford both models for imitation and cautions as to what to avoid. Some of the designs consist in the simple transverse lines, which might have been effective and satisfactory if they had been delicate and regular in thickness and interval, but, being slightly imperfect in these respects, the general appearance is common and vulgar, rather than effective or pleasing. Some have designs in fine lines intersecting each other, resembling the effect of engine turning; others have lines crossing, so as to make the interspaces of the form of very fine and much elongated lozenges; the lines in some resemble the effect of watered silk; in some an effect somewhat resembling canvas is produced. Amongst those we have seen, none, perhaps, are more pleasing than the fine regular lines, not too pronounced in depth, which we first described. We think it not improbable that our first suggestion as to the photographing of good diaper designs in wall papers would furnish many excellent designs for these mask negatives if the selection be made under the guidance of good taste. Mr. Wilson fears that wall paper designs will be found too obtrusive. If this were so, the result would be vulgar rather than pleasing; but it is possible to get in this country some exceedingly perfect and delicate diaper designs, produced by Owen Jones and other designers of the highest ability; and with these copied fine and small there is little danger of obtrusiveness or vulgarity.

In Mr. Gihon's paper an allusion is made to the effect produced by placing the oval opaque mask a little out of truth, so as to produce a white line at one side or end and a dark one at the other side or end of the oval. This effect, which at first sight appears like a defect, is at times not unpleasing. One of the best results of this kind which we have seen was the result of careful design. It was a ten by eight Salomonese portrait, which we saw in the specimen room of Messrs. Robinson and Cherrill, at Tunbridge Wells. The figure, that of a lady admirably lighted and posed, is printed in a large oval medallion, and a dark margin subsequently printed round. In placing the opaque mask over the oval medallion already printed, it had been carefully adjusted, so as to leave a white line at the bottom and a dark one at the top. The effect produced is exactly that of a dark frame placed over the picture, the portrait being seen through an oval aperture. The white line at the bottom of the oval gives the effect of a top light striking the edge of the aperture, and the dark line at the top the effect of a shadow cast by the frame. The whole gives an effect of relief which is decidedly novel and satisfactory.

Our remarks here are intended to be suggestive of varied possibilities in effect rather than precisely descriptive. The range of varied effect in photographic portraiture can never be very extensive, and one of the prevailing sins to be avoided is the tendency to run in stereotyped grooves. Variety of effect, as a rule, tends to stimulate the business of a portraitist, and if it fail in this, it helps to give new zest to the photographer himself, and to prevent his interest stagnating in what, under some circumstances, might become a wearisome and monotonous occupation.

PHOTOGRAPHING CRIMINALS.

THE system of photographing criminals with a view to facilitate their subsequent identification is at last provided for by something like efficient and practical arrangements. Having been for years in partial operation at the discretion of governors whose intelligence and zeal in carrying out important duties induced them voluntarily to put in operation a plan which has proved so valuable, the system of photographing criminals was some time ago ordered by Government to be applied generally in all prisons. By a blunder or oversight only too common with the present administration, the order was made without provision for carrying it out. No funds were provided for defraying the cost of photographing in gaol, and no arrangement was made for rendering sitting for the photograph compulsory upon the criminal. The governor of one of the gaols recently mentioned by the Chief Commissioner of Police as not having adopted the plan of photographing criminals wrote to the *Times*, stating that if an Act were passed compelling criminals to be photographed, and if Government would undertake to defray a moiety of the cost of the work, no difficulty would be found in inducing governors of gaols generally to enter heartily into the system. Another governor of a gaol, himself a skilful photographer, and one who has for years applied the system, recently writes to us to say that until Government makes sitting for a photograph compulsory upon the criminal, and sanctions punishment for refusal, he shall send no photographs under the provisions of the Habitual Criminals' Act.

A new Act has just been passed with a view to meet the case, by which it seems that all difficulties will be provided for. The Act provides that a register of all persons convicted in the United Kingdom is to be kept. Regulations may be made as to the photographing of all persons convicted of crime in the United Kingdom, and such regulations may prescribe the times at which, and the manner and dress in which, the prisoners are to be taken, and the number of photographs of each prisoner to be printed, and the person to whom such photographs are to be sent. Any prisoner refusing to obey any regulation as to photographing is to be deemed guilty of an offence against prison discipline. The expenses of keeping registers in London, Edinburgh, and Dublin are to be sanctioned by the Treasury, to be paid out of moneys provided by Parliament. The expenses incurred in photographing the prisoners in any prison are to be deemed to be part of the expenses incurred in the maintenance of the prison, and to be defrayed accordingly. The section is not to apply to prisons for convicts under the superintendence of the directors of convict prisons, or to any military or naval prison. The new Act is intended to take effect on the second of November next.

It cannot be deemed unreasonable that refusing to sit for a photograph, to secure future identification, should be regarded as much a breach of prison discipline as refusing to comply with any other prison regulations, and that it should be dealt with in a similar manner. Hitherto, contumacy in this respect has been met by contrivance rather than punishment. At times, the portrait has been secured without the criminal's knowledge, just when he was exult-

ing in having baffled the attempt to photograph him. At other times, the photographing of an unwilling criminal was arranged to take place just before the dinner hour, with an understanding that tricks or delay would issue in the delay of dinner. Now, we apprehend that besides delaying dinner, the contumacious sitter may have reduced quality and quantity of rations to fear, and this will, in many cases, have a very salutary effect in securing a tractable model for the prison photographer.

The identification of prisoners has already been absolutely proved to be an efficient means of repressing crime, an end as merciful to the criminal as beneficial to society, and hence it can only be matter for sincere satisfaction that our art shall henceforth take its position amongst the recognized and authoritative agencies for removing from a life of vice and risk a large portion of those whose sole means of living has consisted in crime, and of relieving society from many of the habitually vicious whose chief chance of comparative immunity has consisted in non-recognition or non-identification.

THE NEXT SOLAR ECLIPSE.

WE understand that Government has placed at the disposal of Col. Tennant, R.E., sufficient funds to cover all the charges of an expedition to the south of India, for the purpose of making complete observations of the total eclipse of the sun on the 11th of December next, photographic delineations of the various phases of the eclipse being included in the provisions. Remembering the lamentable failure of the photographic portion of the eclipse observations in India through the insufficient experience of the photographic staff at the time placed at the service of Col. Tennant, it is important, whilst there is yet time, to guard against a repetition of failure. We have before commented on the failure in 1868, and the lack of prevision by which it was caused, and it is unnecessary to refer to the matter now, except for the purpose of suggesting the necessary considerations for securing success in the operations of December next. We have before pointed out the wisdom of securing the services of experienced professional photographers in such an undertaking, if any doubt whatever exist as to the capacity or experience of the military photographic staff available for the service. The aid of civilian photographers is, perhaps, less important now than at some former times, as both at Chatham and at Woolwich competent photographers are attached to the service. The photographic staff of the Royal Engineers, whence it is probable Col. Tennant will derive his assistance, has been for some time under the very able superintendence of Lieut. De W. Abney, and should, under such tuition and charge, have acquired a high degree of competency. Captain Waterhouse, now in India, will, it is probable, we understand, accompany the expedition in charge of the photographic department, in which case we shall have no fear of the efficiency of the arrangement. It is of vital importance that men familiar with the conditions of photographic success in India should be attached to the expedition, and that failure through the nitrate of silver drying up on the plates and crystallizing during exposure shall not mar the results. The plan adopted by Dr. Vogel when in charge of the photographic department of the Prussian eclipse expedition at Baden is worthy of attention. Some days before the eclipse he drilled his photographic staff, with military precision, in all the operations to be carried out during the few critical moments. Each man was told off to his duty, and rendered familiar by practice with its detail, for several days beforehand. All the chemicals were tested, and perfect conditions secured, so that no photographic cause of failure should arise; and the result was a complete success. An equal success may be secured, by like exercise of care combined with ordinary skill, in India.

In the last issue of *Nature*, Mr. Brothers publishes some notes on eclipse photography, based on his own experience

at Syracuse. He remarks that the photographic lens of four inches aperture and thirty inches focus, lent for the last eclipse operations by Mr. Dallmeyer, was found much more efficient than a telescope for the photographic operations, and suggests that if this or a rapid rectilinear of even larger focus and larger aperture be not accessible in India, good landscape lenses of long focus may be tried with advantage. Whatever lens he used, it is unnecessary to say, must be provided with necessary clock-work arrangement for following the apparent motion of the sun. The photographic suggestions of Mr. Brothers, with which we have been favoured in an amplified form, and which will appear in our next, will be found worthy of consideration.

BENGAL PHOTOGRAPHIC EXHIBITION OF 1872.

WE subjoin the rules of the Photographic Exhibition in Bengal for 1872, and add some extracts from a letter received from our friend Captain Waterhouse, urging upon English photographers the importance of contributing. In seconding his request, we may mention the fact that this Society has always been distinguished by its liberality in awarding prize medals, one which we recently saw awarded to Messrs. Robinson and Cherrill at the last Exhibition weighing, we believe, upwards of three ounces of gold. Captain Waterhouse says:—

"I do not know whether the inducement we can offer will be sufficient to attract English photographers, but Messrs. Robinson and Cherrill and Mr. Netterville Briggs have gained prizes two years running. At the next Exhibition we offer two gold medals (one of which is reserved for European contributors), and three silver medals for open competition; besides this, there would, I think, be a ready sale for good photographs if the subjects were suitable. We are particularly desirous of having specimens of the new processes of reproduction in permanent pigments, genre pictures, views, reproductions of works of art; but all contributions will be welcome."

RULES FOR THE FIFTEENTH ANNUAL EXHIBITION, 1872.

- I. The Exhibition will be opened on Monday, 16th January, 1872, and will be closed on Saturday, the 25th February, 1872.
- II. The Exhibition will be open to all good photographs, whether contributed by members of the Society or others.
- III. Only such photographs as have been taken within two years will be allowed to compete for the prizes now specified. No photographs may compete for prizes at more than one Exhibition, and no prizes will be awarded to persons who have not actually taken the pictures which they exhibit.
- IV. The prizes will be awarded previously to the opening of the Exhibition, on the recommendation of three gentlemen appointed by the Committee of the Society; the decision of the Judges will in all cases be final.
- V. Photographs intended for the Exhibition must be properly mounted, and delivered to the Secretary by the 7th January at latest, accompanied with a memorandum describing the subject of the pictures.
- VI. The carriage of photographs sent from distant places must be pre-paid. The Society will endeavour to have photographs sold for the benefit of the sender, if request to that effect be made, but in such cases a price list must accompany the letter of advice.
- VII. Exhibitors must make their own arrangements for the removal of their photographs the day after the closing of the Exhibition.
- VIII. Photographs to which prizes shall have been awarded at the Exhibition will become the property of the Society for the album.
- IX. The Judges will select, from the prize photographs, two for distribution amongst members of the Society, and the exhibitors will be required to give up the negatives of these pictures to the Society, or to enter into reasonable arrangements with the Committee for the printing of the necessary number of copies.
- X. An admission-fee of 8 annas shall be charged to visitors of the Exhibition on Mondays.

The following prizes will be awarded, viz.:—

By HIS EXCELLENCY THE VICEROY.

Prize A.—Gold Medal.—For the best single photograph in the room. *Open to all Comers.* This picture is to be chosen first by the

Judges, and then to be excluded from competition for any other prize.

By THE HONORABLE THE LIEUT.-GOVERNOR OF BENGAL.

Prize B.—A Gold Medal.—For the best series of at least six photographic pictures taken either in or out of India by any member of the Society not being a photographer by profession.

By THE SOCIETY.

Prize C.—A Gold Medal.—For the best series of at least six landscapes taken and printed in India. *Open to all Comers.*

Prize D.—A Silver Medal.—For the best series of at least six portraits taken and printed in India. *Open to all Comers.*

Prize E.—A Silver Medal.—For the best series of at least six photographic pictures, landscapes or portraits taken either in or out of India by any member of the Society not being a photographer by profession, to be selected by the Judges from those for which no other prize shall have been awarded at the Exhibition.

Prize F.—A Bronze Medal.—For the second best series, after E, of at least six photographic pictures, landscapes, or portraits, taken either in or out of India by any member of the Society not being a photographer by profession, to be selected by the Judges from those for which no other prize shall have been awarded at the exhibition.

Prize G.—A Silver Medal.—For the best series of at least six photographs of Indian subjects, exclusive of antiquities, taken by any member of the Society who is not a photographer by profession.

Prize H.—A Silver Medal.—For the best series of at least twelve photographic pictures (or stereograms) of Indian antiquities, taken by any member of the Society who is not a photographer by profession.

By THE PRESIDENT.

Prize I.—A Gold Medal.—For the best series of at least six photographic pictures taken in Europe, excepting those, if any, for which the Lieutenant-Governor's prize has been awarded. *Open to all Comers.*

Prize J.—A Silver Medal.—For the best series of at least six photographs of young children. *Open to all Comers.*

By LIEUT. J. WATERHOUSE.

Prize K.—A Silver Medal.—For the best series of at least six photographs—reproductions of works of art—not smaller than eight by ten. *Open to all Comers.*

By THE HONORARY SECRETARY.

Prize L.—A Silver Medal.—For the best series of at least six photographs printed in permanent pigments, inclusive of photolithographs and photo-engravings. *Open to all Comers.*

AMERICAN CORRESPONDENCE.

BACKGROUND EFFECTS—EDUCATED PHOTOGRAPHERS—NAME-SAKE OF THE VICTORIA CARD—BURNT-IN PHOTOGRAPHS.

Background Effects.—As the background effect in the picture which accompanied the July issue of the *Philadelphia Photographer* seems to have attracted your attention, I will give you a few hints as to the way in which it was produced. I have noticed your editorial on the subject in the *News* of July 21st, and what you suggest concerning the use of transparent ruled paper; moreover, our mutual friend and correspondent, Mr. H. P. Robinson, has favoured me with an example done in that way. I find, however, that the lines are foggy and blurred in appearance, and that the pores and marks in the paper used give the actual tint a granulated appearance which is not pleasing. Take a finely and regularly ruled sheet, make a negative of it, and use it in printing the borders of your pictures, instead of the transparent glass commonly used to give the background tint, in what we call the "cut-out" or "medallion" style, and you have the whole thing. By a regularly ruled one I mean evenly ruled. The space between the lines varies from wide to narrow, the deepest being, say, one-thirtieth of an inch. The difficulty is to get a sheet with regularly ruled lines to make the negative from. It is impossible to do it with the hand, so we employ the services of a ruling machine. There are fabrics in the market, however—such as the striped linen shirtings much used here—which will answer every purpose. Once in possession of a thin negative of the above description there is no end to the designs you can secure. Watered silk, machine and geometrical engraving, &c., may be imitated in the finest style, and in such great variety that there is no end to it, for you cannot, except by mere accident, produce two tints exactly alike.

Now for the way to do it. Let us suppose you have the properly made lined negative, or negative of lines. The figure being first printed and properly masked, the striped negative is laid upon the print, and the background tint is made precisely as in Mr. Gihon's picture already alluded to. Now, without disturbing the mask, carefully shift your ruled negative to the right, to the left, up or down, according to its original position, diagonally or otherwise, and note the effect. [The different effects may be seen by merely manipulating the ruled negative over a print with the background printed as in the picture alluded to.] You will see that it will not appear twice alike. The lines will cross or recross at all sorts of angles, or be multiplied according to the motion of the hands in printing. The most beautiful effects are secured in this way, some of which I enclose you, made by Mr. Geo. H. Fennemore, of this city. This style was exhibited in the late exhibition by Mr. E. J. Voss, of Boston, who has, I am told, applied for a patent for the idea. I think it will be found the prettiest way of proceeding. If designs of wall papers are used, they are apt to be obtrusive, and to be used to excess.

The ordinary printing frame cannot well be used in these chromotropic effects. The easiest way is to use a sheet of glass to lay the print upon, clamping it to the lined negative with clothes clips. The oval mask is simply laid over the figure, and care should be taken not to move it when shifting the negative. When the tint is not double printed—*i. e.*, when only straight lines are used—then the ordinary printing frame can be used.

I enclose you a print by Mr. Carbutt, from one of Mr. Sandy's negatives, with a background effect which is quite pretty. It was gotten by using a piece of thin cotton fabric—the design of which you see—as the medium through which to print the border. There is no end to the effects which can be got in this way either. Mr. Gihon tells his story in a paper on "Ornamental Printing," which I enclose, and which you may think well enough of to print.

Educated Photographers.—Without wishing to appear to your readers in the character of a lecturer or a common scold, allow me to make a few remarks on this important subject. Feeling is what we want in and for our art, and it is promoted by education. A few words, then, with your uneducated photographers.

The report of the U. S. Commissioner of Education for 1870 contains, together with much other valuable matter, some inquiries touching the relations of education to labour, and the replies thereto from representatives of almost every industrial interest in the country. I have been much interested in the answers thus given by Allen Coffin, Esq., printer, of Washington. In response to the question "Have you, as a working man, observed a difference in the skill, aptitude, or amount of work executed by persons, arising from a difference in their education, and independent of their natural ability?" he said that he had noticed a difference, and that it was in favour of educated mechanics or labourers. He proceeded to say that there is a marked difference in the value of the labour of two men, one of whom can read and write, while the other cannot; that the man who can tell the time by the clock is worth more than one who cannot.

In printing a book on the subject of geology, he said, printers who have studied the subject, and are familiar with the terms employed in treating it, will accomplish a given amount of work in four-fifths of the time occupied by those who are wholly ignorant of the science.

Even uneducated employers, Mr. Coffin said, would prefer to employ persons who had received a common school education, rather than those who had not. Persons of education were much to be preferred in positions of trust, as foremen, &c.

In answer to a question as to the effect of education and mental culture upon the personal and social habits of working men, Mr. Coffin said, very pertinently, in substance, as follows:—That mental culture creates wants which the uneducated know nothing of; that it is these wants which

refine and beautify life; that educated working men live in better houses, wear better clothes, and eat better food than their uneducated fellows; have more virtues and fewer vices than these, and by thus making themselves singular or conspicuous, inevitably acquire predominance over and leadership among their less cultivated comrades.

I desire to call the particular attention of those whom "the shoe fits," to the lines which I have italicized. Just as a printer is better in proportion to the information he has in matters pertaining to his profession, so, undoubtedly, is a photographer bettered by being well informed on all matters pertaining to his growing art. A knowledge of geology, we are told, enables a compositor to "set up" a work on geology in less time than one who has not that knowledge, and more correctly. He, therefore, makes the best wages earned in his profession. So a knowledge of chemistry in photography enables the manipulator in the dark room to produce more excellent results quickly and uniformly. So a knowledge of light and shade, position and composition, enable the artist to make the best of pictures, quickly and uniformly; and if quickly and uniformly, then the flow of hard cash to his coffers is naturally quick and uniform. The best informed photographer is the best photographer, and commands the highest remuneration.

Then, may I not safely say, photographers, educate yourselves? Read and practise. There are those who have gone over the ground before you, whose thoughts are recorded in black and white for your good. Lay hold, plunge deep, and grasp all you can get. It will be capital invested which will render you splendid dividends as long as you follow your profession. The standard of education among photographers on matters pertaining directly to their profession has not been of the highest order, but it is gradually growing upward. The successful photographer of the future will be the educated photographer. Believe me, it is so.

The Namesake of the "Victoria" Card.—I observe that the very pretty little portrait which originated with one of my correspondents in this country is receiving all sorts of names. In Germany it is called the "Elizabeth," in Italy something else, and in America and England the Victoria. In England, I imagine, you like the name, supposing it to be after your beloved queen. With us, we like it (or not) because it bears the name of a nominee, by the Woman's Rights Party, for the presidency; namely, Mrs. Victoria C. Woodhull. At least, such is the jocular assertion of the craft here. At present the photograph has a fairer chance of success than has the fair nominee.

Burnt-in Photographs.—Mr. Fennemore has been for several months engaged in perfecting a process for the production of burnt-in enamel pictures, and has succeeded beyond his most sanguine expectations. I have a number of examples by Camarsac, so I am able to compare them, and I have no hesitation in saying that Mr. Fennemore's results are fully equal to them. In some respects they are better, for Mr. Fennemore seems to have the tone of the picture entirely under control, securing a rich black or a warm chocolate tone, according to the exactions of the subject.—Truly yours,
EDWARD L. WILSON.

Philadelphia, August, 15th, 1871.

VISITS TO REMARKABLE STUDIOS.

[BY OUR OWN CORRESPONDENT.]

LÆSCHER AND PETSCH'S STUDIO IN BERLIN.

It is rare that a photographer designs his own studio, or, if he does, it is rarer still that he is able to carry out his cherished ideas in every particular. As a general rule, if he does build his glass house, the same has to be constructed upon the roof of, or at some inconvenient angle of, an ordinary habitation; and if successful, the result is due more to accident than design, for the poor photographer is, in all likelihood, restricted by circumstances both material and immaterial. But the reason why most

studios are unsuitable for the purposes of photography is simply because the designers thereof are inexperienced in matters photographic, and instead of first acquiring some proficiency in the art, at once set about the construction of a glass house in the same way pretty well as they would put together a cucumber frame. There are scarcely half a dozen studios that I know of in England that have been erected by well qualified photographers according to their own particular design, and without being fettered in any way as regards site, dimensions, and direction of lighting; and the most original of these is perhaps the little studio of Mr. Mayall, which, if I remember rightly, was built in London, and set up in Windsor Park within a week, for the purpose of photographing the Princess Alexandra prior to her marriage.

The studio of Messrs. Loescher and Petsch, of Berlin, is of very recent construction, and forms one of the rare examples which have been built in the best and most suitable manner. In the first place, it is situated on the ground floor, and this, if not of great importance to the photographer, is a mighty boon to all sitters. The construction and fitting of the studio alone is said to have amounted to six thousand thalers (or, in other words, nine hundred pounds), and this for a simple glass room is certainly a notable sum. The site of the studio is one of the principal streets of Berlin, the Leipziger Strasse, and the rent, therefore, must be a considerable item, so that, altogether, this renowned Berlin firm must carry on an exceedingly good business, to be in a position even to pay current expenses.

It is, however, something more than a handsome studio and aristocratic site that is required to produce good pictures. The name of Loescher and Petsch is now known almost as well as that of Reutlinger, for their production of charming portraits, and the shop windows even of English provincial towns bear testimony to the eminence of the Berlin firm, whose publishing trade must, indeed, be rather extensive. The soft and rounded little carte portraits, whether of beautiful dames or of victorious warriors, are to be seen everywhere, and command in general a superior price.

My visit to the studio was timed somewhat unfortunately, inasmuch as both of the principals were absent, although their place was very ably filled by M. Hartmann, the principal operator, I believe, and secretary of the Society for the Advancement of Photography. I may mention, by the way, that M. Petsch has but recently returned to Berlin from Metz, where he has been soldiering for the last nine months. He was posted to the Kummer Brigade, the corps, it will be remembered, which had the duty of watching Metz during its investment, and which, during the continued outbreaks of the garrison, experienced some very heavy losses. Fortunately for M. Petsch, he was absent on a foraging expedition at the time of the final bloody outbreak; but, nevertheless, I am told he witnessed a good deal of service, and assisted at several fierce encounters. Now he has laid aside helmet and needlegun, and has once more assumed the garb of a peace loving citizen.

M. Hartmann, who was good enough to show me the establishment, is an accomplished painter and very skilful retoucher, and herein probably lies much of the secret of success. Retouching now-a-days is an indispensable adjunct to photography, for the public, generally speaking, are not averse to any amount of flattery. Moreover, a bolder and more vigorous photograph may often be secured, if the operator knows the negative will pass through the hands of a retoucher, for in that case the plate need not be ever exposed with a view of rendering freckles and other skin defects less apparent. The retouching is, for the most part, carried out with pencil, and the skill and rapidity with which the defects are remedied is really marvellous. "As a rule," says M. Hartmann, "we retouch every negative that is taken, for there is

seldom one that cannot be slightly improved in this manner." The larger portraits are all covered with a preliminary coating before retouching, and then varnished; but cartes-de-visite are generally retouched upon the varnish itself, as this way of proceeding is quite good enough for the purpose. The dark rooms, which are sufficiently spacious, are near the retouching room, and, of course, close to the studio. There was little of novelty to be remarked therein, and at the time of my visit the operations of the day were over. One little thing, however, took my fancy: it was a lamp provided with a square glass pillar, of which the four sides presented four different tints of non-actinic colour, so that during development the power of the light might be governed with the greatest nicety by merely turning round the square glass screen.

The construction and particulars regarding the glass room itself were fully described last year in the photographic journals, but I may be allowed to refer again to the method adopted of shutting out the light. The whole of the roof and of one side of the studio may be uncovered altogether if necessary. A system of blinds consisting of narrow oblong frames, upon which painted canvas is stretched, run up the sides and along the roof, fitting into one another like scales, for when one has been pulled up to its full extent, a sort of nose at the bottom hooks up the next blind, which in a similar manner raises its successor. Owing to the lightness of the blinds and the simplicity of the arrangement, the ropes are pulled with the greatest facility,—with such ease, indeed, that at first one imagines there must be springs to assist the movement.

For the first time I saw in the studio one of Kurtz's saucer backgrounds. It was a large saucer-shaped vessel of iron, measuring some five feet in diameter, and capable, therefore, of being used either for bust or three-quarter pictures. The machine was a somewhat ponderous affair, and was so hung as to be capable of being tilted or swerved round to any degree in order to throw various gradations of shadow, and reminded one very forcibly of a Dutch oven before which a joint is placed for roasting. M. Hartmann appeared well satisfied with its capabilities, and stated that lately the majority of vignette pictures were executed by its means.

The studio is open to the public between the hours of nine and two only, so that the pictures are taken during the best part of the day, and, moreover, the working staff are never taxed beyond their capabilities. This is a rule which I think might be adopted very extensively by photographers, and one which, I believe, the public would not be unwilling to fall in with, for it is only too true that the more one has to pay, or the more trouble to be undergone to obtain an object, the more the same is undoubtedly valued. After three o'clock there is, of course, much to be done by the employés of the establishment, but the fact that the public cease to arrive after that hour removes, of course, a good deal of pressure. So perfect is the system of blinds, that portraits may be taken from both ends of the studio, although, as may be imagined, there is always one end which is the better. The large head carte-de-visite is, perhaps, the favourite style just now, but, as M. Hartmann remarked, the model ought to possess good features to render this style a perfect success. Unfortunately, the sitter will not always take the advice of the photographer, and for this reason one often sees some very sad models depicted in this style. Obviously, these bomb-headed cartes, as M. Grasshoff has very aptly styled them, incur more labour and trouble in their execution, and for this reason command a higher price. Four thalers or (twelve shillings) per dozen is the charge, while for ordinary cartes nine shillings is deemed sufficient. Thus it will be seen that in Berlin the charges are in truth very moderate, for some of the better class studios actually charge but six shillings (or two thalers) for the dozen cartes, and this, too, when a very respectable rental has to be paid

The Adam-Salomon or larger Blanchard style of portrait does not seem to have taken root in Berlin, although the desire to take photographs generally of more notable dimensions was expressed both by M. Grasshoff and M. Hartmann, if the demand for these was forthcoming. It was the same, I afterwards found, in Brussels; the two leading photographers in that city, MM. Ghemar and Geruzet, still remaining content with the execution of cartes and cabinets. In the last two instances, indeed, I did not even remark any of the fashionable bomb-headed

cartes. However, as MM. Loescher and Petsch possess a very flourishing business as it is, there is, of course, no necessity for pushing forward any new styles of portraiture. These gentlemen prove very plainly that there is nothing so successful as success, and that the latter is well merited any of the portraits produced by the firm in the ordinary way of business distinctly show. Indeed, within five minutes of entering the studio and of intercourse with M. Hartmann, it was very clear how the high character of the portraits was secured: the large roomy studio, the skilful management of the blinds, the orderly manner of disposing of the apparatus, the arrangement of the backgrounds, and last, but not least, the systematic method adopted for retouching, all pointed in the one and the proper direction.

SELENOGRAPHY.

BY E. P. OGIER.

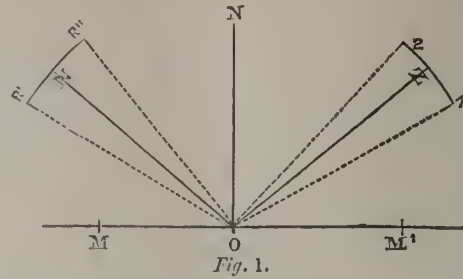
In order to produce a photographic image exclusively by means of lunar light, it is desirable to concentrate upon the sensitive plate the maximum intensity of the luminous rays from the moon, and likewise to obtain all reflected rays possible; to resolve these two problems I proceed as follows:—

The rays of the moon being, like those from all other luminous bodies, of a divergent character, it would be necessary, if but an image of the same only were required, to place the camera in such a manner that the moon falls in the axis of the lens upon the centre of the sensitive plate, the latter forming a right angle with the luminous rays. But as the object to be fulfilled is in my case to obtain, moreover, a terrestrial landscape with all its picturesque form, we must go to work differently, and introduce a reflecting mirror, so as to compensate, by an augmentation of light, the loss experienced by lowering the axis of the lens, and in reproducing the object with less illumination.

Every reflecting surface absorbs a certain amount of the light; another portion is diffused, and a third part lost in the depths of the reflecting medium; while, lastly, the remainder is reflected according to a certain law, and the more acute the angle of incidence, the more intense will be this reflection. Theoretically, a mirror of white glass with a well polished surface, and silvered on the under side, is the reflecting medium that throws back the maximum of intensity of reflected rays. As it is impossible for the experimenter to make use of a similar surface, the mirror represented by a lake or by the sea may be made practical use of in this direction; and although the surface of liquids absorbs more light than a polished surface, by virtue of its transparent nature, this loss is compensated for by the extent of the mirrors afforded by these objects when the horizon is not very limited. For this reason I have taken the sea as my reflector, but I cannot help thinking that the lakes of Scotland, or districts where the landscape is covered with snow, would be preferable even to an expanse of sea; the brilliancy of the moon being greater as one advances towards the poles, one would obtain a more intense image by experimenting farther to the north.

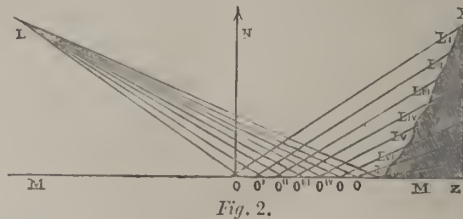
Given a luminous ray, $R'O$, the ray reflected being $O'R$, the angles $RO M'$, $R'O M$, formed with the line of the

sea, $M M'$, and the angles $RO N$, $R'O N$, formed with the normal N , will always be in the same plane; consequently it is necessary to place the sensitive plate in the plane of the angle of incidence if the pose is to be instantaneous.



If, on the contrary, the exposure is a long one, the earth turns round, the moon rises and traces upon the film a curve varying in length with the duration of the pose; so that, in order that the lens always remains in the plane of incidence, it would be necessary to construct a moveable instrument with certain combinations which would permit one to obtain a round image of the moon. In this case, however, the landscape would be destroyed, for the instrument could not at the same time take an image of the moon by a motive arrangement, and also a fixed one of the earth. Fortunately, photography does not require astronomical accuracy, therefore it is sufficient for practical purposes to obtain a curved figure and to place the lens in the plane $Z'O N$, $N O Z$. To fix upon this plane, it is necessary to have made a preliminary study of the necessary time of exposure for $R'' R'$. Having placed the lens in what I would call a medium plane, it is necessary to fix upon the elevation most suitable of the maximum light.

The moon sends out its rays simultaneously on all sides; the light proceeding only in a straight line through homogeneous mediums, the direct rays of the moon are refracted in space, as are also the reflected rays, according to inverse laws. Nevertheless, for the observer, as also for the exterior surface of the lens, the luminous rays may be regarded as proceeding in a straight line, and the angle of incidence being equal to the angle of reflection, it follows that during the progressive ascension of the moon above the horizon the lens must be proportionably elevated. Therefore it is necessary to discover on the sea shore a suitable height rising as perpendicularly as possible, for the longer is the line $L'O$, $L''O$, $L'''O$, the more the luminous rays lose their activity, in virtue of the law that



reflected light loses its intensity in proportion to the square of distance. It is necessary, therefore, to place the lens not at $L' l''$, but at $L' L'' L'''$, in close approximation to the sea.

Let $M M'$ be the reflecting surface of the sea; O the extreme point of the visible horizon; $L O$ the ray of incidence, and $M X Z$ an elevation on the sea shore. The ray $L O$ will be reflected $O L'$. If $O L'$ was the most powerful reflected ray, the lens ought then to be placed at L' : but as the rays $L O'$, $L O''$, $L O'''$, &c., are more active according as the angle of incidence is more acute, it is necessary to obtain them more directly, and, therefore, to lower the position of the lens. To fix the precise point, a medium should be taken on the line $O M'$, say between

O^{'''} and O^{'''}, and the lens placed at A, so that as the moon rises above the horizon, the point A will be proportionately raised.

Practically, it is well to conform to the exigencies of the instrument, for from the moment that the scientific inductions come to an end, the operator must be guided by his instrument in all details. The best adapted to the purpose is one with a short focus and great diameter, as it gives always more illumination and more rapidity.

M. Ogier concludes his remarks with some rules for the guidance of practical photographers, and enumerates the description of lens, collodion, and developing solutions, which he has found suitable for this description of work. The experiments were prosecuted, we believe, on the island of Jersey.

ON THE CHANGE OF COLOUR PRODUCED IN CERTAIN CHEMICAL COMPOUNDS BY HEAT.

BY PROF. EDWIN J. HOUSTON.*

ORANGES.—*Bi-Sulphide of Arsenic*.—*Realgar*.—Colour, when pulverized, orange-red; changes to red, dark-red and brown; returns readily.

Protoxide of Mercury.—*Red Precipitate*.—Colour, orange-red; changes to red, dark red and brownish-red.

Iodide of Lead.—Colour, orange; changes to darker orange, orange-red and red.

Oxalate of the Protoxide of Iron.—Colour, light orange; darkens. In this case the heat must be quite low, as the substance is readily decomposed.

YELLOWS.—*Chromate of Lead*.—Colour, yellowish-orange; changes to orange, orange-red and deep orange-red.

Sub-Sulphate of Mercury.—*Turpith Mineral*.—Colour, yellow; changes to orange-yellow, orange and orange-red.

Chromate of Baryta.—Colour, yellow; changes to orange-yellow.

Bi-Sulphide of Tin.—*Mosaic Gold*.—Colour, brownish orange-yellow; changes to a dark red very nearly approaching a black; quite sensitive.

Ter-Sulphide of Arsenic.—*Yellow Orpiment*.—Colour, orange-yellow; changes to deep orange yellow, yellow, orange-red and red.

GREENS.—*Sub-Iodide of Silver*.—Colour, greenish-yellow; very sensitive; changes first to an orange-yellow, and then to a deep orange.

Sub-Iodide of Mercury.—*Green Iodide*.—Colour, yellowish-green; more sensitive than the preceding; changes to a yellowish-green, and then successively to an orange-green, reddish-orange, red, and brownish-red. These changes succeed each other very rapidly. They may be best observed by heating at once up to the brownish-red, and noting the changes of colour that occur as the body cools.

In all the above cases the original colour is fully regained on cooling.

The substances named are by no means all that have been observed to come under the law. Quite a number of other compounds have been noticed; but none of them are as sensitive as those already mentioned. In no case, however, has any compound been found of the colour of blue, indigo, or violet, that, in the solid state, undergoes any decided change whatever on the application of a temperature short of that producing either a decomposition, or a permanent change in the arrangement of its molecules. Nor is this fact contrary to what might be expected. Near the heat end of the spectrum, where the difference between the light and heat vibrations is not so great, we might reasonably expect the particles of a solid to be influenced by each, and to accept a motion which should be a mean of the two; but when we get as far in the spectrum as the blue or indigo, the greatest heat that we can intermingle with the blue or indigo, even if pushed to the point of incandescence, would but dull red. Now long before this temperature is

reached, most bodies would undergo decomposition, and were this not the case, even then, we could hardly expect the particles of a solid, trammelled as they are in their freedom of motion by the force of cohesion, to accept a mean of two kinds of vibrations which differ so greatly in their wave lengths. Still it must be borne in mind that solids differ very greatly from each other in the freedom of motion of their molecules, and it is not improbable that a number of solids as high in the scale of colour as the blues, indigos, or violets, may eventually be found conforming to the law.

A few very significant facts were noticed in this connection in the case of two pure white substances, viz., the oxides of zinc and of tin; their behaviour is as follows:—

Oxide of Zinc.—*Nihil Album*.—Colour, white; changes on the application of heat to a scarcely perceptible bluish-white, green and yellowish-green. Does not entirely return on cooling, though it resumes nearly its original colour.

Oxide of Tin.—Colour, white. Here the range is more remarkable. It changes first to a pale green, then to a decided yellowish-green, and even runs as far down the scale as orange and reddish-orange; returns on cooling to a greenish-white.

These two substances have not been included in the regular list of solids, as they fall somewhat short of the conditions of the original experiment. They conform sufficiently to it, however, to call attention to their behaviour.

Experiments were also made on solutions of various solids. As a general rule, it has been found that a substance in solution is more sensitive to the action of heat than when in the solid state. This, indeed, should be so, as the action of the solvent is simply, by its adhesion for the solid, to separate it into very small particles, and to give them much greater freedom of motion. Solids in solution have been found, as high in the scale as the violet, which conform perfectly to the law.

These experiments were conducted as follows:—The solution was made of the required strength, and then divided between two thin glass test-tubes of the same size and thickness. They were then held, side by side, between the eye and the light, and carefully compared by transmitted light. If any difference in tint was observed, the solutions were poured together and again thoroughly mixed. If any difference still existed on again dividing them between the two test tubes, one of the tubes was rejected as differing in thickness or colour from the other, and replaced by another until exactly the same tint was obtained. It will readily be seen that these precautions were necessary, in order that the results obtained should not be equivocal. One of the solutions was heated in a Bunsen burner, and the change carefully noted by comparison from time to time. Of course the highest temperature was limited to the boiling point of the solution under the pressure of the atmosphere. In many cases, however, decided changes were observed long before even this point was reached. No experiments were tried on temperatures obtained by boiling under high pressures in confined glass vessels, though there is every reason to believe that by these means splendid results would be obtained. It is purposed, if time allows, to pursue the investigation in this direction at some future day.

Of course, in all cases where the colour did not entirely reappear on cooling, the experiment was rejected.

The solvent used was water. As the colour of a solid in solution varies with the strength of the solution, it will be understood that in all cases the amount of solid dissolved was that requisite to produce the tint described.

The following are among the most sensitive substances noticed:—

REDS.—*Rose Aniline*.—Solution of a strength sufficient to produce a decided red; darkens perceptibly on the application of a boiling heat.

Decoction of Logwood.—Solution of a deep red; darkens on the application of heat.

* Continued from p. 402.

Chloride of Cobalt.—Colour of solution, pinkish red; changes to a darker pinkish red.

Sesqui-Sulphate of Iron.—Colour of solution, light red; changes to brownish-red.

(To be continued.)

REPORT ON PHOTOGRAPHY IN THE INTERNATIONAL EXHIBITION OF 1871.

BY LIEUTENANT-COLONEL STUART WORTLEY.*

WE will now proceed to the consideration of the Woodburytype process, the invention of Mr. W. B. Woodbury, who exhibits a series of pictures printed by his method. This process is founded, as was the last, on the property of gelatine, when mixed with a bichromate, to become insoluble under the action of light; and its manipulation is carried on in the following manner:—A mixture of gelatine and bichromate of potash, with the admixture of a small quantity of Indian ink, is prepared in the form of a thin sheet, and when dry is exposed to the action of light through a negative. It is then taken from the negative and attached to a plate of glass by means of a coating of india-rubber. This is placed in warm water until the solution of the gelatine, in all parts where the light has not acted, is complete. When dry the gelatine sheet is removed from the glass, and the image is seen upon it in relief, the shadows being the thickest, and the lights the most attenuated. A printing block is now obtained from this gelatine relief by placing it in perfect contact with a soft metal plate. The two plates in contact are then placed in a hydraulic press, under powerful pressure, and the details of the gelatine-relief are thus impressed into the metal. It is a remarkable thing that the gelatine film is in no way affected by this great pressure, and may be again used to impress other metal plates. The metal plate which is to serve as the matrix for future printing operations is, when slightly oiled, placed in a small printing press, some ink composed of water-colour ground up in gelatine is poured on its centre, a piece of paper is laid on this, the press closed, and when, after the lapse of about a minute, the press is again opened, the ink will be found to have set, and the print ready to be removed from the press. The prints are then soaked in a solution of alum, in order to render the gelatine completely insoluble, and are then dried and mounted as ordinary prints. It will be noted that the principle involved in this process is that the coloured ink which is poured upon the matrix, and afterwards forcibly squeezed between it and the paper, remains in large quantity in the depressions of the mould, thus constituting the shadows of the print, while the high lights, being in strong relief on the matrix, remain almost free from any of the gelatinous ink.

The specimens exhibited will repay a most attentive examination, and I have little doubt but that this process will be largely used in future photographic operations.

One example of a new engraving process (No. 3351) is also exhibited by Mr. Woodbury. In this process an artificial grain is introduced into the relief which forms an ink-holding ground, this grain being transferred to metal by the same means as before mentioned; from the soft metal used to obtain the grain from the relief an electrotype impression is taken, which, being steel-surfaced, will allow the taking off of a very large number of impressions from one plate. The subject exhibited as being printed by this new process appears to be full of promise.

The next subject I refer to is the heliotype process of Mr. Ernest Edwards, the results of which are exhibited in a considerable number of frames. In this process, while the action of light on bichromated gelatine is still an important feature, a small quantity of chrome alum is added to the mixture, in order to give the gelatine film that consistency

which, in this process, it requires, as it is from the gelatine film direct that the prints are taken in heliotype.

The surface of a glass plate having been slightly rubbed over with wax, the gelatine mixture is poured over it in such quantity as to form a film of tolerable thickness; when dry, the wax that was on the glass plate permits the film to be easily detached, and it is then exposed to light through a photographic negative. Removed from the negative, the next step is to attach it to the support on which it is to remain while prints are taken from it. This support consists of a metal plate, and perfect junction between the two is obtained under water. The plate bearing the film is then soaked in water to remove the superfluous bichromate, so that light may have no further effect on it, and the film supported on the metal plate is then ready for the printing press. In the heliotype process neither the scraping pressure of a lithographic press nor the rolling pressure of a copper-plate press is found to answer; and simple vertical pressure, such as is obtained in an ordinary Albion printing press, is the means Mr. Edwards uses for the production of his prints. The plate, on which a paper is laid, is inked by means of an inking roller, and pressure then transfers the ink to the paper. But in doing this, Mr. Ernest Edwards has succeeded in overcoming the difficulties which are caused by the use of ink of one thickness only. If a stiff ink only is used to produce these prints, it will adhere only to the deepest shadows; while if a thin ink is used, it will do justice to the half tones and lights of the print, but the darker shadows will be weak and devoid of force. Mr. Edwards, then, to overcome this, uses inks of various thicknesses, and having first used a stiff ink for the shadows, re-inks the plate with a thinner ink, in order that the lights and half tones may be properly rendered. As these inks may be of varying shades of colour, it will be readily understood the power which Mr. Edwards obtains by this method of inking his plate. Many excellent specimens of this process are exhibited by Messrs. Edwards and Kidd, and a close examination of their various works will repay anyone interested in the different processes of mechanical printing.

In the above descriptions of the three processes with which the future of photography appears to be most bound up, I have endeavoured, as far as possible, to give a plain and simple explanation of the means used to obtain the various results, avoiding to the utmost the use of unnecessary technicalities, which would be uninteresting to the public at large. The enamel process, by Mr. Henderson, and the Dallastype, by Mr. J. W. Dallas, are both represented by good results, but in neither of these cases has the process been so widely applied as to render it necessary for me to enter into the details of manipulation.

Of novelties in photographic printing in the foreign department I only notice two—the specimens of Maes, of Belgium, entitled Phototype, and the process of Captain Haannot, of the same country, entitled Heliogravure. No description has been published, and the results appear to be inferior to processes of an analogous nature shown by English exhibitors, and which I have described above.

In order to guide the visitor to the Exhibition to such photographs as will most worthily repay examination, I will briefly call attention to the most remarkable of the works exhibited.

Following the order of the Catalogue, I notice first some delicate paintings on porcelain by Mr. A. Debenham; while Captain Paget and Lieut. Abney show some interiors of the Chateau de Pau, in which the difficulties of photographing such subjects have been well got over. Mr. Diston exhibits some good combination photographs, and he bids fair to take a high position in this special line. Mr. Stelitsky, a Hungarian exhibitor, shows a good frame of studies, entitled Chromo-photographs; and some of Mr. Disderi's coloured photographs are also worthy of notice. J. Borsass, Goudy, and Egoy, and J. Schreckler, all foreign

* Continued from page 403.

exhibitors, show good work; and Captain Lyon's Indian photographs are of great interest.

Mr. J. Hubbard displays three art studies, entitled respectively "Preparing for Dinner," "Pensive Thoughts," and the "The Toilette." This exhibitor is well known for excellent work in this special line. The artistic choice of subject, and care with which the details of the composition are carried out, render these pictures among the most attractive in the Exhibition. Mr. F. C. Earl exhibits some noticeable work; and his composition picture "In Memoriam," and his large landscape of Ladr Valley, are among the best works in the present Exhibition. Mr. R. Slingsby shows some remarkably fine large portraits, and I call attention to No. 3538, by this artist, as the finest photographic portrait in this department. The pictures of Messrs. Robinson and Cherrill are so excellent as to hardly require any eulogy at my hands, but I must call attention to the perfect manner in which breaking and broken water is depicted in many of their pictures, and to the great value the study of such subjects ought to be to artists.

Mr. Rejlander shows humour in an effective photograph entitled "A Sweep and his Wife;" and the six pictures by Mr. Valentine Blanchard are specimens of good photographic manipulation. Mr. R. Faulkner shows some frames of instantaneous portraits of children, which are among the prettiest photographs exhibited. Mr. W. Brooks's photographs are of good quality; and three pictures by Mr. B. Greene are remarkable for well-chosen subject and good manipulation.

Mr. A. L. Henderson's enamel photographs are excellent, and their undoubted durability imparts to them great value.

The London Stereoscopic Company exhibit three very good frames of portraits; and Messrs. Hennah and Kent's three portraits are noticeable for good work. Mrs. Cameron exhibits nine pictures, and the artistic handling of the subjects she has selected is remarkable; and the Hon. Roland Leslie Melville's art studies in a somewhat similar style will attract universal attention. Mrs. Cowper shows some excellent reproductions of pictures; and Mr. Wm. England's three frames of views in Switzerland, Savoy, and Italy, are the perfection of landscape photography.

Herr Loewy and Herr Rabending, both Austrian exhibitors, show various portrait studies of great excellence; and F. Lenckhart, of the same country, has some good pictures entitled photographs of costumes.

An interesting collection of photographs has been sent from the Madras School of Arts, and various other Indian photographs are exhibited which will repay examination. I must call attention to the beautiful coloured photographs exhibited by Messrs. Lock and Whitfield, which are hung in the passage at the south end of the Exhibition building.

In conclusion, while I may say that the collection of photographs is an excellent one, I trust in future years that more novelty will be shown in the various works sent in for exhibition, and the public be thereby led to feel increased interest in the display.

ARTISTIC AND ORNAMENTAL PRINTING.

BY JOHN L. GIBON.*

WHERE an effort is made to improve the character of the photograph produced from an ordinary negative, such process ceases to be purely mechanical in its nature, and the means by which superior effects can be obtained deserve to be studied by us with the closest attention. There have been very many able men who have worked faithfully and well to improve our methods of printing, but their labours have been mostly confined to the invention or perfection of formulæ, with the view of securing economy of material or ease of manipulation.

There has been comparatively little said of the artificial means which in skilful hands have already produced photographs that rank high in pictorial excellence. It is a mistaken idea to suppose that a print is cutively finished, as far as the action of sunlight is concerned, when you remove it from the frame, and find that everything has worked in admirable chemical order. Before you immerse it in water or commence your toning operations, can you not often see how that picture can possibly be improved, and do you not sometimes have the means readily at your disposal? Obtrusive parts can be subdued, a flat background can be beautifully graduated, and imperfections reproduced from the negative can often be hidden by the further use of that wondrous agent, "sunshine." Can we not cover over a portion of our print with shields, protecting such parts from further action of light; and can we not, by the aid of variously shaped boards, make such exquisitely graded shadows as would defy imitation by any other means of production?

Again, are we not able to extend our sphere of action, and, ceasing to accept it as a law that one negative will make but one description of picture, can we not use several plates, and combining the utility of each, can we not produce photographs that not only puzzle the uninitiated, but cause the thinking and intelligent workman to study and to admire? The most simple and easily understood form of composition printing is that used in the manufacture of the very popular and pleasing style of cut-out photographs. This is generally confined to the cabinet or imperial and the carte-de-visite size, although it is equally available for any larger work. As an usual thing, the entire effect can be described as a portrait, limited to the head and shoulders only, with either a very light or a very dark background, the combination oval in form, and then surrounded with a flat tint, contrasted from the central oval by its difference of shade. These pictures are so thoroughly different in character from the ordinary vignette that ourselves and the public have been so long accustomed to, that the latter accepted them as a novelty, and it is now my own experience that they have almost superseded all other styles, where no more of the figure is displayed. In this, as in every other class of handicraft, careful workmanship is necessary for successful results. I have been shown such abominable attempts at the production of this really simple effect, that I have often wondered that men could carry on a business of which they proved themselves so ignorant, and still more that patrons could be found in sufficient number to give them encouragement. One of the most conspicuous faults is that the ovals are so frequently badly cut. They are not only misshapen, but are generally unsightly, by being marked with ragged, uneven edges.

Again, the inside and outside shields rarely seem to fit, and we have either or both a broken line of light or shadow, interfering with whatever harmony of shade might otherwise have remained. It is true that a skilful workman, blessed with a quickly perceptive or educated eye, can frequently make use of this want of uniformity in the size of his cut-outs, and can surround his picture with a crescent of light, relieved on the opposite side with one of a dark hue, that will often produce a pleasing appearance. The objection to this is, that the light edge is almost invariably too white, and, by at once attracting our attention, interferes with the picture proper. In the July number (1871) of the *Philadelphia Photographer*, our firm was represented by an edition of the cut-out style. Since then I have received several communications from different portions of the country, and the editor has shown me many more addressed to himself, soliciting information in relation to the peculiar effect of the ring surrounding the head, and as to the engraved appearance of the outside tint.

The first is easily produced by having the inside protector made smaller than the oval of the outside shield. The second result is obtained by using a thin negative copied from a lined or ruled surface, instead of covering your pic-

* *Philadelphia Photographer*.

ture with a transparent glass, when doing your second printing. The idea of the striped outside border suggested itself to me from the desire I had to procure such a margin that, from its difference in character, would give more value to the gently blending shadows of the face itself.

The motive influencing me, however, I am afraid has not in all cases been thoroughly understood, for I have been shown a number of imitations that, although they are highly creditable for having called into operation a deal of ingenuity, still succeed only in proving themselves to be caricatures of the original idea. Those desirous of making negatives capable of printing these borders will find some difficulty in ruling a surface sufficiently well to be successful. My former experience teaches me that it is almost impossible to accomplish it with ruler, pen and ink, or pencil. I had my own made for me, with the aid of a blank-book manufacturer's ruling machine. A very good substitute is a piece of striped muslin or linen, such as is used for shirtings. This is within the reach of all, and presents a good surface from which to copy. I most seriously object to the use of conspicuous or outlandish patterns. They commend themselves to attention at all merely by their novelty, and they are certain to be at once discarded by any one professing the slightest degree of good taste. I had purposed speaking at some length of composition printing, in relation to the production of large groups, but fear that already my prosiness has induced me to occupy too much of the space that is needed for what may be more valuable matter.

Some years ago I was the proprietor of a gallery admirably located, and unexceptionally complete in everything except one particular. The operating room was so placed that its enlargement was out of the question, and its dimensions were such that it was a matter of much difficulty to obtain sufficient distance to photograph an ordinary standing figure. My customers were of a most desirable class, and, of course, not understanding the peculiarities of the room, they often required me to produce pictures that taxed my powers to the utmost. Large groups were particularly to be dreaded. In this case, as in others, "necessity became the mother of invention." I was absolutely forced into the composition method of making pictures containing several persons. I finally became convinced of its real advantages, and now deem it the only proper manner by which you can produce an artistically arranged group. My present gallery admits of the simultaneous sitting of a large number of people, and the distance that can be obtained is equal to almost any demand made upon it; but were I called upon to execute a picture of a group, naturally posed, I should most certainly prefer to split the company into very small parties, and by after combinations trust to the formation of a photograph the limit of which no lens ever yet invented is capable of covering.

Our Canadian friends have already paid much consideration to groupings of this character, and have been highly successful in their undertakings. I should like to find more of our number working in the same direction, and will be most happy at some future time to communicate whatever items tending to facilitate the labour that my own experience has furnished me with.

THE USE OF ALBUMEN AS A SUBSTRATUM.

BY C. WAGER HULL.*

It is now quite the habit of photographers—indeed, has long been the general rule of our craft—to use albumen upon the photographic plate, generally to render fit for use the too often imperfect glass used for negative work; an easy way to make dirty glass clean.

To those who may not have used it, it may be well to state how the solution of egg is generally prepared, and how it is most commonly applied to the plate.

To one ounce of albumen, or, near enough, the white of one egg, add about twenty fluid ounces of water, and five to ten drops ammonia conc., shake thoroughly, and filter. After the plate has been passed through acidified water, well rubbed with clean rag, and washed under a faucet of running water, apply, while still wet, the albumen, by flowing as you would the collodion; avoid bubbles; dry spontaneously in a room free from dust. It was not my intention to have written directions as to preparation, but rather to write of effects, good as well as bad; however, it may be new to some, so let it pass. As a substratum, it has the advantage of affording an easy and effectual means of preparing plates for the reception of the collodion film, and of holding the same firmly in its place under almost all conditions; these are its principal advantages, probably all.

It has the very considerable drawback of interfering with the bath, making it necessary to boil, filter, or sun it more often than before, as the practice of the operator may be.

Its action upon wet and dry plates, comparatively speaking, is the point to which I wish to call special attention; more particularly to its action upon the last named dry plates.

Some years since I spoke at the meeting of the Photographic Section of the American Institute upon this point, asserting that its use for such very materially increased the time required for exposure—nearly, if not quite, doubling the same—which was disputed by all present if my memory serves me, with the single exception of Mr. L. N. Rutherford. I was so convinced at that time of the truth of my position, that I discontinued its use as a coating for plates, only using it as an edging, in which way I have continued to use it ever since with the following exceptions.

Wishing lately to prepare a few tannin plates to be used early the next morning, and not knowing of my wants until late in the evening—more than all, being lazily inclined—I coated and prepared upon my usual formula some half dozen, using plates that had been albumenized for use by the wet process. The next day I started to make the views that I desired, taking the half dozen plates along. I exposed three, giving the time usually given, some sixty to ninety seconds, and returned home to develop, when, to my astonishment, little or nothing was to be found upon my plates; they were weak and under-exposed, like a miserable ambrotype.

I decided at once that my trouble was due to the substratum of albumen, so I put off again with the remaining three plates, which I exposed respectively one, two, and three minutes; the only really good one was the three-minute picture.

Determined to test it more positively, I the following evening prepared six plates as follows:—Two with the albumen coating, four with edging of albumen; through the centre of two of these four I wrote with the point of a stick my name in large bold letters. When these plates were exposed the following day, all at the same time and upon the same view, my conclusions were fully proven; those with the albumen coating taking quite double the time of those edged with the same, and those with the word Charles written on the face were good, well worked, and sufficiently intense in all parts not covered by the letters of my name; here the image was weak, not nearly worked out, and poor to the last degree. I am, therefore, fully convinced that albumen is a poor thing to put on tannin dry plates. All this may be as old as the hills; possibly it is; however, I send it to you for the reason that I never remember having seen it in print.

If these facts strike any reader as curious, will not another and quite opposite one—its action upon wet plates—appear as very strange?

To make a long story short, the same experiments with wet plates proves these facts: first, increase of time for exposure, probably one-half more second, a decided increase of intensity; wherever the letters of my name appeared upon

* *Photographic World*.

the wet plate, there it was more bold and stronger, the opposite of its action upon dry plates. Of this simple matter I have made quite a long story; my only excuse is, that the use of albumen for dry plate work has become so general, and my facts so opposed to common belief, that I think a statement somewhat detailed is required.

Correspondence.

OPERATORS AND ASSISTANTS.

DEAR SIR,—It has been with much interest that I have read the various opinions expressed by your many worthy correspondents on the subject of photographers' assistants, and I do not wish the matter to drop without saying something myself.

I am one of the much ill-used race myself, and a constant reader of your invaluable journal, otherwise I would not trespass on your space. Your correspondent "A First-class Operator," in last week's number, remarks that if a plate cleaner's wages be given, much above a plate cleaner cannot be expected. In my experience I have found that plate cleaners are much better paid than many clever assistants, who receive the liberal stipend weekly of 25s. or 30s. (a large amount to keep a family on, should the assistant be a married man). Much has been said of late on the matter, but I regret that something is not really done to insure a fair salary to the often over-worked assistant, and a competent man to the employer. In the absence of a college or school, suggested some time since in your pages by a correspondent, for the training of the rising aspirants to our profession, I should suggest that a society be formed on the same principles as those belonging to trades, to be supported by entrance fees and weekly payments. Each candidate, before being enrolled as member, should send in at least one dozen photographs of various sizes, to be approved of by the gentlemen elected as judges.

This, I think, would save some anxiety to the employer, as he would have only to apply to the secretary for the names of the unemployed on the books. It would also insure a means of getting men capable of a certain class of work. There should be a fixed salary for the members of this society, under which they should not work; so that employers would know what they would have to pay when applying for an assistant. The members would also have the advantage of receiving a certain sum per week when out of employment or sick.

I am afraid I have trespassed too much upon your space, but as this is a subject of so much importance to our profession, I feel I have not said too much in the matter; but should anything that I have said be the means of improving the condition of my brother assistants, I would ever feel that I had at least a voice in the cause.—I remain, dear sir, yours very truly,

FAIR PLAY.

ENAMELLED PHOTOGRAPHS.

SIR,—In reference to the method of enamelling cameo photographs, suggested by M. Haarstick, and detailed in the NEWS of last week, I may mention that a very successful method of varnishing is simply to free the mounted and finished photograph from dust, and then to flow it with methylated spirit. Allow the picture to drain, and then apply a tolerably thick normal collodion exactly in the same manner as when coating a plate. The result is a pleasant transparent film of varnish, which, although by no means so polished as when the collodion is applied to a glass surface, is, nevertheless, more suitable in some instances. If the collodion is poured on without a preliminary application of alcohol, the latter will not flow so evenly, and air bubbles are apt to be formed.—I am, &c.,

H. BADEN PRITCHARD.

PERMANENT SENSITIVE PAPER.

SIR,—In the PHOTOGRAPHIC NEWS for August 14th, p. 367, a mode of sensitizing albumenized paper is given, which requires neither washing nor fuming for re-rendering the paper permanent. Will you, or any of the readers of the NEWS, kindly suggest the best form of bath for toning this paper? The chloride of gold and calcium produces only a leathery tone; but if the paper, between printing and toning, is submitted to a bath of water containing a few drops of ammonia, the tone is improved, but still it is not satisfactory.

The formula for sensitizing to which I allude is—

Nitrate silver	...	...	...	...	1 ounce
Citric acid	...	...	...	...	1 "
Alcohol	...	...	...	...	1 "
Water	...	...	...	...	12 ounces

I am, sir, your obedient servant, N. P. A.

[We printed the communication of Herr Kleffel to the Berlin Society just as we found it, and cannot say whether the author found any special treatment prior to toning necessary. It seems probable, however, that rinsing in a weak solution of an alkali will have a beneficial effect in toning on paper containing citrate of silver. It is also probable that paper so prepared will be more sensitive and give richer prints if fumed before printing, a plan universally adopted in the United States.—Ed.]

CARTES AT ONE SHILLING AND SIXPENCE PER DOZEN.

DEAR SIR,—I was not a little amused as well as surprised at Mr. Griffith's calculations as to the number of cartes I must have taken in a quarter at 1s. 6d. per dozen to clear a profit of £30.

I must confess that I did not do quite 20,000 in the quarter referred to, therefore, either Mr. Griffiths must have made a wrong calculation, or I must have made a false statement in my former letter. Let us see what is the value of 20,000 cartes at 1s. 6d. per dozen, and also what would have been the total cost of the same had I done them in a quarter.

The value of 20,000 cartes at 1½d. each will be £125; against which must be set—

Paper (cutting 48 from the sheet), 17½ quires at 70s. per ream	...	...	...	...	£3	1	3
Silver (say 3d. to each sheet of paper)	...	...	...	...	5	4	3
Gold " 1½d.	...	...	...	...	2	12	1½
Hypo " 0½d.	...	...	...	...	0	17	4½
Mounts, 20,000	...	...	...	...	6	0	0
Negatives, say 2,000 at 1d. each	...	...	...	...	8	6	0
Assistant's wages, 13 weeks at 21s.	...	...	...	...	13	13	0

Total 39 14 0

Nett Profit 85 6 0

From the above I think it will readily be seen that the number required to clear £30 would be about 7,000, and not 20,000; therefore it will not require any novel secret process to clear the amount I stated.

I have not reckoned waste prints, as that loss will be more than covered by the silver recovered from the washing waters.—I am, dear sir, yours truly, THE MAN WHO DID CARTES AT ONE SHILLING AND SIXPENCE PER DOZEN.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The usual monthly meeting of this Association was held at the Free Public Library on Tuesday, the 29th ult., Mr. J. HENDERSON in the chair.

The SECRETARY read the minutes of the previous meeting, which were passed.

A small embossing press for cameos, sent by Mr. Phipps, was shown by Mr. Henderson.

Two views by Mr. J. Brown, of Rhyl, and two 12 by 10 views by Mr. J. H. Hogg, of Kendal, were shown by the Secretary.

A number of 15 by 10 landscapes and sea pieces, by Messrs. Robinson and Cherrill, were placed round the room, and attracted much attention. The presentation print for 1871 was afterwards chosen from among them, to be either the landscape "Southborough Quarries," or the sea view "Outward Bound."

Two stereo prints were handed round, showing the curious "snow scene" effect produced by printing on the wrong side of Durand's albumenized paper.

Mr. E. ROBERTS and the SECRETARY exhibited a number of views taken on excursions of the Naturalists' Field Club, and announced their intention of going with that Club to Dunham Park on Saturday next, where they hoped they would be joined by other members.

Mr. WATLING spoke of the advantages of printing under light yellow glass, by which it was possible to obtain a good print from a negative that was almost too thin to be of any use.

Mr. BROWN said that, in printing with carbon lately, he

found some portions of the tissue unsensitized and coming off on the transfer in clear patches of gelatine.

It was thought that some fault had occurred in the manufacture of the pigment coating.

Mr. WATLING showed some prints printed under a "glass border mount," manufactured by Mr. J. A. Forrest, which gave a very pretty effect to a carte picture. The "glass" is black, burnt in, with a thin, clear oval, and outside ornamental border lines. A vignette is printed in the usual manner, and the print is then placed under the mask and printed, the result being black lines on a white ground.

Mr. HENDERSON thought that, instead of the centre of the glass being black it might be vignotted, and thus do away with the necessity of printing twice.

Some discussion followed about the preparation of the colloidal-bromide emulsion.

Mr. MAWDSLEY stated that he found Mr. Green's suggestion, of dissolving the silver and then adding alcohol, very convenient; it did away with the necessity of pounding the silver. He (Mr. Mawdsley) also stated that it was not necessary to use a fresh pyro developer to each plate, as he had in some cases (especially when he expected over exposure) used to the first plate two drachms of a three-grain pyro solution, adding ammonia, and then, with the same solution, adding fresh ammonia, developed six stereo plates—the result being fine, clear negatives without any trace of fog. No bromide had been used, though from time to time nearly half-a-drachm of the ammonia solution had been added to the first pyro developer.

Mr. HENDERSON said that he had been lately using a new bath for wet collodion, and got much better results with a developer two years old than with a fresh made one.

The meeting shortly afterwards adjourned.

Talk in the Studio.

AN UNFAIR USE OF A PHOTOGRAPH—A correspondent of the *Times* some days ago wrote to complain that his wife having presented him with a baby, he began to be pestered with circulars. He adds:—"But what I objected to especially was an enclosure, at the same time, of a photograph, said to be executed by a 'poor cripple,' of the births in the *Times*, and containing, of course, my announcement." A few days afterwards the photographer, Mr. A. W. Wilson, thus unceremoniously styled a "poor cripple" to excite pity, writes to the *Times*, and sends the following explanation and protest:—"I am a photographer, having a large connection in one of the suburbs of London, and some time since a clergyman of the Church of England (whom I looked upon in the light of a friend) came to me and requested, as a particular favour, that I would make the photograph he required. I did this for him at the height of the busy season, and at great inconvenience to myself, at exactly cost price. I now find that, as I have the misfortune to be lame, he has issued his begging letter in the hopes of obtaining money for his cause by exciting sympathy through my infirmity. Unfortunately, I never saw the letter 'Nemo' received, the letter shown to me not being the one issued with the photographs. I never participated in any profits gained by the rev. gentleman, merely receiving a fair price for my work; and write this to say that any subsequent photographs that may appear, the 'poor cripple' will have nothing to do with."

To Correspondents.

L. L. EVANS.—The stereographs are pretty good; but each negative would have been better for a little longer exposure. When a piece of foliage comes in at the corner of the sky, as in No. 4, without any tree to account for it, it is better to stop it out of the negative.

T. B. HUTTON.—We shall have some remarks on the subject in our next.

A. MARCHANT.—The letter has been posted.

AN IGNORAMUS.—We have given repeated articles in our pages on the production of collodion prints for transfer, and for the transfer of the same. If you have read and tried any of these processes, and found difficulties, we shall have pleasure in aiding you. If not, you had better read the instructions, and then let us know of any difficulties you find. A collodion transparency for transfer will require about the same exposure as that employed in producing a large negative, but it will require much less development. After toning, the transfer is most easily made to prepared paper whilst the print is wet.

T. E. W.—It is somewhat difficult, without careful examination, to say what you may or may not use in photo-lithography without infringing a patent. There have been several patents taken for such processes, several of which have been suffered to lapse. To decide whether a process may or may not be used requires a careful statement of the process in detail, and then a careful examination of its resemblance to other processes which may have been patented; also a search to ascertain whether the patents of patented processes have been maintained. Your reference to the process regarding which you enquire is not sufficiently definite and precise, as your letter is without date, and you refer in general terms to something which appeared the week before last. It is always desirable, in references to something appearing in back numbers, to refer to the specific article and the page on which it appears. 2. The method of photo-colligraphy which has been described in our pages as that of Herr Albert can be worked without a license. 3. The reason for the cotton dissolving was the addition of too much water, the acids being probably of a lower strength than that indicated. When a high temperature is employed, the slightest trace too much water, or the cotton being slightly damp, or too much of it being immersed, will cause it to dissolve entirely. Use less water, and take care not to immerse too much cotton at once. 4. Old pyrogallie acid is less active as a developer than fresh. If very old, and the solution very brown, it is useless.

A. BARRETT.—The print you enclose is not a bad one, but it might with advantage be purer and brighter in colour. Its lack in this respect may proceed from a variety of causes. Possibly the paper had been kept a little too long before printing; possibly the hypo was a little old or acid; possibly it was allowed to remain too long after removing from the hypo without changing the washing water.

S. HOGGARD.—We do not usually interfere in any way with the business arrangements of our office; but on making enquiry, we find that a partition and a sum for carriage is due from you, on receipt of which the half note will be forwarded.

A. YOUNG PHOTO.—We are sorry to hear of your unfair treatment, but its publication might subject us to the operation of the law of libel.

F. S.—There is some difficulty in securing perfect fixation in all methods of silver printing upon ivory, as any trace of free nitrate of silver so readily combines with the ivory and forms an insoluble compound. We have succeeded by adopting the following precautions: the collodion employed was of good body, and not too powdery; very little more nitrate of silver was employed than was sufficient to combine with the chloride; and sufficient citric acid was added to combine with any excess of silver. By this means vigour was obtained without excess of free nitrate. It is the excess of free nitrate in solution, which readily permeates the ivory, which is dangerous. We then fixed by long immersion in very strong fresh hyposulphite solution. By adopting this course, we have obtained pictures on ivory which did not change in the light, although some less carefully manipulated did so. When difficulty in getting permanent results is found, it is a good plan to produce the collodion-chloride print on glass or paper, and transfer it to ivory. This is not difficult to effect, and it avoids the contact between ivory and the silver salts and fixing salts altogether.

ANXIOUS TO PLEASE.—Copying oil paintings successfully is not an easy task to one who has had no experience. Use the same chemicals as for portraiture; place the painting in a good strong light, taking care to have it quite parallel with the camera, and to see that no false reflections from its surface enter the camera. If the painting be old, dark, and dull, just before exposure sponge the surface with water, which will aid in making the detail more apparent. Then give full exposure, and use an iron developer containing a full dose of acetic acid. You must expect, however, to buy your experience by a few failures before you obtain perfect success.

Articles by W. T. Bovey, A. Brothers, and others, and some Reviews, remain over for lack of space. Several Correspondents in our next.

PHOTOGRAPHS REGISTERED,

MR. WILLIAM BAKER, Stockton-on-Tees,
Photograph, Panoramic View of Hanworth-on-Tees,
Two Photographs of All Saints' Church, Hanworth.

MR. ALLEN, Crawley,
Photograph of Mark Lemon's Tomb.

MR. R. T. WILLIAMS, Monmouth,
Four Photographs of King Arthur's Cave.

MR. A. DOHERTY, Manchester,
Photograph entitled "La Petite Rieuse."

MR. SEED, Bristol,
Photograph of Interior of Cheddar Cave, from Sepia Drawing.

MR. REEVES, Loweston,
Photograph of Rev. F. H. Egles.

MR. J. FOSTER, Coldstream,
Three Photographs of Lady Adh Home.

MESSRS. W. W. LAW and SON, Northampton,
Photograph of Rev. J. Page.

MESSRS. BLAKE and Co., Bedford,
Photograph of Poppe Titus IX.

THE PHOTOGRAPHIC NEWS.

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POISONING BY CYANIDE.

"How oft the sight of means to do ill deeds makes ill deeds done!" We find in the morning papers the record of another suicide with cyanide of potassium. A young lady, Caroline Eliza Palmer Gee, daughter of a photographer, and an actress by profession, in a hasty burst of temper through a trivial domestic quarrel, rushes to the dark room of her father, where she knew cyanide would be found, and in a moment swallowed the fatal dose. Deceased, as the brief newspaper narrative runs, who was about to leave the island for an engagement in England, had some words with her father, a photographer, respecting the cording or her boxes. She rushed from the room where the family were sitting, and, saying she was choking, went to the dark room where the chemicals were kept, poured some drinking water into a jug containing twenty grains of potassium, drank off the mixture, and died in two hours. It is not very long since we recorded a case very similar which occurred at Dover: there also a young lady, in a fit of momentary excitement, put an end to her existence by means of cyanide, living to repent her rashness when it was too late, her fate being even then fast closing on her. In each of these cases—and in how many more we need not now speculate—the young lives would have been spared if the deadly cyanide had not been readily accessible, and available for the hasty resolve before reflection gave pause to the rash hand. The law has limited the right to sell poisons to persons whose education has, or should have, made them familiar with the dangerous qualities of the articles they vend; it has hedged round their sale with conditions and precautions which are intended to interpose barriers against their hasty or careless use. Against the resolve of the deliberate suicide no precautions could be rendered absolutely preventive. But no hasty burst of excitement would be likely to survive the conditions generally necessary in the purchase of poison. But of what avail are all precautions as to the sale of such deadly agents as cyanide, if they are kept familiar and accessible to the members of the photographer's household? In every case where the poison is kept carelessly standing about within reach, the photographer doubtless feels a strong conviction that there is no risk in his establishment; and so, doubtless, has thought each one into whose household the fatal issue has brought desolation. We do not care to weary our readers by sermonizing; but we must again urge on all concerned, who persist in using the dangerous salt, to render its use for other purposes than fixing negatives as inaccessible as it possibly can be made.

SURFACE FOR RETOUCHING WITH PENCIL.

THE use of lead pencil for retouching negatives undoubtedly

possesses many advantages not possessed by other methods in which a wet pigment is employed. With the latter a considerable amount of skill is necessary not to apply it too thick and opaque, and only a practised hand can apply it with an even stroke, the tendency with the unskilled being to make the finish of each stroke a little thicker than the commencement. Clumsy, or even slightly unskilful, retouching with pigment readily obliterates the drawing of the image, and spoils the portrait both as a likeness and work of art. With the lead pencil there is much less risk. The lines applied are never very opaque, they are easily applied of even thickness, and the temptation to obliterate or alter the detail of the negative is much less present than where a pigment is employed. In all but very highly skilled and judicious hands, therefore, we recommend that retouching on a negative should be effected with a lead pencil only.

One of the chief difficulties of using the pencil has arisen from the fact that the ordinary lead pencil does not readily bite on a glossy varnished surface. Various methods of meeting the difficulty have, of course, been devised, and some of them very efficient. But there is a very simple one which seems to have escaped general attention. On another page will be found a letter from Mr. G. Piercy, Jun., in which he points out how he secures a suitable surface by friction. The method of employing a thick varnish, and afterwards abrading its surface with a little fine pumice powder or euttle fish bone, has been employed successfully in Germany; but the simple method of giving a tooth to the surface mentioned by Mr. Piercy has not, so far as we are aware, been employed. It is based upon a quality in certain varnishes which is well known to painters. The surface of mastic varnish, for instance, is readily abraded by persevering friction with the finger, and to such an extent that the whole of the varnish may be removed from a picture by such friction without injuring the painting, and such a plan is commonly employed to remove dirty or discoloured varnish. It is such a method which Mr. Piercy indicates. A steady application of the soft finger end, kept dry and clean—the middle finger is best—quickly removes the glassy surface, and leaves a texture upon which pencil will bite as perfectly as on drawing-paper. If desirable, a second varnish might be applied after retouching; but in such case the second varnish should not be made with the same solvent as the first, or, the whole of the first varnish being partially dissolved, the retouching might be injured.

OBITUARY.—WILLIAM BLAIR, OF PERTH.

WE have to record with very deep regret the death by drowning of Mr. William Blair, of Perth, a gentleman whose name for many years past has been most honorably

associated with photography, more especially in connection with the progress of permanent printing processes. From the earliest days of carbon printing processes Mr. Blair was one of the ablest workers in their development, and was, upwards of a dozen years ago, one of two or three independent discoverers of the principle of printing from the back upon which half-tone in carbon printing is based. From time to time he published ingenious methods of meeting difficulties in carbon printing, and steadily aided the progress towards excellence and practical conditions at a time when the labourers in that department of the art were few, and even the hope of success amongst photographers generally very feeble. Of late years our readers have been familiar with his interesting contributions to our pages, in which various subjects have been very ingeniously treated, those connected with carbon printing being his favourite themes. About two years ago he published a little work on carbon printing, in which several new and ingenious processes were detailed, admirably illustrating his practical familiarity with every phase of carbon printing. A few months ago, as our readers know, he published in our pages the details of a new dry process, of which alkaline conditions formed an important feature, and which gave great promise of combining in an unusual degree high sensitiveness and excellence of result.

As an experimentalist, Mr. Blair was distinguished by rare ingenuity, care, and perseverance, added to a large inventive faculty, and with these were combined the highest trustworthiness in accurately and lucidly stating his results. He had a clear, calm, and well cultured intellect, great kindness, and a winning candour. In our personal relations with him we had learned to esteem him highly, as well as to admire his labours. His connection with photography was that of an enthusiastic amateur, his profession being that of a solicitor. He was drowned on Saturday, the 2nd of September. His loss will be deeply regretted by a very wide circle, and his memory will be cherished in photographic history with respect.

We append some further details, cut from a local journal, with which a correspondent has kindly favoured us:—

"It is with feelings of deep regret we have to record a sad accident which occurred on the Tay on Saturday afternoon, and resulted in the death by drowning of Mr. William Blair, solicitor, principal law clerk to Messrs. McKenzie and Dickson. So far as can be ascertained, the facts are as follows:—On Saturday afternoon, a little after five o'clock, Mr. Blair and two of his sons, Patrick and Gorire, proceeded down the river in a boat. When near the Sands Fishing Station on Moncrieffe Island, Patrick, who has recently been learning to swim, asked his father to be allowed to bathe. Mr. Blair consented, and the lad stripped and went into the river. After swimming about for a time, the boy attempted to cross to the opposite bank, but the current proving too strong for him he gave a cry of distress. This was heard by Mr. Blair, who threw one of the oars to the lad, in hopes that he would catch hold of it. This, however, he failed to do, and Mr. Blair then threw the second oar in the direction of his son, but it also failed to reach him. Feeling that the boat was rapidly drifting down the river, Mr. Blair divested himself of his hat, boots, and coat, and proceeded to the assistance of his son, and, being an excellent swimmer, he soon reached the struggling lad, and, carefully supporting him on the oars, allowed him to drift towards the bank, which had by this time been reached by the boat containing the other boy. Scarcely had the father and son parted than the former showed signs of distress, and, after a short struggle, but without a cry, sank in deep water. The screams of the boys soon attracted attention, and several people tendered all the assistance they could render under the circumstances, but Mr. Blair's body did not again rise to the surface, and the boys were taken home, when the sad intelligence was broken to their mother. A little after nine

o'clock, Mr. Croll (superintendent of the Tay district) and a party of men proceeded down the river to drag for the body, which in about an hour afterwards they found lying on the bank, face downwards, about five yards from low-water mark. Mr. Blair was aged about fifty years, and was a gentleman very generally respected, alike for his kindly obliging disposition, and the exemplary manner in which he discharged the duties devolving upon him in the varied relations of life. He leaves a widow and five children—three sons and two daughters—and much sympathy is expressed for them under the sad circumstances in which they have been so suddenly placed."

THE PARIS PHOTOGRAPHIC EXHIBITION OF 1870.

It is gratifying to find that at the very first meeting of the French Photographic Society, the question of the recent exhibition was fully discussed. M. Davanne, the vice president of the executive committee, made a report on the progress of affairs during the last year, and this was followed by the decision of the jury appointed to award the medals to the most deserving exhibitors. The thirty-one medals are thus to be distributed:—Albert, Arosa, Blanc, Bieber, Braun, Charanx, Cnvelier, Ducos de Hauron, Durand, England, Ferrier, Giroux, Goupil, Harrison, Hubbard, Koller, Krone, Kurtz, Lafon de Camarsac, Leon and Levy, Lewis, Luckhardt, Lyon, Marguet, Mieczkowski, Relvas, Reutlinger, Robinson and Cherrill, Sebah, Slingsby, Stuart Wortley.

Besides the above, the jury considered twenty-three of the exhibitors to be worthy of honourable mention, among whom may be noted Higgin of Liverpool, Sanderson of Manchester, and Wane of Douglas.

The medals are not yet ready for distribution, nor is, indeed, the design thereof fixed upon. The executive committee will, however, at once give the matter their consideration, so that no delay need arise.

It would be satisfactory in the meantime to know where the pictures which constituted the exhibition are at present located, or, at any rate, it would be some solace to the exhibitors to know that pains had been taken to discover their whereabouts. The pictures contributed may not of themselves have been of great value, but in any case a photographer's specimens are generally well worth preserving, and are often held in high esteem by their producer.

The two annual medals of the Society have been awarded this year to MM. Becquerel and Woodbury.

ENGLISH PICTURES AT THE AMERICAN EXHIBITION.

THE English contributions at the recent Exhibition in Philadelphia were neither so large nor so thoroughly representative as might have been desired, especially in portraiture. It may interest our readers to know that those pictures sent won golden opinions amongst our American brethren. We quote some remarks on the subject from our Philadelphia contemporary:—

"While the number of pictures from foreign countries at our late exhibition was not large, yet there were enough to give an idea of the various classes of work made in England and Germany, and to make opportunity for comparison with the work done at home.

"Our English and Scotch brethren are undoubtedly ahead of us in the matter of landscape and genre photography. Both of these classes were splendidly represented by Messrs. Robinson and Cherrill, whose work is without a superior. In both classes, too, 'combination printing,' which art Mr. Robinson so plainly teaches in his excellent book, 'Pictorial Effect in Photography,' is practised with admirable effect. This printing of one picture from

several negatives is in this country very rarely practised. Mr. Hubbard's 'Stolen Moments' is another example of this class, and was superior in composition and finish to anything of that order exhibited. It was a true genre, which any figure-painter might feel honestly proud of. It attracted universal admiration, and is a proof of the truth that 'it is better to produce one good picture than many bad ones.' Mr. Hubbard evidently understands that maxim. Added to the list of genre work the five little pictures, 'The Smithy,' 'Peep Show,' 'The Broken Toe,' the 'Young Artist,' and 'Waiting for Change,' by Mr. Diston, came to our notice, and very fine specimens they are, too—each one full of life, and naturally and admirably arranged and photographed. Each one tells a plain, unvarnished story, with a vein of rare good nature in all. Those aspiring in that direction would do well to secure them as studies. The ten by eight Salomoneseque pictures, by Mr. Netterville Briggs, were also very fine. Mr. Notman's large composition picture, 'The Skating Carnival,' our readers are familiar with, from the copy of it given in our last December number. Mr. Notman has no equal in this line, and in all sorts of work no superior. In the matter of landscape work, Mr. Alexander Henderson had some fine things; while the very best landscape work in the exhibition was from Mr. Geo. W. Shington Wilson, Aberdeen, Scotland. There are qualities about his work which are hard to understand without seeing them, and which we have heretofore vainly tried to describe. We hope that many in this country will aspire to such excellence.

"The German work also taught us some useful lessons. The German landscape photographs are some of them very good, those by Messrs. Gustav Schaner and K. Schwier being among the best. In portraiture they are fully up to us, or, rather, we have caught up to them; and we are both far ahead of English portraiture, so far as we have seen. A few years ago the Germans were undoubtedly the best portrait photographers in the world. The exhibition of their work in this country awakened some of our live artists, and now we think American work in that line will equal any that is done. Messrs. Loescher and Petsch, whose fame is well established in this country, are ahead of the world in grouping figures for the stereoscope. There is only one Max Petsch, and we feared the war was going to rob us of him; but he is safe home again, and soon we expect to hear of something grand being done by him. No new work was exhibited by Loescher and Petsch, but their old work was, and it had but few superiors. There were four pictures by Ernst Milster, 11 by 14 size, from negatives retouched in a style peculiar to Milster, and which is a very elegant style. They attracted much attention by their delicacy, and beauty, and roundness, and were certainly splendid."

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

OPERATORS AND ASSISTANTS—PHOTOGRAPHY AL FRESCO— THE OFFICIAL REPORT OF THE INTERNATIONAL EXHIBITION— PROSPECTS OF FUTURE EXHIBITIONS.

THE status of operators and assistants, their relations to their employers, the hours they should work, and the remuneration they should receive, constitute a subject which must always possess an especial interest for the readers of a journal which is especially recognized as the organ of professional photographers; and hence it is not surprising that its discussion in a complete or fragmentary—more frequently the latter—form should so often recur in the NEWS. In most established trades, the qualifications, duties, and remuneration of a competent hand are defined with tolerable precision; but in others no definite conditions can be laid down, and photography is one of these. The position, prices, and general status of photographic establishments vary so much that it would be impossible to

establish a rate of remuneration common to all. The abilities of different operators vary so much that any attempt to establish a uniform rule of payment would involve the grossest unfairness. Nevertheless, it ought to be possible to establish a minimum. If capable operators would agree amongst themselves as to a sum below which they must decline to accept engagements, a gradual understanding might be come to between employers and employed. It should be remembered, however, that, as a rule, country salaries are smaller than metropolitan salaries, and bear some relation to the cost of living in town or country quarters. A salary of thirty shillings a week, for instance, in the country would be equivalent to one of two guineas in town.

If ever the time come when a system of apprenticeship or studentship be established, the completion of which shall entitle the photographer to a diploma or certificate of having graduated in a course of instructions fitting him for the varied duties of a skilled operator, and indicating, possibly, that he has taken especial honours in chemistry, or art, or manipulation, then, possibly, a definite scale of remuneration could be established and demanded. Until then, I fear, the varied scale which now prevails—varying, I believe, from about one pound to five per week—must continue to exist. A good operator should be a gentleman in deportment and education; an artist in taste and culture; a chemist within at least a certain range; he should be pleasant and winning in manner; he should possess both tact and firmness, some mechanical skill, and great readiness of resource. If, during the hot summer months, he can work from nine till six without food, or upon a hastily eaten biscuit or sandwich, so much the better. But if he have all these, or any approximation thereto, surely he is worth three or four times the five-and-twenty or thirty shillings a week remuneration which some of your correspondents have alluded to.

As a curious illustration of the fact that there are photographers and photographers, I may mention some recent observations made in my summer rambles. Driving along a country road in the suburbs of London, I noticed a curious caravan drawn up by the road side, and not far from it a camera and stand. As we came near, a photographer rushed out with a glass positive specimen in one hand, and a dark slide in the other. He was prepared to photograph the carriage and its inmates without delaying them more than two or three moments, the finished picture to be ready as they drove back, or, if they did not return, a few minutes would suffice to finish it. Here the cuter-prize was of a higher grade than the photographic skill. At a popular sea bathing place I recently visited, I found a similar kind of enterprise even more highly developed. In a snug corner of the shore, near the jetty, I saw a small camera and stand placed. The photographer was arranging a group of three. This was done in a few seconds. Then a second group was arranged at a suitable distance. I was a little puzzled as to the reason for arranging a second group before exposing a plate on the first. I soon saw that it was a fine stroke of policy. Having no waiting room for his sitters, those who had to wait might easily be tempted to ramble away; but once placed in position, and with an impression that the process was going forward, several groups might be kept in position and retained safe for some time. None were detained long. An exposure of one or two seconds; development in one or two minutes; fixation in still less time; drying, black varnishing, and placing in tray in a few minutes more. Eager spectators flocked round to see each picture as it was completed, and the operator, with considerable tact of a certain kind, contrived to make arrangements with fresh customers as he proceeded with posing those on hand. Possibly, as an operator, he might not have been worth more than five-and-twenty shillings a week; but as a tactician of a certain kind, it is not improbable he was making that sum per day.

I have been much interested in reading the official report of Col. Stuart Wortley on the photographs at the International Exhibition. Most photographers will regard it as for the most part a very appreciative and excellent review of the photographs there displayed; but I cannot help feeling that there are some singular shortcomings in it. Is it fair, for instance, to refer to the magnificent Salomoneseque portraits by Valentine Blanchard as simply examples of good photographic manipulation? They are undoubtedly very perfect as photographs, but they are considerably more than that—they are fine art studies; and if it were necessary to regard them as illustrations of one quality only, surely it is as examples of fine chiaroscuro they are worth especial notice.

I fear that a variety of causes will militate seriously against the success of any future photographic department in the International Exhibitions of the next nine years. The miserable misarrangement and odd distribution of the pictures this year; the animus shown in excluding a coloured photograph like the portrait of Charles Dickens from the photographic department, and then hanging it as a painting amongst paintings without any indication of its photographic character and origin; and some similar causes, must have a tendency to destroy the interest which photographers might otherwise have felt in contributing. Then the fact that the November Exhibition of the Photographic Society precedes the International Exhibition by a few winter months involves the absence of novelty at the latter, for the photographic exhibition will necessarily take precedence in interest, and there is not time nor light to permit the production of a second series of novelties for South Kensington.

FRENCH CORRESPONDENCE.

Paris, 4th September, 1871.

AMONG the specimens of photography that recall to mind the sad events which marked the last days of the Commune, there are two of an exceedingly startling character. These have both proved a great commercial success, and represent the assassination of Generals Lecomte and Clement Thomas at the outset of the insurrection, and the execution of the hostages in the Roquette prison on the night of the 25th May. The first picture shows poor Clement Thomas, clad in bourgeois costume, standing, hat in hand, in a resigned position, and the General Lecomte with a more energetic demeanour, both of them being placed in the vicinity of two pits dug in a kind of court yard, at the end of which is the building that served as a place of reunion for the Central Committee, and which has now attained to a sad historical importance. The firing party stand ready with levelled muskets, and only await the signal to fire. In the second picture we see Mgr. Darboy, M. Deguerry, M. Bonjean, and the other hostages, drawn up into line, in postures more or less theatrical, in front of the wall in the interior of the prison. The company of Federal soldiers charged with the execution of the victims turn their backs to the spectator, and only the officers grouped on the left are to be seen in profile.

The portraits of the victims are all of them very good, and evidently the house in the Rue des Rosiers, the view in the prison, and the group of armed men, are taken direct from nature, and it is only the combination of the work that is the result of a trick or subterfuge, that has been excellently well managed. Portraits taken from old cartes-de-visite have evidently been dismounted and attached to the principal *cliche*, and reduced in accordance with the perspective and in proportion to the other figures represented. Only, I would ask, who are those who have consented to take the part of executioners, and whose portraits are such as to render them easily recognisable? How is it, also, that the authorities have allowed the depiction of a scene of this nature in the interior of the prison? But in any case there

remains the fact that the pictures appear so vividly real as to convey to the spectator feelings of a most thrilling nature.

Unfortunately for myself, I return too frequently to the discussion of the sad times through which we have lately passed; and although three months have now fled since the date of these occurrences, still they form the theme of much conversation. The events have left behind them such dismal *souvenirs* in the memory of Parisians, that it will be some time, indeed, before the fatal images disappear from our minds.

M. Marion, who sojourned in London during the whole period of the siege, has profited by his exile to complete the practical study which he commenced some time since upon carbon printing. On his return he decided to publish the results of his experience in the form of a pamphlet, in which are condensed the series of operations inherent to the process, the elaboration of the latter having been aided by the experiences of English photographers in the same path. This work will constitute an excellent treatise or manual of photography in pigments. M. Marion gives a resumé of the works of MM. Swan, Leon Vidal, Jeanrenaud, Edwards, Andra, and others, and then finishes with a detail of his own labours in the matter.

One of the inconveniences of carbon printing, which otherwise possesses many advantageous resources, is the latent state of the image, and the difficulty that arises in regulating the time of pose. The employment of the photometer, thanks to the recent improvements by the combined efforts of MM. Leon Vidal and Marion himself, is now sufficient to overcome any hesitation in this direction.

The new publication of M. Marion will be certainly received with much favour, from the fact that it is really a conscientious work, and eminently practical. It does not omit any useful hint or advice, nor is it, at the same time, encumbered with a mass of formulæ from which the reader must choose, and which generally have the effect of completely bewildering him.

I do not know if you have any knowledge as yet of the simplification which has just been effected in the coffee-gum dry process of M. Constant Delessert, which appeared for the first time in detail in the PHOTOGRAPHIC NEWS. In a letter which I have just received from the worthy author, he tells me that by employing pure Mocha coffee in connection with the preparation of the plates the same advantageous results may be obtained as when gum and coffee are employed in combination. If, however, it is impossible to obtain a supply of pure Mocha, then the employment of the gum cannot be suppressed, but the two preservatives must be used conjointly, as detailed by M. Constant in his pamphlet.

At the last meeting of the Academy of Sciences two communications were received touching upon the study of light. M. Wurtz made known a fact which had recently been observed by M. Salle, that sulphur, when submitted in a tube to the action of electricity, gives rise to two different luminous spectra, the one disposed in pure lines, the other in simple rays, according as the electricity is of greater or less power.

Another observation, made by M. Muller, and communicated to the Academy by M. Leverrier, has revealed the fact that during the last total eclipse the magnetic needle of the compass was entirely arrested during the period of complete obscurity, and did not regain its activity until the sun reappeared. As this phenomenon is now observed for the first time, M. Leverrier requests other experimenters to repeat the observation, so that it may be discovered whether the same thing happens only on certain occasions, or whether it invariably takes place during all occurrences of this description.

ERNEST LACAN.

APPRENTICES AND ASSISTANTS.

BY W. T. BOVEY.

LABOUR groans and capital grumbles. Employers against employed: the employed *versus* their employers. Interests

which, broadly viewed, are identical, by misinterpretation turned into chaotic confusion. Bitterness on both sides, and reason nowhere. These are the natural accompaniments of industrial life, and photography, as an industrial pursuit, is at length brought face to face with a serious problem which, unsettled and unsolved, bubbles and boils in frothy agitatedness, whilst *pro* and *con* grapple and fight for the place of injured innocence.

"What course may we take to secure efficient assistance?" plaintively ask the employers. "Pay for it," is the curt though practical rejoinder of those whom "Little Photo" represents; and "Little Photo" has assuredly the best side of the argument. Unluckily, he proceeds further, and, endeavouring to prove too much, he piles up reasons until they topple over and expose a weak point in his case which he evidently overlooked. "Take so many grains, ounces, or drachms of this and that, handle the product with adroit fingers, and the result will be a masterpiece. The three R's often fail where nimble ignorance succeeds. So, in substance, writes "Little Photo," who, by the way, writes well, and, in some respects, wisely; but he has failed to perceive how he is dragging photography down to a level with the lowest grade of mechanical arts, and he certainly must be aware that work requiring so small an amount of brain-directing, must be performed by ill-paid workers, simply because labour that can be promptly trained will ever command a supply that exceeds the demand. "Little Photo," however, proceeds to prove, indirectly, that his knights of the neat fingers and formulæ are not so skilled as he would have them to be, as he goes on to explain that the present degradation of prices is, to some extent, occasioned by the transmuted employés who, disgusted with employers, take a shop and set up on their own account. Surely it needs no argument to prove that those embryo masters, usually in alley practice, must be incapable, else why begin by underselling? To raise a connection without the necessity of working and waiting might be admitted in excuse, but this apology is made extremely feeble by the many examples of the cheap and nasty I have seen emanating from the hands of protestors against parsimonious employers and unreasoning extortioners.

Query: are employers blameless? The advertisements they sometimes issue give a reply. "Wanted, a first-rate operator and printer; one who can pose artistically, and take a good negative; in look and manner gentlemanly; with all the other etceteras; wages, twenty shillings per week." Is not this asking something unreasonable? I admit that the plea of low prices, precarious business, and all that, is an excuse for the low remuneration offered; but can it be deemed probable that such a superior being can be obtained at the price? Reasonably not. Better, then, work yourself from early morn until the biggest hours of night, as unskilled labour for skilled work is dear at any price. Work harder if you cannot afford to purchase equal skill, and employ only when a little skill will go as far as required.

A word of encouragement to assistants. At the lowest "round of the ladder" I began my career as an assistant, and I was not slow in discerning the extent of my ignorance, which was very great as far as matters photographic were concerned. Now, had I held to an idea that small wage deserved its equivalent of labour, to the lowest round I must have stuck until I was kicked off by a better man. Fortunately, I understood the position, and looking upwards I made my employer's interests my own. I studied hard. Like others, I had my mishaps; but, unlike most others, I passed sleepless nights in endeavouring to penetrate the causes of those failures. A hand-book of chemistry became my constant companion, and I worked on until, by unceasing study and close observation, I was enabled to leave the beaten path, and to open up a fresh track for myself. Go you and do likewise! Never view the 'prentice labours you expend as of money value; sow the seed, and as knowledge accumulates so will wages increase. Depend

on it, photography demands of its workers a larger amount of information than is usually supposed. On this account, I am hopeless of ever seeing a really efficient class of assistants attaching themselves to photography, for, unlike the majority of professions and trades, it is rarely that an ordinary photographic business can find room for more than one male help, and he must needs be a kind of *factotum*, being in turn artist, glass polisher, printer, and jobber of jobs in general. There can be no doubt concerning the utility of such training, but, if he would move higher up, a man must enter heart and soul into the work; he must be moved by an instinctive aptitude which sinks all considerations of scant earnings, whilst it unweariedly strives for future efficiency. Such an one, earnestly bent on improving, *will*, and must, succeed; and the best studios and good wages will ever await him when, by hard work and mental culture, he has fitted himself for the position. Employers have their faults, doubtless, but from them I received nothing but kind treatment and generous forbearance, and I do not remember an instance where an employer did not second my endeavours to push improvement. Assistants often have only themselves to blame for the discourtesy practised on them by their employers. Thriftless, they take to drawing advances on their weekly wage; by so doing they expose their pecuniary scant, and masters often are not slow to take advantage of the knowledge.

"How is it you never borrow money like others?" asked an employer one day. "Because I save my money, and with it my independence," was my reply. "You are right," said he; and I had ample reason to believe him. Young men have generally a horror of being called a "screw" by their fellows. Well, he who has not the moral courage to meet the epithet with a smile will often find himself pecuniarily screwed. Assistants would do well to bear in memory this hint. By thrift make yourselves prepared to *wait*, and when you offer yourselves as candidates for a situation, never over-rate your abilities. This is an ordinary practice, which annoys the employer more than you probably are aware of. Led by the erroneous description you give of your powers, and finding on trial but common-place ability, a prompt riddance follows as a matter of course. When assistants can see the necessity of speaking plain truth, then will be a fitting time to put into practice the suggestion offered to employers by a "First-class Operator," for when an employer advertises for certain qualifications, he cannot be condemned if he feels or expresses annoyance when, in place of expected ability, he finds nothing beyond an ignorant assurance.

In conclusion, as a summary of the views I have formed on the subject of photographic employers and employed, I am persuaded that really efficient assistants will ever be few in number; qualifications stand beyond the range of ordinary minds to grasp. Second and third rates will always be at hand, and they must be content to labour for small pay. Limited ability is no disgrace, no sin; and when mediocrity ceases to be vain pretension, then employers will have no further cause for grumbling when they get the article they pay for.

NOTES ON ECLIPSE PHOTOGRAPHY.

BY A. BROTHERS, F.R.A.S.

[We are favoured by Mr. Brothers with an amplified copy of his article in *Nature*, which will, doubtless, interest our readers.—Ed.]

The most complete particulars yet published respecting the eclipse of next December will be found in a paper communicated to the Royal Astronomical Society, in March last, by Mr. Ragoonatha Chaug. The points most interesting to photographers are referred to in the following extract:—

The central line of the eclipse will first meet the earth's surface in the Arabian Sea, and, entering on the western coast of India, will

pass right across one of the most important parts of Hindustan in a S.E. by E. direction. In this part of the peninsula the sun will be about 20° above the horizon when totally obscured. The duration of totality will be two minutes and a quarter, and the breadth of the shadow about seventy miles. On leaving the eastern coast of the Madras Presidency, the central line will cross Palk's Straits, passing about ten miles S.W. of the island Jaffnapatam, and over the northern part of Ceylon, where the small towns of Moelativo and Kokelay will lie near the central line, and also the well-known naval station of Trincomalee, which will be about fifteen miles S.W. of the line. Continuing its course over the Bay of Bengal, the shadow will cross the S.E. point of Sumatra, and will touch the south-western coast of Java, where Batavia, the capital, will lie nearly sixty miles N.E. of the central line; and two other smaller towns, Chidamar and Nagara, will also be very near the middle of the shadow path. In the Admiralty Gulf, on the N.W. coast of Australia, the eclipsed sun will be only 10° past the meridian, and not far from the zenith, in consequence of which the totality will last four minutes and eighteen seconds, or only four seconds less than the time of greatest duration. Lastly, passing through the most barren and uninhabited portion of Australia, crossing the Gulf of Carpentaria, and the York Peninsula, the shadow will ultimately leave the earth's surface in the Pacific Ocean.

The author also says that, unfortunately, haze and mist are very prevalent in the hill ranges in the month of December; but that in the lower levels of the country the weather is generally fine at the time of the year named. It is unfortunate that the weather in the hill districts is uncertain, as the advantage of obtaining photographic and other observations from elevated stations during the totality cannot be over-estimated. Although the weather may be uncertain in the Neilgherries, the importance of the observations which may be obtained is so great that the attempt ought to be made.

It is generally admitted that it is highly desirable photography should be again employed for the purpose of recording the phenomena, as far as practicable; and as, in all probability, there are many amateur and professional photographers resident on or near the line of totality, those who are willing to take part in the observations may be glad to know what was done during the last eclipse in Sicily:—

Eclipses of the sun occurred in 1860, 1868, and 1869, when photography was employed chiefly to obtain evidence as to the nature of the red prominences, and in all cases a telescope of some kind was used, the image being taken at the principal focus. When refracting telescopes are employed for photographic purposes, the chemical and visual foci not being coincident, it will be found almost impossible to obtain pictures exhibiting detail such as becomes visible during a total eclipse of the sun. This difficulty is removed when reflecting telescopes are used, and when adapted specially for photographic work they may be advantageously employed.

It is, however, preferable that instead of a telescope, an ordinary photographic lens of long focus* be employed. Such a lens may be a portrait combination or single or compound lenses adapted for landscape or copying work; the conditions are, that the image shall be as large as possible, and the lens quick acting. These requirements were found to be combined in the lens I used at Syracuse, and which was made by Mr. Dallmeyer, and lent to me for the purpose of the expedition. The lens is four inches in aperture, and has a focal length of thirty inches, the image of the sun or moon being three-tenths of an inch in diameter. It is scarcely to be expected that there will be many lenses of this exceptional class available in India; but no doubt there are many good landscape lenses of long focus which may be used, and if the images they give are not so large as those taken by the four-inch "rapid rectilinear," the pictures obtained may have scientific value, although small. It is

* The author of an article in *Nature* of July 13 quotes from a paper read at the Royal Society by Mr. Lockyer, as follows:—"B. Photographic observations made with such an instrument as the one I took out to Sicily, namely, a camera with large aperture and small focal length, equatorially mounted." There is evidently a mistake here, as I know of only one photographic apparatus taken to Sicily by the English party, and that was the one I took, the aperture of the lens being large, and the focus long, and those are the essential points. The apparatus taken by Dr. Vogel was of a totally different kind.

an interesting fact that at Oran, Dr. Huggins had arranged with a local photographer to attempt some pictures with a small lens, giving an image of about one-eighth of an inch in diameter. Clouds prevented a trial of the instrument during the totality; but I have no doubt, judging from a picture of the sun taken a short time before totality, that this small photograph would have shown the corona fairly and the rifts distinctly.

In all cases it is strongly to be recommended that the best instruments be used. Instead of Dallmeyer's four-inch lens, it is suggested that lenses of the "rapid rectilinear" make, of still larger aperture, be used, as the focal length will be increased, and consequently a larger picture will be obtained, allowance, of course, being made for the increased exposure required, if the focal length of the lens has been made greater in proportion to the aperture.

It will be convenient to assume, in what I have now to say, that a lens of at least four inches aperture and thirty inches focal length will in all cases be used, and that it will be corrected for the chemical rays.

Now an instrument of this kind, if used to photograph the sun's corona, will be useless if not mounted so as to follow the sun's apparent motion. The camera must, therefore, be mounted on a stand having clockwork motion. The stand of an equatorial telescope is what is required. The telescope may be removed, and the camera fixed in its place (this for convenience only), or the camera may be fixed on the top of the telescope. It will, however, be better to remove the telescope, as the extra weight of the camera and fittings, which require to be counterpoised, throw extra work on the clock, and is also objectionable on the ground that the camera is not so handy to use as when mounted as suggested. Care must be taken that the camera be mounted at right angles with the declination axis of the equatorial stand. The adjustments may then be made, treating the camera as a telescope.

The annexed diagram shows the plan of the observatory and dark room as used at Syracuse:—



The framework was of wood, as slight as possible consistent with stability, and was covered entirely with waterproof cloth, the dark room being lined with yellow calico, in some parts double. The floor was also covered with the waterproof cloth to keep down the dust. Instead of the cloth for the sides and the roof I should prefer very thin boards, and the roof need only be made watertight, the edges of the wood being made, if necessary, to overlap. If wood be used, one thickness of yellow calico will be sufficient. The cloth, if used alone for the sides and roof, is objectionable, owing to the possibility of wind tearing it away from the nails.

It is unnecessary to enter into details of construction, as any joiner will at once see what is required. The opening in the roof may be adapted for the position of the sun at the place of observation during the totality, and with very little extra expense other parts of the roof may be made to open.

The importance of each photographic party being provided with a tent of the kind named cannot be too strongly urged. Residents in India will, of course, have no difficulty, but observers from England should prepare a tent at the nearest town to the place of observation, or, better still, take

one with them. To unpack and erect our observatory and dark room required about a day, and to dismantle and repack it about three hours. To adjust and arrange the instruments will require about another day, and about two hours for the dismantling and packing. Much of our success at Syracuse depended on our being provided as described. The entire cost of the building, including waterproof cloth, yellow calico, and the fittings of the dark room, was less than ten pounds. In the erection of a temporary construction of this kind the shelter of a wall or building should be sought, as, in the event of a high wind blowing at the time, the protection of the observatory and instruments would be less difficult than in an open situation.

(To be continued.)

THE STORY OF THE PIGEON POST.*

THE balloon *Le Niepce* started from Paris on the 12th November, 1870, at 9 A.M., and was manned by MM. Dagron, photographer; Fernique, engineer; Poisot, painter, son-in-law of Dagron; Gnocchi, assistant to Dagron; Pagano, seaman, and aeronaut apprentice. The car carried, besides, six hundred kilogrammes of photographic apparatus belonging to M. Dagron.

The balloon *Le Daguerre* left the metropolis at the same time as the *Niepce*, carrying three travellers, the mail, a cargo of pigeons, and the remainder of M. Dagron's apparatus.

MM. Dagron and Fernique were sent by M. Rampont, the Director-General of the Post Office, to establish in the provinces a series of photo-microscopic despatches, which were to be sent into Paris by means of carrier pigeons. The service was regulated by a decree of 10th November, 1870, and was to be established at Clermont Ferrand.

At the departure of the two balloons, the wind was due east; nevertheless, we left the capital amid the liveliest demonstrations of sympathy.

On arriving above the Prussian lines, the *Niepce*, as also its companion, the *Daguerre*, was received with a sharp fusillade. At a height of 800 metres the balls whistled around us. The *Daguerre* was hit, and we saw it, with bated breath, descend from its giddy height, and fall against the wall of a farm building several leagues from Paris; we know now that the locality was Ferrieres.

One circumstance, which might have been of terrible consequence to us, and which was, indeed, the cause of the loss of the *Daguerre*, was that the ballast sacks were made of too thin a material, and were not sufficiently strong for the purpose. The sight of the *Daguerre* pierced with balls, and captured by some of the enemy's cavalry, which we could see gallop towards the spot, made us vividly aware of our own danger, and caused us to hasten our ascent to escape a like fate, but, to our dismay, the ballast sacks became torn, and the sand poured out into the car. So it became necessary during the whole time of the voyage to collect the sand by means of a plate, and bale it out, as it were, by degrees from the car.

At about half-past one in the middle of the day we were 1,500 metres above the earth. There remained scarcely two more bags of ballast, and from the ignorance of our whereabouts and of the vicinity of the enemy, it was decided to make a very rapid descent, so as not to give time for the Prussian cavalry to arrive and capture us. The descent was, therefore, effected at about the rate of ten metres per second, and, thanks to the ballast which we had husbanded, and to two guide ropes with which we were provided, the landing on *terra firma* was, notwithstanding a high wind, effected without any serious accident; but the balloon swept on to its side, and ran along for about a couple of kilometres at an enormous speed, carrying with it the car and all its passengers entangled in the cordage. The

country was bereft of any bushes or trees in which our anchor or guide ropes could be made fast, and, therefore, the balloon did not come to a halt until the hemisphere had been torn to rags, and the wind had no further power. The ropes, in becoming crossed, had secured M. Fernique by the neck, and it was only by a desperate effort that he was able to free himself. The same circumstance happened to M. Gnocchi, who was, however, released by a rotary motion of the balloon. M. Poisot was the first to be able to leave the car and to come to our assistance. As to myself, a heavy case suspended above my head was in the act of falling upon me, and in raising my arms to ward off the blow, I was overturned and thrown down in a state of almost total unconsciousness, being unable to move until my son-in-law released me from my critical position.

A number of peasants who came running towards us communicated the fact that we were in the neighbourhood of Vitry-le-Francais. They provided us at once with blouses and caps, and placed at our service a couple of waggons, upon which was hastily packed all the cargo from the balloon. Scarcely, however, had the waggons been freighted than the Prussians arrived, and took possession of one of them; they mixed among the group of peasants which we had joined in order to discover us, but, thanks to the prompt and effective change of costume, they were unable to make detection. The balloon was also captured by the enemy, and it was, indeed, while they were engaged in securing it that we escaped safely across country, bearing with us one of the waggons with my apparatus and necessaries.

At this period M. Fernique separated from us, taking the direction of Coole, where we arranged to meet again; but difficulties presented themselves, and compelled us to make for Vessigneul. Here the mayor, M. Sogny, agreed to shelter us in an outhouse for the night, and I confided to the care of Madame Sogny the papers and letters which had been entrusted to me for conveyance from Paris. The luggage was hidden under some straw in a barn; only one case remained unconcealed, and this the Prussians, who were following rapidly on our footsteps, found and made off with.

Profiting by their departure, and foreseeing their speedy return in increased numbers, M. Sogny, without loss of time, made us enter his carriage, and drove us himself to Fontaine-sur-Coole, to the house of the curé. The latter, who but the night before had given shelter to two Prussian officers, and who at that very moment was expecting another visit of the same nature, knowing us to be hotly pursued, hastened to effect our departure from the back of his premises, so that we should not come into contact with the enemy, nor our safety be jeopardised by the possible indiscretion of the inhabitants.

The curé gave us a kindly introduction to his colleague, M. Darcy, of Cernon, where we arrived, almost exhausted from fatigue and hunger, at two o'clock at night. M. Darcy and his mother gave us every attention, and behaved in a most devoted manner, and we owe also our thanks to the mayor of this place, who did all he could in his power to help us. M. Darcy wished us to sleep at his residence, but at midnight there came a knocking at the door, and some peasants, who had just arrived with a part of the luggage left at Vessigneul, communicated the fact that the Prussians were upon our track and coming up fast upon us. No longer delay was, therefore, possible, and off we started again for Bussy-Letree, where we arrived at five in the morning. Having thrown away our ordinary clothing at the time of our descent from the balloon, and being but clothed in a thin blouse, the cold during the frosty night was insufferable.

At Bussy Letree we were again well received. Our host at once made up a good fire, and in this way we were enabled to warm our stiffened limbs and to improve our condition in some way, but we could make but a temporary halt, and proceeded in a carriage to Lomperis. To escape public curiosity we decided upon not entering all together.

* Abridged from a pamphlet "La Poste par Pigeons Voyageurs," by M. Dagron

M. Poisot, who remained behind, was interrogated by the inhabitants, who told him that a stranger had the day before arrived at the house of M. Legrand, the post master. Supposing this traveller to be M. Fernique, I proceeded to make enquiries, and was delighted to find that it was our comrade, who had also been successful in escaping the hands of the enemy, and had been safely conducted to Dampierre, where we now all repaired.

Here Dr. Mosment was good enough to entertain us. In the belief that the journey could be more easily traversed, he procured in the town a guide furnished with Prussian permits for the transport of wine. All that had been saved of the apparatus was accordingly put into empty casks, and in this way carried along for some time. Thus we proceeded to Nogent, and afterwards to Aube, being well received at both these places. From Aube we were advised at once to push on for Vandœuvre, but we had not been eight hours on the road when the country people told us that the district was continually being visited by the Prussians to make requisitions for horses and waggons, and there was no alternative, if we did not wish to come face to face with the enemy, but to retrace our steps. We therefore made our way to Arcis-sur-Aube, a village occupied by Prussians, bearing our goods outside, for we were, of course, afraid to present them at the Custom House to be passed. All the hotels of the place we found crowded with the German soldiery.

At the Hotel de la Poste, where we were obliged to dine at table d'hôte with Prussian officers, a Hanoverian veterinary surgeon—who, probably, had doubts as to our *bona fide* character—wanted to make a bet of a hundred dollars with me that Paris would surrender in a fortnight, and he passed me his card, wishing, of course, for mine in exchange. But I was, fortunately, well on my guard, and it is unnecessary to say that I did not accept the challenge.

During the night the baggage was packed into boxes and hampers, and at four o'clock in the morning we quitted Arcis for Troyes, also occupied by the enemy, leaving, however, behind us, for the sake of safety, our aeronaut Pagano. It was, indeed, well that we did depart in the night, for, as we afterwards learnt, at seven o'clock all the outlets of the town were rigorously guarded.

(To be continued.)

NEGATIVE VARNISHES AND THEIR MANAGEMENT.

BY M. CAREY LEA.*

MUCH more attention than usual has been directed in these last months to the destruction of negatives resulting from insufficient protection by the varnishing. I propose in this paper, besides some remarks on the general subject of varnishing negatives, to call attention to one source of trouble about which very little has been said—I mean, to the use of too thin a varnish.

Varnishes are usually sold of a proper thickness. The published formulæ also give a proper strength of varnish, unless, indeed, the alcohol used has been too watery, and has left undissolved portions of material which it ought to have taken up. But after varnish has been once used, and has been poured off the plates, it is considerably changed. It has darkened somewhat in colour, and has become considerably thickened. Before being used again it needs to be diluted with alcohol, and it is very easy to carry this dilution too far. If alcohol enough is added to bring the colour down to match that of the fresh material, the dilution will have been far too great.

When negatives have been coated with too thin a varnish, they do not at first show any difference of appearance, unless, indeed, the want of body has been very great. There may not be the least deadness of surface, which may be bright and glassy, and yet the protection may be quite

insufficient. This fault in varnishing will show itself, not so much by cracks or ridges resulting, as by scaling off. Sometimes a negative will bear printing from for some time, and then suddenly a flake will detach itself, and the negative is probably ruined, and this may happen whilst the negative is standing in its box. Or if, in printing, there be the slightest trace of moisture on the paper, or even sometimes, perhaps, without it, parts of the film will adhere to the paper and come away with it.

The only real trouble I have had with varnishes for many years I traced to the cause just described, not, however, before losing some valuable negatives first. I have never used a bad varnish, and the protection that is afforded by a really good one is something remarkable. I have described in the second edition of my "Manual" the wonderful resistance afforded by the varnishes (of which the formulæ are there given) to wet, and as the experiment there described was still unfinished at the time when the book went to press, I take this opportunity to describe its continuation. The pieces cut out of the negatives varnished with the different varnishes, as there described (pp. 375, 431), had been left in water up to the time when the book went to press, (three months): one had resisted perfectly, and two others sufficiently, having only shown a slight puckering at one corner. Since then the trial has been extended to four and a-half months, at the expiration of which the condition of matters continued unchanged, the last month and a-half having produced no difference whatever. The one film remained entirely perfect, and the other showed no further injuring than the slight fold at one corner already described, which had not increased in size.

The investigation of which this experiment formed a part was entered into with a view of aiding to ascertain exactly what were the conditions of perfect protection to negatives. The amount of time which is expended in their production by the very many thousands of photographers constantly at work is so large that one cannot but regret to see the results destroyed so frequently as they are by want of efficient protection. And it is in reality just as easy to give a negative a perfect as an imperfect protection. The conditions of complete protection are as follows:—

1. To have a good varnish to start with.
2. To keep it in good order, avoiding to dilute it too much, as above explained.
3. To have the negative thoroughly dry and warm before applying the varnish.
4. To keep the varnish on the plate for a sufficient time. Neglect of this is the commonest of all faults, and, as I have elsewhere pointed out, this is the origin of "honeycomb cracks." After the plate has been fully covered, keep the pool on it for ten or twelve seconds before beginning to pour off.
5. To heat the plate thoroughly after varnishing. This heating has been usually done in order to prevent drying dead, but I have shown by the experiments detailed in the new edition of my "Manual" that it has another use not hitherto understood, and that is, to drive off the last portions of the essential oil used in all varnishes. The introduction of these volatile oils seems to be necessary in order that the film of varnish may be left in a proper condition, but they must be expelled again, or they will do injury. If they are omitted from the varnish, the danger of cracking is greatly increased, as was shown by the experience of Mr. Wenderoth. If they are left in, the tendency of the negative to stick to the silvered paper in very hot weather is greatly increased. This last fact was brought out in the plainest manner in my experiments, and explains what has hitherto seemed difficult to understand, viz., that some negatives show much more tendency than others to become sticky with heat, though varnished with the same varnish, and exposed in printing to the same degree of heat. The explanation is, that some have been dried at a higher temperature after varnishing than others. This difference may have arisen by simply holding them nearer to the source of heat, or for

a longer time. It is necessary to recollect, however, that too high a heat, or a proper heat too long continued, is also injurious.

PHOTOGRAPHIC PRINTING ON OIL SURFACES.

BY H. H. SNELLING.*

I AM not aware that a satisfactory process for printing on oil surfaces has ever been given to the photographic public; serious objections being made to all I have seen. It is, also, so long since I experimented for the purpose of obtaining such a process, and adopted the one herein given, that some one else may have made a similar discovery; still, knowing this to be a good method, I send it, and I trust, Mr. Editor, that its excellence will make up for its brevity as my monthly contribution to your valuable journal, particularly as the severe labour to which I am now otherwise subjected prevents as free scope to my thoughts as I desire when writing. And just now there is another reason. I like best to sit down and scratch away as rapidly as my hand can go, and finish before I rise from the desk; but under present circumstances my mind is dwelling too much on something, which time will disclose, to come to a point on any other subject. When you are made acquainted with this one "all absorbing idea," you will say, I trust, "All right!" But to the process.

Make a saturated solution of gum dammar in equal parts of alcohol (95°), and sulphuric ether (conet.) It is necessary to make a saturated solution, because, *first*, even this strength is not very strong; and, *secondly*, because, as weak as it is, the varying quantity of oil in different surfaces requires a thinner or thicker film, as the oil is more or less predominant; therefore, an eight or twelve-ounce bottle full of the varnish may be made as above, and diluted with the same solvent before using, as may be required. The experience of the photographer must teach him as to the thickness of the film necessary to a given quality of canvas or other oiled material. Having prepared the varnish, it is used by flowing it quickly over the surface, in the same manner observed in coating a plate of glass with the collodion film.

Either the ammonia-nitrate or developing process may be used in printing on this prepared surface, in the solar camera, or by super-position; but if the first process is adopted, the solution must be salted as lightly as possible before spreading the varnish; or, perhaps, it can be salted after it is spread, but I have not tried it so.

The superiority of this method over those that I am acquainted with is, that the film remains soft, never cracks, either before or after painting, and it does not injure the canvas in any way, while, it seems to me, it makes the colours more brilliant.

I have had two or three specimens of this style of printing "knocking around," and if I can find one I will send it to you for examination.

I may also mention that I have taken "printing paper" like that used for your journal, and even a very common quality, and made quite good photographic prints upon it after sizing it with this varnish; and I am of the opinion that paper well sized with it, and rolled heavily, would receive photographic impressions equal to albumen paper in solidity, and more artistic in appearance.

ON THE CHANGE OF COLOUR PRODUCED IN CERTAIN CHEMICAL COMPOUNDS BY HEAT.

BY PROF. EDWIN J. HOUSTON.†

ORANGES.—*Chromic Acid.*—Colour of solution, reddish-orange; changes to an orange mixed with a greater amount of red.

Bichromate of Ammonia.—Colour of solution, orange-red; changes to a pure red.

Sesqui-Chloride of Iron.—Colour of a weak solution, orange-red; very sensitive; changes to red and brownish-red.

Bi-Chromate of Potassa.—Solution of an orange-red; changes to a red.

YELLOWS.—*Sesqui-Nitrate of Iron.*—Colour of solution, brownish-yellow; changes to brownish-red.

GREENS.—*Ferro Cyanide of Potassium.*—Solution of a yellowish-green; changes to a yellow.

Chromate of Potassa.—Solution of a yellowish-green changes to a yellow.

Nitrate of Nickel.—Solution, pale green; changes to pale yellowish-green.

Sulphate of Nickel.—Solution, green; changes to yellowish-green.

BLUES.—*Chloride of Copper.*—Colour of weak solution, bluish-green; changes to a very decided yellowish-green. This substance is quite sensitive, the colour returning rapidly on cooling.

Sulphate of Copper.—Solution of a decided blue; changes to a very decided green at the boiling point of the solution. Returns to its original colour rapidly on removal from the heat.

VIOLETS.—*Ammonia Oxide of Nickel.*—Solution of a violet-blue; changes to a light blue; returns fully on cooling, and cannot, therefore, be attributed to any loss of ammonia.

Solution of Litmus.—Colour, violet; changes to an indigo-blue.

It may be objected that the substances noticed do not present as great a range of changes as those observed in solids. It must be remembered, however, that the temperature in no case differed much from the ordinary temperature, being never much greater than 220° F., while in the experiments with solids the temperature was often more than three times as great. We feel sure that experiments with liquids at higher boiling points will show substances running down the scale much further than the observed solids.

The Action of Cold.—It would appear from the law already stated, that the colour of a body is affected by its temperature, and that in proportion as this temperature is raised, the colour is lowered; moreover, considering the colour emitted by the body at its higher temperature, the colour is always raised in the spectrum as the body cools. For example, take the case of the green iodide of mercury, which, as before mentioned, is yellowish-green at ordinary temperatures. By the action of heat its colour is successively lowered through the yellow, orange, and red, which latter is reached at the maximum temperature of exposure. Cool the body from this point, and its colour will become orange, yellow, and yellowish-green, respectively.

Now, the same reasoning that applies to the cooling of the body from this higher temperature should also apply, though not with equal force, to its cooling from any temperature, such, for instance, as that of the place in which the body is situated. The colour emitted by a body at any temperature is always lower than it would be were it not for the intermingling of the heat vibrations. Remove it as much as possible from the influence of these vibrations—or, in other words, cool it—and the emitted light must be of a higher pitch or colour. It would appear, then, that as the effect of raising the temperature of a body above its ordinary temperature is to lower the pitch of the emitted light, so cooling it below that temperature must be to raise the pitch. The raising, however, would hardly be as great, proportionally, as the lowering. As we recede from the boundary of the heat and light vibrations, we lessen the chance of their producing by intermingling a resulting mean vibration.

With a view of testing the truth of these theoretical considerations, experiments on the action of cold on substances in both the solid and liquid condition were made.

Solids.—The reduction of temperature was obtained by the evaporation of ether, bi-sulphide of carbon, or liquid

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† Continued from page 416.

sulphurous acid. The liquid was placed in a metallic box furnished with eight vertical sides. Strips of paper, on which the substances were painted, were pasted on the sides of the vessel. Corresponding strips of paper, similarly prepared, were kept for comparison. Cold was produced by blowing a blast of air from a small bellows upon the surface of the liquid. The results obtained were somewhat vitiated by the deposition of the moisture of the air on the sides of the metallic vessel. This difficulty was obviated to some extent by having the paper slip, kept for comparison, equally moist. The results, which are open to this objection, were as follows:—

Sulphide of Mercury.—Changes from a bright red to a brighter red.

Bi-Sulphide of Tin.—Changes from a brownish orange-yellow to a lighter brownish-yellow.

Sub-Sulphate of Mercury.—Changes from a yellow to a greenish-yellow.

Iodide of Lead.—Changes from an orange to a lighter orange.

Chromate of Lead.—Changes from a yellowish-orange to a yellowish-green.

The substances occupying the remaining sides of the vessel did not present any appreciable change.

Liquids.—The experiments with liquids were, with a few exceptions, of an unsatisfactory character. The solvent in most cases was water, and the cold could not safely be pushed lower than the point of maximum density of the solutions. The solutions were prepared in test tubes, in a manner similar to the experiments with heat. The limitation in the application of cold was, in all probability, the cause of the changes not being of a more decided character.

The following are among some of the substances experimented with:—

Sulphate of Copper.—Solution of a pure blue; deepens on the application of cold.

Ferro-Cyanide of Potassium.—Saturated solution of a nearly pure yellow; becomes tinted slightly with green.

Chloride of Copper.—Solution of a bluish-green; becomes a more decided bluish-green.

Sesqui-Chloride of Iron.—Solution, orange-yellow; becomes an orange yellow in which the yellow is more predominant than in the preceding.

Sesqui-Nitrate of Iron.—Solution orange yellow, like the chloride.

Wishing to obtain a solution that could be exposed to a much lower temperature without freezing, a solution of the chloride of copper in ether was prepared. The colour was yellowish-green. When exposed to a low temperature by the evaporation of the bi-sulphide of carbon, the colour changed very decidedly to a pure green. It is purposed, at our earliest convenience, to pursue these investigations at lower temperatures obtained by means of solid carbonic acid and ether. Meanwhile, we would be much pleased if any investigators throughout the country, who may be using a solution of the solid carbonic acid in ether, would observe the action of intense cold on the ethereal solution of chloride of copper, or on any solution of a similar nature.

The law already stated seems now to have been clearly established, both by the number of cases that come under it, and by the fact that, so far, no exceptions have been noticed. It can hardly be urged, with fairness, that all coloured compounds should be equally influenced by the action of the less rapid heat vibrations, for the differences presented by bodies, as regards their transparency or opacity to light, or their diathermaney or adiathermaney to heat, clearly indicate a very great difference in their molecular structure, which difference offers reasons amply sufficient to explain why the colours of some compounds should be more influenced by heat than others. Again, there can be little doubt that more extended observations will increase the great number of compounds already noticed. For instance, the well-known change from red to yellow presented by the red iodide of mercury dissuaded us at first from submitting it

to an experiment. On a careful trial, however, it was found to illustrate the law, changing to a decidedly darker red up to the temperature requisite to alter its crystalline form.

The theory also receives further support and confirmation from the following considerations:—

It is well known that when a yellow and a red substance which have no chemical action on each other, are mixed together, the resulting colour is orange. The explanation is undoubtedly to be found in the raising of the less rapid vibrations by the yellow, and the consequent lowering of the yellow by the red, the mean resulting vibration being that capable of producing orange light.

This case, though analogous to the change produced in colour by the action of the heat, is not strictly identical with it. In an orange substance, which emits red light when heated, the change is produced as follows: its molecules, while vibrating in periods requisite to produce orange light, are, at the same time, forced to accept the less rapid vibrations of heat. They are unable to do this without lowering the rapidity of the light vibrations, and the emitted light is red. Here, however, the molecules themselves transmit red light to the ether surrounding the intermolecular spaces, which ether in its turn transmits it to the eye for the purposes of vision. Now, in the case of the orange light emitted after the commingling of a yellow and a red substance, as no change other than that of mixture is produced, we must still conceive of the particles of the red and of the yellow substance vibrating in periods requisite to produce red and yellow, and the interference taking place in the intermolecular spaces. Briefly, the difference is as follows:—In the substance whose colour is changed by heat, the molecules transmit the changed light directly to the surrounding ether, while in the commingled bodies the change occurs in the ether surrounding the molecules. The two cases become strictly analogous when we mingle red and yellow light.

In accordance with this view, pure orange and green when mingled should produce yellow; yellow and blue, green; green and indigo, blue; and blue and violet, indigo.

(To be continued.)

PHOTOGRAPHY IN THE FIELD.

BY K. SCHWIER.

FOR some time past I have been desirous of giving some account of our doings in the field during the recent six months' campaign. Many business engagements, as also certain military strictures, hindered me, however, from carrying out the intention, which I now proceed to fulfil; and in publishing this communication, I do so in the hope that by making known the difficulties experienced in this interesting branch of our art, some step of progress may thereby be attained.

In a book of travels which I have recently been reading, there is a recommendation to this effect: "Traveller, when thou wanderest into Egypt, leave all idea of the romantic at home." In the same strain I would say: "Photographer, when thou marchest away under the flag in the capacity of photo-surveyor, do not give way to any illusions." But to the point.

On the 7th of September last year I was engaged by the War Department as photographer to accompany the Field Photographic Detachment, and was, at the same time, requested to obtain two gentlemen as assistants, all to be occupied in taking photographic surveys for military purposes by means of a photo-surveying instrument. My friend M. Quidde, and the assistant at the Royal Industrial College, M. Max Hintze, agreed to join in the expedition, and the party was thus complete. Our detachment was under the command of Captain Buehardi, of the Royal Engineers, who was assisted in the duties of surveying by Lieutenant Dorgens. One serjeant as draughtsman, ten sappers, and two of the Military Train, completed our number.

A perfect outfit of photographic requisites had been devised, but, owing to a change in the appointment of the photographers, the same was not in a very satisfactory condition. The gentlemen who had previously to me accepted the appointment resigned immediately before the departure of the detachment, and when I, on the recommendation of Privy Councillor Professor Dore, became a candidate for the post, the apparatus and chemicals had already been ordered and supplied. Every photographer believes, of course, in his own special manner of operating, and it is no wonder, therefore, that the materials at hand, although fulfilling, no doubt, the object of the person who ordered them, were by no means suited to my taste, and caused much difficulty before I could get suited to or even understand them perfectly, for no hint or explanation of the arrangements could I obtain. At last, however, matters were cleared up a bit, and we were enabled to make experiment with the measuring instruments which had been specially constructed for the purpose, by securing two or three trial plates. As these preliminaries were deemed satisfactory, we started off to Strasburg on the 19th September.

Our outfit consisted of a covered waggon, which served as dark room, and afforded seats in the interior for two of us, and of another army cart containing apparatus and other necessities. Our personal appearance differed so much from that of the army uniform that we were often regarded in the light of Franc-tireurs, especially when strolling about with loaded pistol and revolver in the girdle. Of our journey and arrival, as also of our manner of living, I must leave M. Quidde to give an account.

In Strasburg we had our hands constantly full, and produced a total of 116 survey plates measuring 12 by 12. Besides these, I was specially permitted to secure some landscapes, and of these, sixteen 10 by 8, and fifteen stereoscopic size, were executed. The apparatus for this work had been lent me by Professor Reuleaux, the Director of the Industrial College, as likewise other utensils and necessities, which were not included in the outfit, but which were found to be indispensable, especially when operations were conducted in presence of the bombardment. The stereoscopic plates are now being printed by M. Obernetter, of Munich.

The manner of dividing the labour was as follows:—While I put the apparatus in position, the tent was set out and M. Quidde prepared the plate, and I then adjusted the instrument (the dark slide of which was exceedingly imperfect), exposed the plate, and then carried it back and developed. M. Hintze meanwhile put the tent in order, unpacked the chemicals, &c. The varnishing of the plates was postponed till evening, and then performed at home in our own quarters.

On the 19th October we left Strasburg, and on the sixth day arrived at Nanteuil-Saacy, our party being joined on the way by another official, who acted as constructor and draughtsman. For want of horses we were compelled to remain for six weeks in the village of Crouettes, and here we proceeded to print our Strasburg negatives, until we set out for Versailles, which we reached on the evening of the 5th December, after a march of four days. By particular order, we were attached to the command of the Crown Prince, under whose disposition our detachment was placed, and our duties were to secure pictures of the forts of Issy, Vanvres, and Montrouge, as also of our own batteries on the south side of Paris: of the latter as many as six were photographed. In all we prepared at Versailles 123 landscape plates, of the sizes 12 by 12 and 10 by 8, besides others of smaller dimensions.

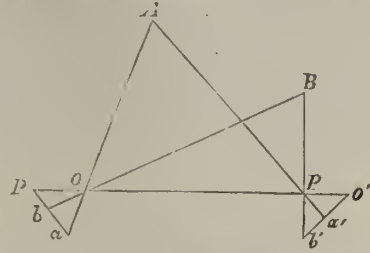
Of these, nine plates were views of Fort Issy, eighteen were views of Fort Vanvres, and eight of Fort Montrouge, and the remainder of batteries and outworks in the neighbourhood.

During the period of the war we were enjoined to silence as to the nature and extent of our work. After three

months' sojourn at Versailles we returned, and arrived back again in Berlin on the 12th March. Of all the plates we had taken only one was broken on our return.

I will now proceed to describe briefly the manner in which the photo-surveying operations were conducted:—

Let OP represent a measured base-line, at each extre-



mity of which (namely, at O and at P) the camera and lens is every time placed. Suppose the plate to be obtained through ap and $o'b'$, then abp are the pictures of ABP , and in the same way $a'b'o'$, the pictures of ABO . Suppose now that the measured line OP be transferred to a drawing-board, and the pictures of $o'b'$ and ap suitably applied, having regard for the focus of the lens and the direction of the camera, then from the points depicted can be found the position of B by drawing the lines $b'P$, and abO ; and in like manner is every other point decided on. Of course, in operations of this kind a very accurately constructed apparatus and very careful manipulation are necessary.

The apparatus consisted of a tripod stand carrying a double brass plate, which turned upon a three-quarter inch pivot. A kind of locking pin came into play every time the plate was turned 60 degrees. The stand was very heavy, and exceedingly faulty, as its level became altered whenever the apparatus was turned but one-sixth of the circumference, and always required subsequent levelling, to ascertain whether the plate stood perfectly horizontal. Upon the plate was placed a loose slide which rested upon three pins, and carried at the top three open forks. It was entirely of metal, and tapered towards the lens, so that it appeared similar to an elongated funnel. The plate was placed behind upon a metal edge which carried four silver projections whereupon to adjust the hair cross. The lens was without a cover, and only furnished with a slide. The distance of the plate from the lens was exactly its focal length, and, therefore, no rack-and-pinion movement was necessary, and the constant effects could not, therefore, be in any way altered.

There were many errors to be taken into consideration in regard to the instrument, photographic, optical, and mechanical. Among those of a photographic nature may be mentioned the manner in which the plate was adjusted, which, from the fact of its lying upon the metal surface, became chemically affected and covered with stains and spots, a defect to be avoided, possibly, by employing a silvered metal margin. The worst point was, however, the defective dark slide; this circumstance rendered it necessary at every operation to transport the camera itself in a state of darkness, and gave rise to many difficulties, much time being lost in cleaning the apparatus after every exposure. Another surveying instrument, which was at first employed, was also defective as regards its dark slide, the latter being exceedingly bulky and heavy, and only capable of being fitted into the camera from the front. The putting in, and especially the taking out, of the plate, the film of which is turned towards the operator, involved the greatest care, and in hurried operations in the field it was, indeed, scarcely possible to prevent damage to the sensitive film from dust and other causes.

As regards the optical difficulties, these would have been remedied, no doubt, by the substitution of another lens of much longer focus, inasmuch as the one employed

possessed a focus of but 235 millimetres. The images obtained with our instrument were, in fact, too indistinct in the distance, and too small in proportion to their proximity. For this reason it was just those objects that were the most important to us in the construction of the plans that were rendered most indistinct. It would also have been far easier to focus if the manner of fixing the lens had been such as to allow its removal with facility. The calculation of the distance of the centre of the lens from the ground glass would, according to Lieutenant Dorgens, have been easily made by photographing from a particular distance a rod of a certain length, and the interval would then be in proportion to the actual length of the rod as depicted upon the plate.

(To be continued.)

Correspondence.

SURFACE FOR RETOUCHING NEGATIVES.

DEAR SIR,—The following is my method for preparing a plate for touching.

To one part of white hard spirit varnish I add two parts of methylated spirit. The plate I coat in the usual way, and dry by heat. As soon as perfectly dry and cold, a corner may be frictioned with the finger, which should be perfectly clean and dry. Very soon the varnish will give way and a fine powder will come up, when the whole surface should be gone over equally and gently.

The result leaves nothing to be desired, as far as my practice is concerned. I touch with a BB pencil.—I am, sir, yours truly,

GEORGE PIERCY, JUN.

Talk in the Studio.

IRREGULAR MARKING AND STAINS ON ALBUMENIZED PAPER.—Mr. Bovey remarks:—"Complaints are often made of albumenized papers refusing the sensitizer, the solution collecting in globules on the surface, or running in zigzag lines. The cause of this can be easily traced to the silver bath, which, in such cases, is too strong for the kind of paper that is liable to such defect. The difficulty occurs only when the paper is heavily albumenized. Papers coated with weak albumen sensitize evenly with silver solutions of any strength, simply because the pores are left open to exercise capillary suction. It is a curious fact that heavily albumenized papers require the weakest silver bath."

YELLOW LIGHT FOR DARK ROOM.—Mr. Hallenbeck writes to our Philadelphia contemporary saying:—"Better than all glass, stretch over the opening used as a window thin sheet rubber. This keeps out all actinic light, and you can work with your room as light as you please without causing fog."

ONE CAUSE FOR PINHOLES IN NEGATIVES.—A correspondent of the same journal says:—"A fixing bath of cyanido or hypo that has been over-worked and full of silver, will cause negatives to be full of pinholes, for which the bath will be blamed and doctored."

ACTION OF MOIST ULTRAMARINE UPON SILVER.—Herr Braunschweizer, in a German journal, relates a series of experiments made in order to explain some facts to which his attention had been called by parties who found that silver foil (perfectly pure silver), and objects made of that metal (spoons and forks), became very deeply black brown coloured under conditions which seemed to point to the presence of ultramarine (in paper wherein either the objects were packed, or in contact with) as the only cause of the discolouration and tarnishing of the metal alluded to. By the experiments this opinion was fully confirmed, care being taken to have extra good quality of ultramarine, and to institute comparative experiments with other blue pigments, viz., indigo, litmus, Berlin blue, mountain blue, all of which, placed upon clean glass plates, and moistened with distilled water, were left in contact with silver foil for twenty-four hours, with the result that only the foil in contact with ultramarine was blackened. It thus appears that the sulphuret of aluminium present in ultramarine is slowly decomposed, and gives off, when moist, sulphuretted hydrogen. The presence of ultramarine in paper occasionally used to modify

the colour would doubtless have an injurious influence on photographs. Its use in passepartouts was years ago discovered to be injurious to Daguerreotypes and glass positives.

To Correspondents.

W. W.—There are degrees of fogging in negatives. One thoroughly fogged has a grey veil of reduced silver all over, making the shadows and half-shadows opaque, but not increasing the density of the lights—these, indeed, in a fogged negative, often being thin, a portion of the silver, which should have aided in giving the lights intensity, having been diverted from that purpose, and thrown down in the shadows. There is, perhaps, some degree of resublimance at first sight between a negative the varnish of which is matt for retouching purposes, and a slightly fogged negative; but as regards printing qualities the difference may be easily distinguished. In the latter case the general transparency of the negative is slightly obscured by the matt varnish, but it is equally so in lights and shadows, the relative intensity not being in any degree impaired. In a fogged negative the shadows are more completely obscured by the veil thrown down, whilst the lights are generally proportionately thinned, so that the intensity of the negative is absolutely lessened. A matt varnish may render the operation of printing somewhat slower, but the print will not be reduced in brilliancy. A print from a fogged negative always lacks brilliancy.

C. TAYLOR.—If you obtain the varnish applied without heat, known as crystal varnish, and dilute it with three or four times its bulk of benzole, you will obtain a varnish which will answer. The "Positive Colouring Varnish," sold by Newman, of Soho Square, will answer. If the alabastrine positives are properly managed, we believe that their permanency may be relied on. It is important to allow the bleaching solution to remain on the image until it has very thoroughly performed its office. We have pictures in our possession now which were treated so sixteen years or more ago, and in which there is no change.

R. GRIFFITHS (Truro).—The effect in your medallion prints of the image being seen through an oval aperture is just that to which we referred.

THE REV. S.—No. 1 on your list, by all means, as a lens of all work. 2. The collodio-bromide process used wet must be developed with the alkaline solutions which are employed with the plates when dry. They have been used wet with success, but not to any great extent. 3. Most of the suggestions in the articles to which you refer will still be useful; but further experience has modified some of the hints, and more recent articles in the NEWS will, therefore, prove safer guides. In a dull light, or cold weather, a very much stronger developer than that mentioned is desirable for instantaneous work. We shall have pleasure in receiving some details of your trip. Possibly we may be able to offer suggestions as to any causes of failure.

F. G. O. STUART.—We will endeavour to find space for a reprint of the article, or for another on the subject, shortly. In the meantime we may mention that in the production of transparencies for the lantern, care must be used to keep them clean and brilliant, without fog. A thin textureless collodion should be used, and an iron developer with plenty of acetic acid. There are various modes of toning; but that to which we referred as being employed by Mr. Blanchard consisted in first bleaching by means of bichloride of mercury, and then blackening by a dilute solution of sulphide of ammonium.

B. L. F.—The very high gloss to which you refer is obtained by using heat as well as heavy rolling pressure. There are rolling-presses made with arrangements for the application of heat.

GRISDALE'S WASHING MACHINE.—A correspondent asks:—"Can anyone having had practice with Grisdale's centrifugal washing machine state its advantages and disadvantages, and how to remedy the latter?"

OWEN CHESTER.—An ordinary portrait lens, stopped down until the definition is satisfactory, is as good a lens as you can use for groups in the studio. A "rapid rectilinear" would give better definition, but is scarcely sufficiently rapid for groups in the studio. If you arrange the figures in a semi-circle, you will materially assist in securing satisfactory definition throughout. 2. Sponging the surface of the albumenized print with dilute ox-gall will cause it to take water colours easily. Adding the ox-gall to the colours will answer the same end. Newman, of Soho Square, sells a preparation which answers the purpose well.

Several Articles and Reviews are compelled to stand over. Several Correspondents in our next.

PHOTOGRAPHS REGISTERED.

M. W. W. WINTER, Derby,

Photograph of Mr. M. Kirtley.

MR. H. SUGDON, Beverley,

Photograph of St. Mary's Church, Beverley.

MR. E. GREGGON, Blackpool,

Photograph of Dr. Hall.

THE PHOTOGRAPHIC NEWS.

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POISONING BY CYANIDE.

In our last we recorded the death, after taking a dose of cyanide of potassium, of Miss Gee, daughter of Mr. Charles E. Gee, of Jersey. In the brief newspaper paragraph reporting the event, cut from a morning contemporary, the death was mentioned as the result of suicide. We have received a communication from Mr. Gee, in which he informs us that this is an error: that his daughter's death was the result of accident, not intention, no thought of such a death, he is satisfied, having entered her mind. We receive this information with much satisfaction, and gladly give all the publicity we can to the fact that the death of this young lady, sad enough as in the best it is, is not made more painful by the bitter associations which must always surround the memory of suicide. All our readers must sympathise with a photographer who has lost a beloved child by such an accident, and will be pleased to learn he is relieved by the decision of a coroner's jury from the deeper agony attending his loss.

The force of our cautionary remarks on the dangers of cyanide and its readiness of access is not altered, however, by the fact that a young and hopeful life has been sacrificed, and a family made desolate, by accident rather than design. We should be sorry to add one pang to the grief of the bereaved parent by any comment on the subject; and in our remarks we make no special reference to the accessibility of cyanide in Mr. Gee's establishment. It is, unfortunately, accessible in almost all photographic establishments, and Mr. Gee's was no especial exception. He, unhappily, suffers the penalty of a common practice, and his loss gives sad point to the moral we enforce—the danger of having such a deadly agent accessible, so as to render death by accident, as well as by design, so readily within reach. Such a poison, so surely and rapidly fatal, should be placed beyond easy access, and, wherever it is kept, the warning label "POISON" should be conspicuously borne upon it. In every establishment where it is kept the antidote should be as accessible as the poison should be remote, so that every chance should be made available to save life. We have more than once before detailed the best modes of dealing with such cases, and need not repeat them here, but we again earnestly commend the subject to the attention of our readers.

THE ORIGIN AND PROGRESS OF THE COLLODIO-BROMIDE PROCESS.

ON another page we print a letter from Mr. Carey Lea, in which he expresses himself as less than satisfied with the degree in which he has been accredited with the discovery of the collodio-bromide process, or that form of the process now prominently before the photographic public. He

feels aggrieved at the various allusions in our pages to "Col. Stuart Wortley's collodio-bromide process," the phrase being in his estimation a misnomer, as he claims the process referred to as essentially and wholly his own. And he further feels, as he intimates at the close of his letter, and as he distinctly states in a private note, that we scarcely do him the justice he has a right to expect, in permitting, without protest, this injustice to be done, the more so as we have been, as he mentions, the victim occasionally of similar injustice.

That we should not conscientiously permit injustice to the humblest labourer in the field of photographic experiment and discovery, we need scarcely to affirm to those who have been in the habit of reading this journal; and that we should knowingly permit any slight or derogation of the services of a worker to whom the art and its votaries are so much indebted as they are to Mr. Carey Lea, is simply an impossibility. Mr. Lea has been for years one of the most able contributors to photographic literature; his contributions have generally possessed the practical character which can only result from constant and intelligent work in the laboratory, and have frequently been of an originative character. We esteem such labours highly, as the art has need of them, and it is not given to many men to have time, ability, opportunity, and inclination for the steady pursuit of photography as a science, and not as a profession.

In regard to the collodio-bromide process, and the paternal nomenclature by which various forms of it have been characterized, we cannot but think, however, that Mr. Lea is a little over-sensitive, or that he has not duly considered the various circumstances of the case. So far as we have been able to observe, and certainly so far as we have had occasion to refer to the matter, there has been no disregard of Mr. Lea's claims in the matter. The originators of the process were Messrs. Sayce and Bolton, of Liverpool, and their claims, it is possible, have been too much over-looked. Mr. Lea, many years ago, commenced experimenting with the process, and in his hands it has undergone such change, addition, and improvement, as to constitute it, as we have on more than one occasion observed, practically his own process. Some of the elements by which great rapidity without risk of fog, &c., might be obtained, were the sole discovery of Mr. Lea, and for these especially, as well as for the publication of details of long-continued experimenting with the process, we believed he had received credit. In his paper on the subject before the Photographic Society, Col. Stuart Wortley distinctly, and in no niggard terms, recognized his indebtedness to Mr. Lea for the essential basis of the process, and pointed out the importance of some of the features which were wholly due to Mr. Lea's initiative. Mr. Lea thinks this insufficient: the process should, he thinks,

have been spoken of and advertised as his, and not as Col. Wortley's. This is, of course, a matter of opinion upon which it is evident differing views are held, and upon which we cannot give any absolute decision. But it appears to us that many inconveniences and some injustice would have proceeded from such a course. Col. Wortley claims several points of the process he works as absolutely his own, and as differing from, if not opposed to, the process of Mr. Lea; and this being so, it would be an injustice to Mr. Lea to attribute to him a process modified in a manner he might not approve. Mr. Lea recommends a slight excess of nitrate of silver in the compound; Col. Wortley lays great stress on saturation with nitrate of silver. Mr. Lea recommends a carefully limited proportion of ammonia in developing; Col. Wortley uses it *ad libitum*, with an almost lavish freedom. Even if Col. Wortley were not concerned to claim any credit for the experimental labour which had enabled him to arrive at these results, he might naturally hesitate to accredit Mr. Lea with these modifications, which he may not approve, as an injustice which he might resent. Or, if considerations of credit did not exist, it must be admitted that much inconvenience and possible misunderstanding might arise if the plates were advertised as by Mr. Lea's process, when, in truth, they were prepared by a modification thereof to which some attach great importance. All the facts of the case have been clearly placed before the public; no one has denied, or ignored, or disparaged Mr. Lea's claims, and it is simply a matter of convenience in general reference or commercial description that Col. Wortley's name should be used to designate the precise form of the collodio-bromide process which he has worked out, and to which he has called attention.

In making these remarks it is quite unnecessary for us to enter into any estimate of the respective merits of the processes. We have every reason to believe that the collodio-bromide process as left by Mr. Lea is a very excellent process. Our own experience with it has been limited to one or two testing experiments; but we have testimony, and have seen examples, which assure us of its excellence. With the process of Col. Wortley we have had somewhat more experience, and we know its excellence. But, quite independent of the respective merits, we feel persuaded that the preservation of a distinctive nomenclature is not only not intended as an injustice, but that it would be unfair alike to Mr. Lea, to Col. Wortley, and to the public, to ignore the distinction.

THE COLLODIO-CHLORIDE PROCESS.

So far as the origin of the collodio-chloride process is concerned, we have said all that we deem necessary on the subject, and should not under any circumstances pursue the discussion further if some practical suggestions did not arise out of it. Mr. Sutton, however, in returning in very angry mood to the subject, changes his position and attacks the process, which, it appears, he has not succeeded in working successfully. The merits of any process are much a matter of opinion, and may be safely left in the hands of the public, and we are in no wise concerned to discuss Mr. Sutton's opinion in this matter. As, however, on this subject, as is his custom, he mis states facts, it may, for the sake of those who use the process, be worth while to point out his errors. In passing, we may point out that in the course of his attempt to falsify the origin of the process, he spoke of it in approving terms, and as having been used with success on the Continent. Having, by a brief statement of the facts, established our claim beyond even his cavil, he eats his own words, and states that it has proved an incorrigible failure in the hands of everyone who has tried it. It is, he now thinks, a "matter of utter indifference who was the discoverer." Well, it is not of much importance, but the truth is. If, however, it

be a matter of indifference, why did Mr. Sutton voluntarily raise it and falsify it, and that *apropos* of nothing? He further states that, besides having failed as a process, it has been tried commercially by Messrs. Mawson and Swan in this country, and Herr Obernetter on the Continent, who have proved it a commercial failure, and it has fallen to the ground. That Mr. Sutton should utter a personal opinion unfavourable to a process would concern no one; but when he states that it has failed as a process in the hands of all who have tried it, and failed as a branch of commerce in the specific hands he names, he again states what is not true. We need not refer further to the absurd statement that it has proved a failure in the hands of all who have tried it, as thousands of photographers know by experience that the statement is not true.* As to the commercial question, with which, by the way, we have never had, nor sought, any kind of interest or connection, Messrs. Mawson and Swan continue to manufacture and advertise collodio-chloride of silver, and Herr Obernetter, so far from finding the matter a failure, informed us in a letter not long ago that he had manufactured upwards of two hundred pounds weight of nitrate of silver into collodio-chloride for the preparation of the paper he supplied commercially.

Mr. Sutton speaks of a collodio-chloride print which he had produced from one of his own negatives, which had split up lamentably. This is not improbable: the most perfect thing may be spoiled by mal-practice; and even without conscious mal-practice, collodion films occasionally split in various processes, as photographers know to their cost. As the cause of the occasional splitting of collodio-chloride films was investigated and explained by us many years ago, we may now give this discussion, of which we are very weary, a practical turn by again referring to the matter for the benefit of those interested in the question. We may mention, in passing, that of the several scores of prints which we exhibited at the Photographic Society of London upwards of six years ago, a large number are still in our possession, and not one has split or cracked. Splitting of the film may be caused by two or three causes, of which the use of a horny contractile collodion is one; but, although the most obvious, it is not the most dangerous cause: Collodio-chloride of silver, when long kept, especially if it contain much free nitrate of silver, becomes somewhat decomposed from the action of nitrate of silver on the pyroxyline, and in this state it is apt to yield a film which will readily split if carelessly treated. When opal glass is coated with collodio-chloride of silver, the plates should be dried by heat, and printed as soon as possible, as, if kept a few days, a tendency to split is developed. When collodio-chloride of silver is kept in two collodion solutions, one containing the chloride, and the other the nitrate of silver, the latter is more apt to suffer, and to yield on mixture a collodio-chloride which will split, than when the complete emulsion is prepared with freshly-made collodion solutions. If a suitably prepared paper and suitable glass be employed in conjunction with collodio-chloride in good condition, no fear of splitting or any trouble of that kind need be feared.

FIRST SILVER MEDAL AT FALMOUTH.

In our report of the jurors' decisions in the photographic department of the Royal Cornwall Polytechnic Society's Exhibition at Falmouth a month ago, the award of a first silver medal to Ralph Ludlow, of London, for a picture entitled "The Bridesmaid," was mentioned. At the time we intimated a suspicion that the name of the prizeman in this instance was a *nom de guerre*, and we have since ascertained that this was so. We are reminded by the circumstances of a similar case which recently occurred within

* It may interest some of our readers at this point to refer to the remarks, on another page, of Mr. Elbert Anderson, of America, where the process is extensively used.

our knowledge. An able novelist, whom we have the pleasure of numbering amongst our personal friends, having had a succession of unusual successes, both in circulation and favourable reviews, began to feel misgivings as to whether the high encomiums he received from the press were genuine expressions of opinion, or mere matter-of-course approval given by friendly critics to an established reputation. He resolved, therefore, to issue his next work anonymously, and had the good fortune to win even a higher success than he had achieved by any former work bearing his name.

A somewhat similar issue arises in relation to the prize in question. Ralph Ludlow is H. P. Robinson, who seems to have been anxious to test his work very thoroughly indeed upon its merits. Possibly, in the view of some, the *modus operandi* may be open to question; but it must be admitted that the winner of twenty-eight previous medals in something like a dozen years might not unreasonably have a craving for the crucial test of winning as an unknown man, and so enter the lists in a mask. It is to the picture the prize is given; and if its producer resolved to make assurance in relation to this fact doubly sure, by doffing, for the nonce, his known name and reputation, we think that photographers will readily allow the

“ ——— pretext, as for gain
Of purer glory.”

We have not seen “The Bridesmaid,” but understand that it is a picture of very great merit, on a plate twenty-two inches by sixteen, produced at Cyfarthfa Castle on the occasion of a wedding in the family of Mr. Crawshaw, with whose admirable work, and with whose name as an enthusiastic and able amateur photographer, many of our readers are familiar.

REPRODUCING NEGATIVES ON BROMO-CHLORIDE PLATES BY THE NITRIC ACID TREATMENT—DOUBLE SALTS—GUM BLISTERS.

BY COL. STUART WORTLEY.

HAVING experimentalized lately with the process you recently proposed for multiplying negatives by the use of bromo-chloride plates treated with nitric acid, my experience may possibly be of use to some of your readers. I find it to be a process of the greatest value, and in multiplying several negatives, which I have had to do lately, it is impossible in the resulting prints to distinguish those taken from the duplicated negatives from the ones printed from the originals. In all cases I have printed on dry bromo-chloride plates by gaslight, from ten to fifty seconds' exposure to an Argand burner being sufficient, according to the density of the negative operated on. The development of the resulting transparency is then conducted in the usual way, and when the details are sufficiently out the film is washed, and nitric acid somewhat diluted with water poured over it. In a few seconds the transparency becomes reversed, and we have a negative in all respects a perfect copy of the one from which the transparency was taken. It is then only necessary to wash it, and return to the ordinary alkaline development till sufficient density is obtained, no intensifying with silver being ever needed. The printing qualities of these negatives are remarkably good. I send you one to show you the utility of the process. The original negative was so weak as to be useless for printing purposes, while by management of the exposure of the transparency I have obtained a second negative good in all respects, or, I should say, as good as could possibly be obtained from the bad original.

Again, for enlargements the process is equally good. It is only necessary to take the transparency in an enlarging camera, and pursue exactly the same course. As this is done at one operation—that is to say, the enlargement is only conducted through one film, and not through two, as in the

ordinary method—you get a much finer negative, the more so as a bromo-chloride film prepared with the proper kind of collodion is remarkably free from structure. As the use of a cadmium salt has a tendency to render a film slightly lumpy and uneven, I should strongly recommend all bromo-chloride workers to turn their attention to one of the double salts—for instance, with the double bromide of cadmium and lithium, as well as that with cadmium and ammonium; we retain all the sensitiveness and keeping qualities conferred by cadmium, while the film loses entirely any tendency to thickening, and becomes remarkably pure and structureless. These double salts are made with the greatest ease, and I strongly recommend them.

In the matter of preservatives, I promised you some time ago the results of some experiments I have been making. An alkaline preservative does not appear to answer at all, and I agree with Mr. Russell Manners Gordon in condemning its use. In my hands a modification of that gentleman's gum-gallie preservative has lately given me most excellent results, and I prefer it to the one with pyrogallie acid, which I originally used.

I take this opportunity of re-stating that if gum plates are developed according to the formula which I published in your pages on (I think) the 28th July, and in which the development is continued throughout with alcohol and water, all tendency to blistering is entirely done away with; but the full proportion of alcohol must be used, and if a second quantity of developer should be required, it must also contain alcohol. The cheapest methylated spirit will, of course, answer. It also adds to the density of the negative, and makes the development more rapid.

THE COLLODIO-CHLORIDE PROCESS.

BY ELBERT ANDERSON.

MR. ANDERSON, continuing his lessons in our Philadelphia contemporary, gives his pupil some hints on the collodio-chloride process. Producing two pictures, he remarks:—

Here are two pictures on porcelain, one on the smooth side of a plate intended for a plain picture, and the other on the ground surface of a plate intended for colouring.

M. There's a vast difference betwixt 'em.

I. Naturally, since they are made by different processes. The smooth plates are made in the same manner as I have previously directed for glass for negatives. The plate must be perfectly flat, especially for plain pictures. When the plate is dry, and well polished, it is to be flowed with the following preparation. Take equal parts of albumen and water, thoroughly mixed, either by beating or shaking, and filter it through a clean sponge; if it does not come through perfectly clear, add aqua-ammonia drop by drop, shake until it is so, and again filter. Take of the above—

Albumen	1 ounce
Chloride of strontia or calcium ...	2 grains
Citric acid	3 „
Nitrate of silver	5 „

Dissolve the salts thoroughly (by grinding in a glass mortar with the albumen) in the following order. First the citric acid, second the chloride, and lastly (in the dark) the silver. This should form a milky liquid, and cause some precipitate of chloride of silver. Before coating the plate shake thoroughly. Coat the plate twice (in the dark, of course) with the above, allowing it to dry between each coat; after which, when quite dry, it is exposed under a negative with any of the various kinds of porcelain printing-frames—in default of which an ordinary printing-frame (for paper) will answer. Be careful to secure the glass of the frame to prevent its moving, and gum the negative fast to this glass. The porcelain plate may be hinged to the negative at one end by a piece of gum paper, which will allow of its being examined during the progress of printing. When slightly over-printed, dip the plate into a basin of clean water slightly acidulated with acetic acid, where it

may remain about ten minutes, and then wash thoroughly under the tap. Tone with a weak solution of chloride of gold in water neutralized with bicarbonate of soda, wash and fix in hypo (one hypo to six water) for five minutes; wash one hour.

M. This picture looks very fine and delicate.

A. You must have a very fine and delicate negative, in the first place, taken on very flat glass, to insure close contact. Without considerable experience—which, of course, I cannot give in conversation—you may be apt to fail; if so, fail, and try again.

M. I certainly will (try again, I mean). How was this one made?

A. The first one was made by what you may call the albumen process; this one is the regular collodio-chloride, which, as its name implies, is made with a collodion containing a chloride. You may make your plain pictures by this method also, if you desire, and perhaps, as a novice, you will succeed better. The original collodio-chloride process, was first introduced, I believe, by Mr. G. Wharton Simpson of London, though several have since tried to deprive him of his title. The formula is one which I have used for years with invariably success, Mr. Kurtz's porcelain pictures being proverbially *sans peur et sans reproche*. As in the above process, the plate—as well as the negative—must be as flat as possible, and washed as ordinary glass, after which it is "gone over" with a muller and finely pulverized flint; in default of which, use pumice.

M. By the by, what is pumice?

A. Pumicestone.

M. I mean, what is its nature—a kind of chalk or brick?

A. Oh, no; I believe it is a kind of lava, ejected from volcanos. Whilst the plate is still wet and clean, flow it twice with albumen made as above described, before the addition of the salts.

M. You mean plain albumen made half and half with water, and cleared with ammonia?

A. Exactly. Set the plate up to dry. Now take—

Plain collodion	...	...	1 ounce
Nitrate of silver	...	...	5 or 6 grains
Chloride of strontium or calcium	...	...	2 "
Citric acid	...	...	3 "

Mix according to the directions already given. The grinding of the silver is a long and tedious operation, occupying nearly half an hour [hurry, and do this, and your collodio-chloride will be worthless.] "If it were done, when it 'tis done," "then it were well" [it were not done quickly.] This emulsion must not be milky white, but of a bluish opaline transparency. Coat the plate once, and print as before directed. Tone with a weak gold bath, fix ten minutes, and wash one hour under the tap. When it comes to the colouring, you, Mr. Artist, can no doubt instruct me.

M. Well, I'm sure I'm greatly obliged to you, and I'm right sorry to say good-bye.

THE STORY OF THE PIGEON POST.*

ARRIVED at Troyes, our position was in no way bettered, for we had great trouble in obtaining waggons and horses. We were fortunate in having the assistance of M. Joffroy, a merchant of the town, who helped us greatly in this respect. We quitted Troyes on the 17th at three o'clock in the morning. It so happened that a large portion of Prince Frederick Charles's army had preceded us on the route but a dozen hours before, and therefore our journey was beset with danger. We arrived, however, safely at Avroll-s, which the Germans had just taken possession of; but, once inside, they would not allow us to go away. M. Poisot went to a Prussian major located in a villa belonging to M. De La Bourdonnaye, and asked plainly for an authority to continue our journey; but the major stated that we

could not leave till the next morning at eight o'clock, after the departure of the Germans.

While I was waiting with my assistant for the response of the major, strictly guarded by sentinels, a few gunshots were heard in the distance. It turned out that some guards, taking us for Franc Tireurs, had resolved to make sport of us, and I was scarcely allowed to await my son-in-law's return from the commandant. We were, however, allowed to go back to our vehicle, in which we were enabled to reach a village farm, and, as it was then raining in torrents, we entered a barn, with the intention of passing the night there; but the Prussians were not long before they drove us out, using the while threats and menaces in case we ventured to return.

The waggon loaded with the apparatus remained in the courtyard, and the Prussians were bent on examining it, stating they were sure that we came from Paris. I declared that we all came from Troyes, and requested that an officer might be called to vouch for this fact. The soldiers, however, insisted that, pending his arrival, the cases should be opened, and it was due to this, no doubt, that I subsequently missed many important portions of my apparatus. Time went on, and the officer, fortunately occupied over his dinner, did not make his appearance. In the meantime the waggoner, who had left his lantern in the barn, returned in order to look for it; and the Prussians, perceiving the door again opened, supposed we had entered anew in spite of their warning. They ordered the proprietor at once bring a light to make search with, and would certainly have shot us had we been found there.

We were able, however, in the darkness, fortunately, to gain the gate of the farm, and, crossing the road, entered an auberge, in which more Prussians were assembled. We set ourselves down before the fire, and the officers passing from one room to the other regarded us with anything but favour, coming frequently close up to us, revolver in hand. We remained the whole night in this auberge, the proprietor of which was overcome with the exigencies of the invaders, and we all of us began to lose hope of ever extricating ourselves from our adventure.

On the morning of the 18th the Prussians moved towards Joigny; but the advanced guard had not advanced more than three kilometres when they came upon an organized defence of the National Guard. The struggle that took place rendered, of course, the road impassable to us, and it was necessary, therefore, for us to take our waggon across country during a pelting rain, advancing slowly over the ploughed fields, and pushing and supporting the vehicle ourselves. On our way we found deep traces of the horses of the Uhlans, who had evidently explored the country in every direction prior to our arrival.

Arrived at last within the French lines at Mont Saint-Sulpice, a difficulty presented itself of which we had little dreamed. The prefect or mayor of the district could not believe that we had passed through the immense track of occupied country with impunity, and would not, therefore, assist us further on the way to Auxerre, the prefect of which place had been advised of our mission. This lack of attention caused us serious annoyance at Seignelay, and much loss of time; our baggage was searched, and the crowd, believing us to be evil intentioned people, showed much hostility towards us. We quitted the place escorted by a detachment of National Guards, who conducted us as far as Monetaeu, where a new escort awaited us. I ought, however, to mention that the captain of the Nationals, of whose name I am unfortunately ignorant, did all in his power to further our interests, and placed at our disposal his own vehicle and covers to shelter us from the terrible weather that we had to encounter; and, indeed, when we arrived at Auxerre at eleven o'clock at night, we were quite prostrated by the fatigue and trials through which we had passed. The prefect of the place stated that he had just received orders from the Government at Tours to send us on, and at Nevers a fresh telegram from M. Gambetta awaited us, to

* Continued from page 428.

enjoin us to use all the speed we were able during the journey.

On the 21st November we arrived at last at Tours at eight o'clock in the morning, and at once reported ourselves to M. Gambetta. M. Fernique, who had arrived a short time previously, also attended on the minister. We communicated the terms of the contract that had been made with us by the Postmaster-General, and which was signed by M. Picard, the Minister of Finance. The Government at Tours had already been advised of the possibility of reducing despatches by means of photography by the ordinary methods by M. Barreswil, the eminent chemist, and with this view preparatory had already been made to make trial of the plan.

M. Blaise, of Tours, had been instructed by Government to proceed with the work, and had commenced operations, producing his results upon paper. He reproduced two pages of printed matter upon each side of his sheet of paper, but the fineness and sharpness of the photographic image was, of course, limited by the nature of the grain and surface of the paper.

I hereupon came forward with a specimen of my work, being a photo-microscopic image produced upon a thin pellicle; and this being at once approved of by the authorities, the printing upon paper was forthwith abandoned. The pellicle which I prepared, besides being excessively light, was, moreover, endowed with the immense advantage that only an exposure of a couple of seconds was necessary, while with paper, during the bad weather, an exposure of nearly two hours was required to give an image. The transparent nature of the pellicle was also an advantage not to be overlooked, as in Paris very excellent results were obtained by simply enlarging by means of the electric light.

Aided by my colleagues, I immediately organized a system for the reproduction of official and private documents which was to prove so useful for the Government, as also for private individuals. The service was entirely under my control, M. Lafollye, the inspector of telegraphs, superintending the executive, and having under his charge the whole of the carrier pigeon despatch service. At my instigation the ordinary manner of working was modified, and the results, taking into consideration the little apparatus at our disposal which had been saved, were very rapidly executed, and at a minimum cost.

The journals having made known the fact that the Prussians had captured a large portion of our material, two distinguished photographic amateurs, M. Delezenne and M. Dreux, of Bordeaux, kindly placed at my disposal their own apparatus, which much resembled my own.

The stock of despatches which, in the meantime, had accumulated, were promptly copied and sent off, and I may say that, seconded as I was in my endeavours, there was no stoppage in our work. The removal of the seat of Government, and the intense cold during the winter months, created some difficulty, however, in regard to the flight of the pigeons.

When, however, there was nothing to impede the journey of these interesting messengers, the rapidity with which the correspondence was carried on was something marvellous. And to exemplify this I will quote an experience of my own. Being in want of certain photographic chemicals, and especially gun-cotton for the preparation of collodion, which I could not obtain in Bordeaux, I made known by carrier pigeon my wants to M.M. Poullene and Wittmann, of Paris, requesting a supply at once by the first balloon, my despatch bearing date, I should mention, the 18th January. On the 24th of the same month the goods arrived safely at my studio in Bordeaux, the pigeon not having taken more than twelve hours in travelling the distance from Poitiers to Paris. Truly the electric telegraph and the railway could not have done more.

The official despatches were executed with surprising rapidity. M. de Lafollye would place in our hands a des-

patch at midday, and on the same day at five in the evening, notwithstanding the unfavourable wintry weather, ten copies of the despatch were completed and returned to the authorities. We have in this manner prepared thirteen series without having once caused delay. The private messages were executed in the same manner. The labour of copying was very great, for, with the exception of a few of the pellicles, which were not repeated more than six times, from the fact that they arrived and were acknowledged promptly, the greater number of the despatches were, as a rule, multiplied as many as twenty times, and some even were repeated thirty-five and thirty-eight times. We also reproduced in this way a large number of Post Office Orders, so that the recipients could draw their money in quite the same manner as usual.

Each pellicle was the reproduction of a dozen or sixteen folio pages of printing, containing, on an average, according to the description of type employed, three thousand despatches. The lightness of these pellicles allowed the postal authorities to employ as many as eighteen of them as the freight for one pigeon, the whole number of fifty thousand despatches weighing together less than one gramme. The whole series of official and private despatches that were made during the investment of Paris, to the number of about one hundred and fifteen thousand, only weighed in all two grammes, and one single pigeon could easily have carried the lot. If now one multiplies the number of despatches by the number of copies of them that were made, it will be found that more than two million five hundred thousand despatches were photographed during two of the worst months in the year.

The pellicles were rolled into a quill tube which the postal authorities attached to the tail of the pigeon; their extreme suppleness and perfect impermeability rendered them peculiarly suitable to this manner of disposing them.

The method adopted by M. Dagron to produce the micro-photographs was simply as follows:—The authorities sent in sheets of printed matter divided into a dozen squares each, containing at least a thousand letters, and these sheets were cut in two and placed in contact with a dry sensitive collodion plate in a pressure-frame. An exposure to light of two seconds suffices to yield an image by development of very great sharpness. The plate was then cut up into the squares, and these were then placed in the micro-camera for reproduction; the camera being furnished with twenty lenses, only a couple of exposures were necessary to obtain forty impressions. The preparation employed for detaching the film from the glass was a mixture of collodion and castor oil. Some modifications afterwards became necessary when it was desired to reproduce directly nine, twelve, or sixteen pages of printed matter.

ON A NEW VARNISH SUITABLE FOR NEGATIVES TO BE ENLARGED.

BY DR. VAN MONCKHOVEN.*

If negatives for enlarging, which, as every one knows, are not varnished, are preserved for a lengthened period, dust often attaches itself to the film, and this cannot again be cleaned without some risk of danger; for the collodion image is of a very delicate character, and soon becomes scratched and injured. If the negatives are covered with an ordinary varnish, then the same is softened by the great heat to which plates of this kind are exposed in the enlarging apparatus, especially if the film is at all a thin one. There are, besides, other reasons why no varnish should be applied to the negatives, and, indeed, it has become a maxim with photographers never to varnish a negative which is to serve for the production of enlargements. For a long time already my friend M. Fritz Luckhardt has pointed out to me the necessity that exists of protecting

* *Photographische Correspondenz.*

in some way the negative from the influence of the air, and he moreover urged the advantages that would exist provided a varnish could be applied that should be sufficiently hard to allow of retouching.

I now give a receipt for the production of such a protective material. Two solutions are prepared:—

No. 1.—Rainwater	1 litre
Gum-arabic	20 grammes
No. 2.—Alcohol	$\frac{1}{2}$ litre
Ether	$\frac{1}{2}$ "
Pyroxilin	12 grammes

As soon as the negative has been developed and fixed, it is washed with distilled water, and then, after draining off a couple of minutes, it is coated with solution No. 1, which should be very thin and carefully filtered. After this film of gum has been sharply dried, the negative is coated in the ordinary manner with the collodion above mentioned, and allowed to dry.

As will be seen, the coating of gum only serves as a go-between, to separate the two films of collodion, and to prevent the second application from dissolving away the image formed upon the plate in the first instance. Instead of gum, other materials of a suitable nature may be employed for the same service, as, for instance, gelatine, india-rubber, &c.; meanwhile, gum answers the purpose very well.

When the collodion has dried upon the gum surface, the film produced is as polished and even as a glass plate itself, and is, in my opinion, harder than most of the photographic varnishes that are employed. The protective surface produced may be rubbed for a long time with the finger without suffering injury, and the negatives may be piled up one upon another, with merely a sheet of paper between each, without any chance of the films being scratched or rubbed in any way. The negatives, when thus treated, may, moreover, be retouched and exposed to the influence of the hottest sunlight, as the protective is not, of course, liable to melt.

Any one who occupies himself with enlargements will at once appreciate the benefits of this varnish. Ordinary negatives, when not too large a number of copies are required, might also be treated with this protective, which, as will be seen, is simply but an application of ordinary normal collodion.

A MEANS TO PREVENT FOGGING IN VERY HOT WEATHER.

BY DR. VAN MONCKHOVEN.*

WHEN working with an excellent collodion and a good silver bath in very hot weather, it not unfrequently happens that one is troubled with fog, and this phenomenon increases in intensity with the heat of the weather and the continuance of the exposure. When, for instance, from the moment the plate was lifted from the silver bath until the operation of development, there lapses but the period of a minute, there will be no difficulty in obtaining a very good and clear negative; but if, on the contrary, some time passes between these two operations—say two or three minutes—a tendency to fog will be observed, which is very marked indeed if a long exposure has been given, and the interval approaches to five minutes.

I will not on the present occasion enter into any speculations as to the reason of this unwelcome occurrence, but will confine myself to mentioning a simple preventative for the same, which, in the course of the summer, has done me good service. I prepare two iron developers according to the ordinary plan, and to one of these I add a little gelatine, say about two grammes to the litre. To be clear, I may mention that my developers are composed of—

No. 1.—Water	1 litre
Sulphate of iron	40 grammes
Alcohol	30 "
Acetic acid	20 "
No. 2.—Water	1 litre
Sulphate of iron	40 grammes
Alcohol	20 "
Acetic acid	20 "
Gelatine	2 "

If the plate has but left the bath a short time, I employ the simple iron developer; but if a copy or reproduction of some kind has been made, and an exposure of five minutes, therefore, has been necessary, the gelatine developer is used, and in this way fogging prevented, although sometimes the negative is thus rendered a little harder. The ordinary and gelatine developers may be mixed and used in equal proportions, if the exposure has not been quite so prolonged.

NOTES ON ECLIPSE PHOTOGRAPHY.

BY A. BROTHERS, F.R.A.S.*

As these hints are for the practised photographer,† and not for the tyro in the art, very little need be said about the process to be used. No dry process with which I am acquainted is adapted for the purpose. It may be suggested that the old *positive* process on glass would give good results, and I see no objection to using the negative process as well. Supposing six plates to be used, three of them could be developed as positives and three as negatives, the exposures being timed to suit either. The negatives taken at Syracuse were not strengthened or intensified, and, although they were developed as negatives, they are almost as valuable as positives, as the detail is of so delicate a kind that very little of the outer corona can be seen when viewed by transmitted light. As positives, and when viewed by reflected light, this detail is seen very perfectly. There is, however, detail of another kind in these negatives which can only be seen by transmitted light. The advantage of the positive process is that the picture is chiefly on the surface, but at those parts where the light has been most active the detail would probably be visible when viewed as negatives by transmitted light.

The size of the camera will be determined by the dimensions of the plates to be used. Plates five by four and a-half inches will be quite large enough, and the camera will require to be slightly larger. The number of dark slides necessary will depend on the number of exposures to be made, and this again will be determined by the duration of the totality. In India, where the totality will be rather over two minutes, it will, perhaps, be better not to attempt more than six exposures, therefore six frames will be needed. In Australia at least twelve plates will be exposed, the totality lasting over four minutes. The single frames used at Syracuse were found to be so handy and convenient to use, that I am undecided in my opinion as to whether any advantage would be gained by using double or sliding frames. This is a matter which must be left to the choice of the operator. The frames may be made in the ordinary way, but the corners of the carrier or frame itself should be fitted with silver wire or glass for the plate to rest upon; and, as an extra precaution against defects likely to arise through some of the plates remaining in the frames half an hour, each corner may rest on blotting-paper. In fixing on

* Continued from page 427.

† Mr. Lockyer, in a paper read at the Royal Society, and quoted in the number of *Nature* before referred to, says that in the suggested expedition to Ceylon, with the other observers, there will be required "one photographer, two assistants. This duty, perhaps, may be entrusted to skilled sappers." If sappers are competent for the photographic work, why should not they be for the spectroscopic and other observations? With all respect for Mr. Lockyer's suggestion, I do not hesitate to assert that more skill and experience are required in order to be certain of photographic results than of spectroscopic observations. If sappers with the requisite skill can be found, why not delegate to them the whole of the proposed work?

* Photographische Correspondenz.

six as the number of plates to be used, I am assuming that they will all have to be prepared so as to be ready at the moment of totality; and I see no advantage to be gained by keeping an assistant in the dark room during that time: at most he could only prepare one plate, and I consider it preferable that every plate should be ready for immediate use. The preparation of these plates will require twelve minutes at least, and it is at this point and after the exposures are made that extra assistance would be valuable.

It was found at Syracuse that four baths of glass for the silver solution were sufficient; they were covered with brown paper to protect the plates from light. The dippers may be of glass or varnished wood, and it is better to be provided with both, in case of accident. The glass should be the best patent plate, selected, carefully polished, each one being marked with a cross in one corner, and stored in plate-boxes with the marks all in one position; and in all the subsequent operations this mark should be to the left hand; the reason for this will be seen presently.

The image obtained with a camera as described is small, and it is therefore undesirable that any part of it should be disfigured by position wires. The necessity for using wires may be overcome in a very simple manner. Let the ground glass focussing screen (which should be of the finest possible kind—patent plate glass before it receives its final polish) have pencil lines crossed diagonally, and a single line horizontally across the centre of the plate. When the instrument is adjusted and stationary, the image of the sun should travel parallel with this line. A plate should then be prepared, and a very small diaphragm being used in the lens, the instrument should then be moved quickly, so that the image of the sun leaves a trace which will appear after development. This will give the north point of the sun at the time of the eclipse, and serve as a key plate for all the pictures taken. The object of marking the corners of the plates will now be seen, and every plate used must be so held that in every operation the marked corner is touched by the forefinger or thumb of the left hand; then there will be no doubt about the orientation of all the pictures.

Up to this point two operators will be sufficient—one to attend to the arrangement of the instruments, and who ought to have some astronomical knowledge, so as to be able to adjust the equatorial stand; and the other for strictly photographic work. Help will, of course, be required in the erection of the observatory and dark room. At the time of the eclipse two other assistants will be required—one to count seconds from the clock or chronometer, and the other to hand the plate frames to the assistant at the camera. If a clock beating seconds or half seconds were used, the assistant at the camera could do the counting, but volunteers will readily be found.

The plan adopted at Syracuse could not, I think, have been improved. Mr. Fryer was at the instrument making the exposures, while I was at the other end of the camera changing the frames. At the word "ready" Mr. Fryer took off the cap and counted the prescribed number of seconds. At his signal "done" the plate was changed, and so on through all the exposures. Captain Speight handed to me the frames and took them from me after exposure, thus saving twenty-five seconds of the time. Sapper Gardiner counted seconds aloud. At the signal of totality given by Mr. Fryer the counting commenced. At the third second the first exposure was made, the three seconds being allowed to make sure of absolute totality. A table of the times for the exposure of each plate had been prepared by Mr. Fryer beforehand, and this was kept in view so as to avoid the possibility of mistake. The times were arranged in the following order:—3, 18, 30, 15, 8 (the sixth plate was exposed in the telescope camera) with three or four seconds to spare at the end. In India there will be time for the sixth plate to be exposed in the camera. On the day before and on the morning of the eclipse all the operators should be in their places to practise their different parts, as it will require the greatest possible care to avoid mistakes.

Everything must be done deliberately and without the slightest hurry.

Previously to the last eclipse it had been supposed that the light of the corona possessed very little actinism, and I had been strongly advised to give a full exposure. As, however, there was some doubt on the subject, it was determined to vary the exposures as stated; and unless the light of the corona is not the same in all eclipses, I see no reason for suggesting any alteration in the time for exposing the plates to obtain different results, supposing the same kind of lens to be used. Allowance must, of course, be made for the altitude of the sun and the state of the weather at the various stations.

The dark frames were numbered from 1 to 6, and the plates were exposed in the order in which they had been prepared, and the development proceeded in the same order.

Much of the delicate detail of the negatives is likely to be lost by varnishing. It is, therefore, preferable to cover them with glass, carefully binding the edges, to exclude the air; the glass cover should not touch the film. Instead of using an ordinary plate-box for the negatives, I prefer that each plate should have a slight frame similar to an ordinary "carrier," and these frames are then placed flat on a box prepared for them.

In counting seconds it is preferable that the assistant should count consecutively throughout the totality. Supposing the eclipse to last 130 seconds, by counting from 1 to 130 the operators know exactly the point arrived at after each exposure; and this is most important towards the end, as the last plate might be spoiled by the least mistake in this respect.

Artificial light: some kind will probably be required during the totality—certainly in the dark room. We used the ordinary railway reading lamps. Boxes open on one side were provided, and in them the lamps were fixed. These boxes effectually protected the lights; without them the candles would have been extinguished by the wind.

It is better to assume that nothing will be found at the place of observation but water, but as in India there may be some difficulty in obtaining that necessary article sufficiently pure for photographic purposes, it will be better to provide a small still, which will cost about five shillings. At Syracuse we used rain-water, which was sufficiently pure for the purpose.

Those accustomed to photographic work in India will be aware of the necessary precautions to be observed to prevent the plates drying. At Syracuse we kept our observatory and dark room well sprinkled with water; and the glass plates when they were in the dark frames, were covered on the backs with wet blotting paper.

Much disappointment will be avoided if proper care be taken in packing the apparatus. All bottles and other glass articles should be placed in separate divisions and packed with cotton wool or paper cuttings. Packing cases should be made very strong, and bound with iron plates. By attention to these matters the whole of the apparatus and chemicals were found on being unpacked at Syracuse to be altogether uninjured; the packing cases bear testimony to the rough usage they have undergone.

PHOTOGRAPHY IN THE FIELD.

BY K. SCHWIER.*

AMONG the defects of a mechanical nature must be enumerated the unstable nature of the tripod. It would have been better to have furnished the metal plate with circle divisions with a micrometer movement, in order, on the one hand, to allow of the adjustment of the middle of the hair cross upon a particular signal pole, and on the other hand to do away with the defects occasioned by the loose locking-pin. The pivoting point of the apparatus did

* Continued from p. 432.

not pass, as theory requires, through the centre of the lens; although this could very easily have been attained by employing, instead of an entire circle, a section of 120° only; for it is scarcely necessary, in besieging an enemy's works, to overlook or include more than 100° or 120° of any point. Covers for the lenses are absolutely necessary, for the slides in the newer kinds of apparatus are totally unserviceable. By skilful manipulation of these covers it is possible to avoid defacing the distance of the picture.

The cross in the apparatus was of human hair, and this gave the horizon and the point of view. It would be better to do away with this altogether, and instead to have right and left, above and below, four silver points whose connecting lines would produce the required result; for not only does the horizontal thread sometimes cover up important points, but the fragile arrangement is, moreover, very susceptible to injury during the introduction and exit of the plate. Instead of the very hygroscopic human hair, it would be better, at any rate, to employ fine platinum thread, which Professor Dore recommended for the purpose.

If a different lens were employed as above recommended, it would be best to secure an image-angle of but 30° , and then the ordinary aplanatic lens of Steinheil would be available for the purpose; and the size of the plates would be a more practicable one, as instead of a square, an oblong shape might be chosen, for the sky and foreground would be probably of little importance. Practically the slide which formed the base of the apparatus was very defective, inasmuch as the places where the camera was fixed soon became much worn, and thus the making of corrections was frequently necessary.

The photographic chemicals furnished with the outfit were, on the whole, satisfactory; the collodion had already been iodized, and, although working brilliantly, gave rise to surface stains that were not removed by the action of a developer containing a large proportion of alcohol. It is better in cases of this kind to let the photographer mix his own collodion. A further quantity of collodion purchased in Strasburg, to complete our stock, worked, with Dr. Vogel's manner of iodizing, much more satisfactorily, although its freshness was in some cases remarkable. The nitrate of silver proved to be very good, but the varnish would not, I fear, have found favour in the eyes of our varnish committee, inasmuch as it split at the slightest attempt at retouching.

The glass plates brought with us from Berlin were of patent plate, 12 by 12; but, unfortunately, these were somewhat small for the apparatus, and on that account caused us many difficulties. Of particular value was the preliminary coating of the plates with albumen; all my negatives were produced in this manner, and the uniformity of the results and freedom from albumen spots was very satisfactory. The glass dippers to the bath were quite unserviceable, and silver wire dippers had, therefore, to be obtained in Strasburg.

I had brought a couple of printing frames with me from the Industrial College, and, guided by these, a further supply was constructed at Crouttes. Prints were, of course, only furnished to the authorities, and these were invariably produced with washed sensitized paper, a very suitable material, indeed, for travelling photographers. The wooden dishes that we carried soon became leaky after use, but the papier-mache ones, on the other hand, were exceedingly serviceable.

The covered waggon which was to serve as dark room, and upon which much care and attention had been bestowed, was found unsuitable for operations under fire, as it could not be brought to the front without attracting some attention. As a laboratory, however, the vehicle was invaluable, but it would have been better had the same been more roomy, as many difficulties arose from the limited space at one's disposal.

As regards the construction of the plans, and the results

thereby obtained, I hope to give some further particulars on a future occasion. In Mundolsheim we essayed to construct a plan by means of three pictures taken before Strasburg, but quite unsuccessfully, as the details of the picture in the distance were much too small. Later, after the taking of the place, and a higher elevation was attainable, another portion of the front of the fortress was attempted, but the difficulties met with from the faulty nature of the apparatus were so great that at last it was decided to verify the plan by the aid of regular surveying instruments. It was a mistake, in construction of the apparatus, that the camera was not pivoted at the central point of the lens, but at another point, so that when the camera was placed at a greater elevation, differences of an important nature were met with: moreover, the movable switch or locking pin not being sufficiently firm and accurate, errors crept in on this account also. For these reasons the aid of the theodolite was very welcome in completing and correcting the photographic plans, which otherwise would not have been reliable.

From my experience, therefore, it would appear that the method of photo-surveying, even with well-constructed apparatus, will not supersede the employment of ordinary surveying instruments in times of peace, as, among other reasons, that of expense is an important one. In war time, however, and especially when laying siege to towns, the method is certainly to be recommended, as at one operation we obtain a picture of a landscape, which afterwards allows of the construction of a plan; and for this same reason the mode of operating should be acceptable to geographers. It is desirable that instead of wet plates, those prepared by some reliable dry process should be substituted; and this difficulty, at least, appears now to be in a fair way of being solved.

ON THE CHANGE OF COLOUR PRODUCED IN CERTAIN CHEMICAL COMPOUNDS BY HEAT.

BY PROF. EDWIN J. HOUSTON.*

WHEN we come to the boundary of the spectrum on the light side—in other words, when we come to the violet—an apparent objection meets us. We know that violet can be produced by the mingling of indigo or blue light with red; that is, two lower vibrations, and one of them at the lowest extremity of the visible spectrum, produce by their mingling a resultant higher vibration, a fact certainly improbable, and seemingly at variance with theory. It must, however, not be forgotten that the violet of the spectrum marks not the limit of the ethereal vibrations, but merely our power of appreciating them. The existence of higher vibrations is shown by the actinism of the spectrum, or the effect in producing chemical decomposition, existing some considerable distance beyond the violet. In fact, Herschel, by concentrating this invisible light beyond the violet, succeeded in rendering it visible, and gave its colour the name of lavender. This light is of a pale red, inclining to a tinge of violet.

The explanation is now simple: the violet of the spectrum is not produced by the mingling of the indigo or blue with the remote or lower red, but with that of the higher red or lavender. Indeed, we are strongly led to the belief in the existence of a spectrum beyond the visible spectrum, whose colours, could the eye be trained to appreciate them, would be lighter tints of the lower colour. This spectrum would then begin with a paler, shriller, higher red, which we actually have in the lavender. The next, which will probably some day be rendered visible, would be a paler, shriller, higher orange; and so on through the yellow, green, and the other colours.

The analogy of the less rapid vibrations requisite to produce sound is in strict accordance with these considerations. Take, for instance, the note *c* of the natural gamut; it

requires for its production, say, 128 vibrations per second; if we increase the rapidity of the vibrations to 144, we get the next higher note, or D; at 160 vibrations, E; at 170 $\frac{2}{3}$, F; at 192, G; at 213 $\frac{1}{3}$, A; at 240, B; and at 256, or just twice the number of vibrations requisite to produce C, we get a higher note, which we call C', which, though it differs from C in its pitch, and probably in its timbre, still hears to it in many respects a striking resemblance.

The visible range of coloured notes also constitute one octave, viz.: red, corresponding, say, to C; and then orange, yellow, green, blue, indigo, and violet, corresponding respectively to D, E, F, G, A, and B. The octave, or the lavender, corresponding to C', can only be appreciated by the eye under favourable circumstances.

It is most probably more than a mere coincidence that the interval between the lower and the higher red, which is $\frac{1}{2}$, is exactly the same as the interval between the higher and the lower C. Indeed, calculations we have made show a remarkable similarity in the intervals between the different colours of the spectrum and the notes of the natural gamut with which we have compared them.

The same reasoning applies to the colours of the spectrum beyond the red, on the heat side, the next colour to which, could it be appreciated by the eye, would probably be a very dark reddish-violet, or a purple. In confirmation of this view, we have noticed that some reds, in turning into browns and blacks, possess a slight tinge of purple.

BOTTLED SUNBEAMS.*

POCKET sunshine is the latest novelty with which science has presented us. The art of extracting sunbeams from cucumbers has not been quite mastered, though we do not despair of witnessing that economical process; but something quite as useful, and almost as wonderful, awaits us. M. Xamben de Prades, of Saintes, is on his way to England with a cargo of sunbeams in bottles, of which he is anxious to present samples to the Royal Society. It is explained that he intends to avoid Paris, and come by way of La Rochelles; but the object of this is not very obvious, unless it is connected with *douane*, or custom-house difficulties, and obviously the *savant* is likely to be exposed to some trouble on this score. Light is not liable to duty either in France or in England, but it would require some tact to convince the Custom-house officers that M. de Prades' bottles did not contain spirits, or something which would bring them within the tariff. That a man should import, carefully corked and packed, empty bottles, would not be credible; while if any attempt were made at examination in the way of uncorking, the sunbeams would go off in a flash, and the value of the entire cargo would be dissipated into air.

This difficulty, let us hope, will be overcome, and the bottled sunbeams carefully landed and discharged. Curiosity is naturally awakened as to the appearance they will present and other points respecting them, though M. de Prades has made no secret of his bottling process, and might even be anticipated as purveyor in ordinary of sunshine to the British public. His experiment consists in taking an oblong vase of metal, and after exposing it for a quarter of an hour to the intense heat of the sun, closing the aperture of the vase by means of a cork, through which a hole has been pierced. To this hole he applies a powerful lens, by which the solar rays contained in the vase are made to converge towards a taper placed at the distance of a yard from the operator. In less than three minutes' time the taper, with a crackling sound, bursts into flame. Here we have the process and its results; we bottle our sunshine, and we apply it to a useful domestic purpose. It may be urged that the process is somewhat vaguely described, and we are compelled to admit that "details are wanting," as the

* *Morning Advertiser.*

reporters say when telegraphing accounts of railway accidents of such magnitude that "no blame whatever attaches to the officers of the company." It is not clear to us how we should set about the bottling process without further instructions, but the explanations to be vouchsafed to the Royal Society will doubtless settle all this. What we have to do is to congratulate ourselves and the public on the wonderful results of the experiment, and the possible objects to which it may be applied. Hitherto we have only got as far as portable shade. In carrying an umbrella we do, in fact, convey with us what is tantamount to a bottle of shadow. At any moment we uncork it and surround ourselves with its influence, no longer compelled to remain in one place to enjoy refreshing coolness, *sub tegmine fagi*, for example, but able to convey our shadow with us in locomotion, and to furl or unfurl it at will. In what is now proposed we are to reverse the process. We are to be enabled to realize the poet's idea of making "a sunshine in a shady place" with literal truth. On a gloomy day we are to have the power of sending out for a bottle of Xamben de Prades' sunbeams—bottles half-a-guinea, five shillings, three-and-six, and half-a-crown: a reduction made on taking a quantity—and diffusing around us a delicious brightness and invigorating warmth. Hitherto it has been only in a metaphorical sense, and as a mere figure of speech, that a man, after "corking a bottle," has been spoken of as having been "in the sun." Now that description may be literally realized, and it may be said with literal exactness that "the bottle's the sun of the table." A couple of friends sitting down for a quiet hour may order a bottle of sunbeams between them quite as much as a matter of course as they would now ring for a "split soda," with its accompaniment in the form of a couple of brandies. From the fact that when brought to bear on the wick of a candle, through a magnifying-glass, ignition follows, it may be surmised that the sunshine is bottled in a highly concentrated form—above proof, in fact—it would therefore need dilution for ordinarily invigorating purposes, and will probably come to be treated in the manner of American drinks, by judicious sophistication, in which case we may look to have the conventional "streak of lightning" give place to "the solar beam," and "the corpse reviver" to "the sun-stroke," as refreshing novelties. Taking a more extended view of the matter, and going from simple bottling to more wholesale dealings with sunshine, there would seem to be no possible reason why it should not be laid on like gas or water, and so adapted for general as well as family use. In this way entire revolutions in life and its surroundings would be effected. People would rise with the sun at whatever hour they chose to order it, and would turn night into day with perfect equanimity. The threats of exasperated rate-collectors to "cut off your sunshine" would at first have a grim and suggestive sound; but society would get used to it, as it would also to the inevitable adulteration and deterioration to which it would come to be subject, the same as water or gas. Monopolists would try their hands at controlling the supply, and while the rich would bask in the very brightest and most refreshing beams, the poor would have to put up with a dingy second-class article, such as they are already familiar with in their fetid courts and the poisonous alleys in which they burrow and die. One of the most gratifying things to which we have to look forward in this discovery is the opportunity it will afford Mr. Lowe of using up his famous motto—if not the die for his discarded stamp, of which a thousand pounds' worth of impressions were taken—for *ex luce lucellum* would be singularly appropriate as applied to a small tax to be inevitably laid on this new discovery, which seems to have been made just in the nick of time to enable him to include an entirely new and brilliant feature in his next Budget. Whether the Ministry generally will derive advantage from the same source remains to be seen, but they certainly have not basked too greatly in the sunshine of public favour of late; and as they are likely to be left "out in the cold" for a very long time to come, they

may be glad enough to cherish and comfort themselves with bottled sunbeams.

Looking at the matter from all points of view, it is pretty clear that M. Xanben de Prades ought to be welcomed as a benefactor to his species. That being so, he will, of course, be coldly received—a form of reception which, by the way, he has the means of counteracting—and every possible impediment will be thrown in his way. In place of honours and emoluments he will be met with patent laws and ingenious expedients for getting his secret from him and working it to his disadvantage, while he is under the impression that its safety and his own profit are being legally secured. As the unkindest cut of all, the nation he seeks to benefit will in all probability thrust its tongue into its cheek and receive him with open ridicule. It is more than probable that he may be laughed at. We can understand ribald journals making merry over his bottled sunbeams, and regarding it as a legitimate subject for caricature. Such a thing is quite possible in this benighted country. We are, indeed, unworthy of the blessing designed for us, and we can only express a hope that M. De Prades is of a merciful and forgiving disposition, and that he will not, in the end, revenge himself upon us by bottling off the few sunbeams with which nature favours us, smuggling them out of the country, and so leaving us without a flask of anything warm or comfortable wherewith to comfort ourselves.

Correspondence.

OPERATORS AND ASSISTANTS.

DEAR SIR,—The suggestion made by "Fair Play" in his letter to the PHOTOGRAPHIC NEWS last week is, I think, a very sensible one, and the formation of such a society as he mentions I should regard as a step in the right direction.

There exist already amalgamated societies, such as the engineers, &c., who find it answer well. What, then, should prevent an amalgamated society of photographers becoming a reality? It would keep us together, improve our condition, and employers would experience no difficulty in obtaining assistants, and *vice versa*. Last, but not least, it would prevent photography falling to such a state of cheapness to which it is rapidly going.

Photographers, one and all, let us be up and doing. Strike while the iron is hot, for delay is dangerous.—I am, sir, yours obediently,

ANOTHER ASSISTANT.

APPRENTICES AND ASSISTANTS.

SIR,—The correspondence which has recently appeared in your columns upon the above subject is quite of primary interest and importance to many of your readers, and you will, perhaps, therefore, pardon me for pointing out that a side-issue seems to be the ground of discussion—as I think, most erroneously.

Why treat "assistants" as a class? They are, or should be, photographers by knowledge of their profession, and surely the fact of an operator being a master or an employé is a matter of very little moment when the necessity of suitable training in order to reach the required standard of proficiency is under consideration. If a course of study in a school of chemistry or art is recommended to produce a competent assistant, are we to suppose for a moment that the employer may, without disadvantage, discard similar means of accomplishing his own perfection?

I regret to say that in the course of eighteen months' experience as an operator (having adopted photography as a profession, partly from choice, partly from necessity), I have met with only too many instances of incompetency and dishonesty among photographers' assistants in both the studio and printing-room, and can, therefore, understand how, as a class, their employers mistrust them. Some excuse may exist for the former in the fact that their situa-

tions are too often precarious, and their services miserably underpaid. As regards employers, I have observed instances of injustice and dishonesty for which there is no excuse, while I cannot quote an equal number of examples of fair and honorable dealing.

A printer, if technically competent and thoroughly honest, requires only the additional qualities of intelligence and industry to render him deserving of a permanent situation and a sufficient salary; but an operator requires much experience, beside special taste and cultivation, in addition to exceptional personal advantages in appearance and manner. Every photographer practising in the studio should be a gentleman in education and deportment, besides being a chemist and artist. Very few assistants come up to this description, and not many principals. Employers engaging operators should remember how much the personal qualities of their assistants may make or mar the reputation of their establishment, whose patrons, in the majority of cases, are ladies and children, to whom it is of very great importance whether they are waited upon with courtesy and patience, or are treated in a rough and uncouth manner.

I am satisfied that few men educated and cultured as gentlemen could find engagements in the present day with employers who were their equals, photographers themselves, as a class, with exceptions, not having sprung from circles having a professional status. There are, of course, "photographers and photographers," but the public are slow to discriminate.

The employers, I consider, are chiefly responsible for the shortcomings of their assistants, and the remedy is for the former to exhibit in themselves the qualities they desire the latter should possess. When photographers advertise for an assistant, do not let them express their own want of appreciation of the respect due to an art science by offering "wages," as if engaging a domestic servant or a bricklayer's labourer. Let the remuneration be termed a salary, and if the terms be expressed in guineas so much the better, for the odd shillings or fraction will not be much loss to the employer if, by the adoption of the professional custom, his assistant gains a higher opinion of his calling.

With respect to the terms themselves, I would suggest and strongly recommend to all photographers the principle of giving each one of their employés a direct interest in the extension of business by affording them a share of the profits as a bonus additional to a stated salary. In no other vocation that I can think of would the introduction of the system be so easy, and the results so advantageous. As the weekly returns fluctuate according to the season of the year or the state of the weather, all hands would sympathise, while in every department efficient service would be stimulated.

The system also offers the proprietor the advantage of maintaining the same staff winter and summer, for no assistants permanently engaged and honestly dealt with would quit their employment during the winter months for a few shillings advance offered in another and uncertain quarter, when they could look forward with cheerful confidence to the return of the busy season, with its prospective hard work and substantial remuneration.—I am, your obedient servant,

A COLONIST.

APPRENTICES AND ASSISTANTS.—THEORY OF TONING AND PRINTING.

DEAR SIR,—It was not my intention to write another word on the first of the above subjects, nor would I do so now were I not writing to you on the second subject. And I only ask you to allow me to clear myself from any desire to under-pay assistants, or to treat them badly. Stress has been laid upon paying well and treating well. I have only treated my assistants too well, and have been often told so when I have been repaid by ingratitude. As to salary, I advertised for an *assistant operator*. I engaged

one, stating that I only required him to assist me in the dark room to clean and prepare plates, to mix the chemicals under my directions; but I did not expect to get a mere automaton for thirty shillings a week; I expected a little education and intelligence. But I may say that if I expected it, I was sadly disappointed. Of three assistants, not one of them could I depend upon to clean a plate, so that I did not even get a properly qualified plate-cleaner for my thirty shillings a week. I am afraid if operators, even first-class ones, are to be allowed to fix the rate of wages, and if plate-cleaners are to get from twenty-five to thirty shillings per week, and assistant operators in proportion, that not a few employers will feel disposed to change places with them.

Now pass we to a more interesting and agreeable subject, and one which I enter upon with considerable hesitancy, for I fear lest I get beyond my depth; but I will endeavour not to do so.

The subject I refer to is the theory of toning and printing. It has for a long time puzzled me to understand why a strong light is necessary to produce a brilliant negative, and why the most brilliant prints are produced by direct sun printing, yet only with a vigorous negative—that is, with a negative offering a large amount of obstruction to the sun's rays. The key to unlock the secret was supplied to me by the "Old Photographer" in "Behoes of the Month" a considerable time ago, but I did not know how to apply it to the look until very lately. The key was the statement that when the chloride of silver in the paper was acted upon by light, the liberated chlorine combined with the free nitrate, forming chloride of silver, to be again reduced by the light. Observe, that requires time. Now for the application of the key. To get a rich tone in a print requires a proper proportion of albumenate, chloride, and free nitrate. I believe that albumenate simply supplies the colour, which is red, the chloride is blue, and when mixed makes a purplish brown. In toning, the chlorine leaves the gold, and combines with the silver if the free nitrate and the chloride of silver which has been acted upon by light has acquired the property of attracting the gold that has been set free; thus the gold is deposited upon the chloride, and the chloride being so mixed with the albumenate, the gold is deposited upon both. The richness of the tone depending upon the three being so closely combined is to present to the eye only one colour. If that theory be correct, a strong toning bath will require that the prints be well washed, otherwise too much gold would be set free, and it would be only deposited upon the surface. Practical results confirm this. Any person using a strong toning bath, so far as I have seen, his prints incline to blue or black tones. Any person using a weak toning bath—Mr. Bovey, for instance—his prints incline to rich warm tones; that is, when good negatives are printed from. Reason why: a slight washing takes off the free nitrate from the surface, leaving plenty through the albumen, and the weak toning bath allows that solution to permeate the albumen before too much gold is deposited, giving a brilliant warm tone, the gold being deposited evenly, both on the surface and in the body of the albumen.

Now for printing. The question here is how to get the proper proportion of albumenate and chloride. Albumenate of silver requires a stronger light than chloride, and as a preponderance of the red colour gives force to the print, so sun printing would give the most brilliant prints; but as the chloride is required to tone the prints, the difficulty is to get it without getting too much of it. If you mix a large proportion of chloride with the albumen, the chloride being easier acted upon than the albumenate of silver, you would have the preponderance of the blue chloride. Here now comes the "Old Photographer's" theory to our aid: have a smaller proportion of chloride, and have free nitrate, so that the chloride, as it liberates chlorine, may go on accumulating as the albumenate is acted upon.

If I am correct, it will be easily understood why a rich

dense negative gives the most brilliant prints, and also why adding the yellow varnish, as mentioned by Mr. Croughton, will improve the print. If a negative be too thin, the light will penetrate the high lights and middle tints before a sufficient quantity of chloride has had time to be secured to tone the shadows, and the consequence will be that the print will refuse to tone, and will remain red, and any chloride there may be to tone will be in the middle tints, and where a small stop has been used the print will tone blue and washy in the centre. Where yellow varnish is used and scraped away in the shadows, or where a rich negative is used, the high lights will be quite protected from the light; the light penetrating the middle tints will be so weak that only a small quantity of albumenate will be acted upon; and time will be allowed for the chloride to be formed, whilst the shadows being clear glass, plenty of albumenate will be acted upon, but time will also be allowed for the formation of sufficient chloride in the shadows to tone them. The richest tones are got from negatives where the deposit is the finest, because the albumenate and chloride are more finely mixed; hence the peculiarly rich brilliant tones yielded by creamy negatives—the deposit in such negatives being particularly fine; in fact, I believe, the rich creamy colour in great measure depending upon the fineness of the deposit.

I may have something to say about creamy negatives and how to produce them, but not now: I have trespassed too long upon your space already at this time.

I must ask your forbearance if in some cases my writing is not quite plain, as Saturday evening is the only time I have to write, generally speaking, and I seldom have time to correct.—I am, yours truly,
D. WELCH.

THE CHLORO-BROMIDE PROCESS.

SIR,—Permit me to call your attention to the fact that I have on several occasions seen my chloro-bromide process spoken of in your columns as Colonel Wortley's.

I feel confident that you cannot intend any so great injustice. Every established process which gives remarkable and peculiar results undergoes slight variations when worked by different operators; but in no case are such operators entitled to claim a process as theirs because they alter the proportions of the ingredients. It remains always the process of the person who made out first its essential characteristics, and should, in common justice, be known as his.

I beg to remind you that had I cared to patent this process, there are in it at least five original points, every one of which could have been secured by a patent. Had I so done, Col. Wortley could not have made a single plate except under a licence. I have, however, given it freely to the public. Col. Wortley appears to appreciate its value, since he proposes to manufacture my plates commercially. He should, however, have spoken of them and advertised them as mine, not his; this was the least he could rightly do; instead of which I see them advertised in your pages by Col. Wortley as made by "his new and improved dry process."

I consider this appropriation as being unexampled and unjustifiable. Nor do I hold Col. Wortley as excused because he has acknowledged that in two or three respects I am entitled to credit. The process itself is essentially and wholly mine. I could have kept it, had I wished, to myself, or have controlled it by law; but I have preferred to give it to the public. I should, at least, then, have the only reward I have cared for, the credit of its discovery. Col. Wortley is welcome to the profit.

Misappropriation of this sort is fatal to the best interests of photography and of science in general. It tends to render its votaries indifferent to making discoveries, the honour of which is to be assumed by another, or else to use them as secret processes, or protect them by patents. Independent journalism can in no way better serve the interests of science than in securing to discoverers the just reward of their labours.—Very truly,
M. CAREY LEA.

FIXING RETOUCHING.

DEAR SIR,—In continuation of my letter inserted in your last number, I beg to say that exposure to the fumes of warmed spirit for a few seconds will set all touching, and restore the polished surface of the varnish, which is important, both for wear and cleanliness. For retouching more dense than can be produced by the ordinary black lead pencil, I must refer photographers to a pencil which I have described to Mr. Newmau, of Soho Square, who has kindly promised to have it ready for the profession within a few days.—I am, sir, yours very truly,

12, Pall Mall, East.

G. PIERCY, JUN.

Talk in the Studio.

POISONING BY ABSORPTION WITH BICHLORIDE OF MERCURY.—A case of poisoning by the absorption of bichloride of mercury has recently occurred. The daughter of Mr. R. N. Fowler, M.P., suffering from ringworm, her medical man applied an 80-grain alcoholic solution of bichloride of mercury to the scalp. The result was swelling, inflammation, salivation, and death. Photographers rarely deal with mercurial solutions nearly so strong, but the case is sufficient to point the caution we have often given as to the dangers of absorbing bichloride of mercury through the skin.

CARDS AT ONE SHILLING AND SIXPENCE PER DOZEN.—Two or three correspondents point out that in the estimate of costs given by the photographer who took cards at one shilling and sixpence a dozen, he has omitted various important items, such as rent, rates, taxes, water, &c. Mr. J. Griffiths says:—"I should be obliged for the address of the manufacturer of paper (worth using) at seventy shillings per ream; the printer of cards at thirty shillings per 5,000; the way of doing negatives—finding glass, chemicals, &c.—at one penny each; and the way of cutting forty-eight cartes out of a sheet of paper. He does not allow anything for wear and tear, mounting, or anything else."

ORNAMENTAL BACKGROUNDS.—Several of our correspondents have sent us examples of ornamental spandrels around a vignette or medallion picture such as we have recently described. All are more or less good, but the tendency is to patterns a little too much pronounced. The more delicate the diaper the better. The pattern and ground may be as nearly as possible of the same tint, and the pattern should be small. Mr. Forrest, of Pontypridd, sends a variety of plaid or tartan designs, and some with very fine lines. We regard the latter as best, but tastes will vary.

FOR TAKING ALBUMEN OUT OF SILVER SOLUTION FOR PRINTING.—Mr. John R. Clemons says, in the *Photographic Times*:—"Take one ounce of gum camphor and dissolve it in six ounces of 95 per cent. alcohol. (Of this add to any positive v.d.t.h. (that has albumen in it, or becomes black or foul) few drops at a time, and shake it well; if the bubbles do not break when the bottle is set down, add a little more until it ceases to froth or bubble, then filter at once. If the silver should turn after filtering, add a few drops of permanganate of potash, which will clear it up at once."

To Correspondents.

J. P.—In recommending five grains of nitrate of silver in the printing bath for each grain of salt (assuming chloride of sodium to be used) in the salting solution employed in preparing the paper, we refer to nitrate of silver solely; no addition of other nitrates—such as those of potash, soda, or ammonium—will materially modify this proportion. The basis of our recommendation is this: three grains of nitrate of silver are required for each grain of chloride of sodium, in order to form chloride of silver, so that when five grains are employed two grains are left as free nitrate of silver, and aid in securing vigour. For copies of etchings we should recommend a very weakly salted paper—about five grains of salt per ounce will give good results.

J. R. TANNER.—Received, and shall have our early attention.

A. COPYIST.—Copies of maps and plans with sufficient contrast to present intense black lines on a pure white ground are not difficult to produce, especially if the originals possess clean and perfect contrast between the blacks and whites. The chemicals generally must be in good condition, the collodion ripe, and containing very little bromide, the iron solution weak, not exceeding ten grains—sometimes five will do—per ounce, and with a full proportion of acid. A gelatino-iron developer is frequently desirable. When a clean intense image is produced, intensify by applying a five-grain solution of bichloride of mercury until the lights of the image are of a uniform even grey tint, wash, and apply a one-grain solution of iodide of potassium until a greenish grey or olivine tint is obtained. The image will now be very intense; but if it is insufficiently so to print clean black-and-white, wash well, and further intensify with pyro and silver, by which any degree of density can be secured. A portrait lens well stopped down, a triplet, a doublet, or a rectilinear lens will answer.

A. B.—Considerable care is necessary in recovering the silver from waste fixing solutions of cyanide of potassium, owing to the dangerous character of the fumes evolved. Add hydrochloric acid to the solution until it is decomposed and the silver thrown down as chloride, taking care that there is a draught, and that the operator keep to windward. If the solution be evaporated to dryness, the residue may be added to sulphide of silver for reduction, and will assist the operation as a flux. In such case avoid breathing the deadly fumes.

CHARLES WALTERS.—The most recent practical treatise on carbon printing is issued by the Autotype Company, and may be obtained of them at their establishment, Rathbone Place, London.

H. C. LEE.—The effect of the card you send is nearly what we mean. We should prefer the design a little less strongly pronounced.

R. BLEASDALE.—Write, stating your wish, to the Autotype Company, Rathbone Place, and to the Woodbury Printing Company, Hereford House, Brompton. Either of these firms can probably undertake what you wish, and will doubtless furnish terms and other particulars.

W. P.—The simplest plan of obtaining the News in India consists in obtaining it direct by post from our Publisher. The postage of each copy is 2d., so that the prepayment of a year's subscription is 13s. Of the lenses you mention we should have no hesitation in selecting No. 1 as most generally useful.

H. J. TAPHOUSE.—Probably Mr. G. Croughton, of 14, Albion Road, Hammersmith, can retouch the negative with advantage. We certainly never saw a face so full of wrinkles. Great judgment should be used in retouching it, but if care be used the extremely rugose effect may be softened without injuriously altering the character and destroying the characteristic effect.

L. B. R.—The use of the powder colours to which you refer was chiefly confined to Daguerreotypes and glass positives. These colours may be employed to tint prints on albumenized paper; but such pictures should be kept under glass, otherwise the colours would rub off. 2. It is not difficult, if you have any aptitude for the work, to learn to tint photographs in water or oil colours, especially if you confine yourself to transparent colours. To paint a photograph thoroughly in water or oil requires almost as much skill as to paint a portrait from life.

Several Correspondents in our next.

Several articles in type are compelled to stand over.

PHOTOGRAPHS REGISTERED.

- Mr. J. W. SHOREZ, Bridlington Quay,
Photograph, the Heroes of the *Harbinger* Life Boat.
- Mr. G. GODDING, Aberkuffy,
Two Photographs of Glamorganshire County Lunatic Asylum.
- Mr. T. KINGSMILL, Ashford,
Photograph of Interior of Cranbrook Church.
- Mr. A. NICHOLLS, Cambridge,
Photograph of Chapel, &c., at Mill Road Cemetery.
- Mr. APPELYARD, Brighouse,
Two Photographs of Rev. J. Clark.
- Messrs. R. WARD and Co., Belfast,
Photograph of King William's Castle, Hillsboro'.
- Mr. C. SANDERSON, Preston,
Two Photographs of Father Ellis.
One Photograph of Father Head.
One Photograph of Father Mitchell.
- Mr. C. J. WRIGHT, Worthing,
Photograph of the Pass Key of the Tower of London.
- Mr. W. GORINGE, Cheltenham,
Photographs of York Cathedral and twenty-two others.
- Mr. E. LAWTON, Southend,
Photograph of Group of Inmates of Rochford Union.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 681.—September 22, 1871.

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TESTIMONIAL TO THE LATE WILLIAM BLAIR.

THERE is no sentiment more healthy in a community than that which prompts a grateful recognition of its benefactors. Gratitude, like mercy, is twice blessed, blessing him who gives and him who takes. Few arts have been so dependent upon the gratuitous service of enthusiastic votaries for its progress as photography. Its rapid growth and quick strides towards perfection, unparalleled in the history of the arts, have been due in a large measure to such service. In few matters have the tangible prizes open to the enthusiastic amateur been so few as they have been in connection with our art, the delights of its pursuit alone having generally furnished to the experimentalist their own sole reward. Besides this guerdon, the knowledge that valuable discoveries and contributions to the art would be remembered, and, when opportunity served, repaid by a grateful community, would doubtless constitute one of the strongest incentives to the free gift to the public of the results of laborious, and sometimes costly, investigation. In any case, a community elevates itself, as well as stimulates research, by honouring and rewarding those who have contributed to its prosperity.

It is scarcely necessary, we think, to prelude a suggestion for some recognition of the services of the late Mr. William Blair by extended preliminary observations of a general character. Mr. Blair's name is well known throughout the community; his services and contributions, especially to the progress of permanent printing, are well known to all who have known anything of the art during the last dozen years. He has never sought to obtain pecuniary compensation, or to make commercial use of the results of his labours. Mr. Blair was not a rich man, and the amount of time and money he expended in his devotion to the art he benefitted probably contributed materially to his being much less than rich. He has died, and left a widow and five children, the eldest of whom alone is able to provide for himself. Although not left in absolute poverty, or without any means whatever, Mr. Blair's family are left practically unprovided for. We do not wish to dishonour his memory or the self-respect of those he has left by suggesting what might be regarded as eleemosynary aid; but we feel that few fitter occasions have occurred in the history of photography for the presentation of a testimonial which shall honour the dead and aid the living, than now exists in relation to Mr. Blair and his family.

We make the suggestion at once to photographers before any organization has been formed for giving effect to the proposition. We hope to announce shortly that specific arrangements have been made to receive and apply contributions for such a purpose, in the meantime commending the matter to our readers; and we shall have

pleasure in receiving communications and suggestions from any one interested in seeing such an undertaking properly carried out.

A CINCINNATI STUDIO.

In a recent number of our Philadelphia contemporary a very fine photograph of an old gentleman belonging to a by-gone period forms the illustration. The picture is entitled the "Last of the Queues," referring to the coiffure he wears, which is the old "pig-tail" in vogue more than half a century ago. The noble features, with meän and bearing stately, but benign, are admirably rendered; the silky and waving white hair, and full ruffled shirt, although presenting a mass of white, are produced with perfect detail, and in a sufficiently subdued light to render them secondary, as they should be, and not the most prominent elements in the picture, as such whites only too often are in a photograph. Besides being a fine and interesting subject, the picture is treated with a degree of artistic skill which lead us to enquire further as to its production. We find it the work of Mr. J. Landy, of Cincinnati, Ohio. The diagram of his studio, with accessories, screens, &c., here annexed, at



once suggests admirable possibilities of lighting. The dimensions of the studio are as follows:—

Length, 40 feet; width, 25 feet; top and side-light, each 12 feet wide. The side-light reaches to within 2 feet 6 inches of the floor, and stands at an angle of about 25 degrees, and is 10 feet high. The top-light is 20 feet long, and inclined at an angle of 40 degrees, as shown in the cut.

In speaking of his formula, Mr. Landy says:—"The

formula I work is the same as you have so often published, and which I have used for thirteen years or more.

Collodion.

Ether	...	...	...	1 ounce
Alcohol, 95 per cent.	...	...	...	1 "
Iodide of ammonium	...	...	...	5 grains
Bromide of potassium	...	...	...	2 "
Soluble cotton	...	...	...	4 "

"I also have a solution with the above proportion of iodide and bromide, without cotton, for thinning in hot weather. I also have a strongly iodized solution for certain kinds of work. My bath is generally from 35 to 45 grains strong. Strong effects of light require very weak iodizing. Formulas are played out; after making a few batches of collodion, you will soon see what's wanting. I believe in cultivating the eye so that you can tell when you have a good effect, without trying a plate to see if the shade is too deep, or the light too strong. Brains!"

PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.

We have already pointed out the numerous surprises awaiting the visitor in search of photographs at the International Exhibition. We have now to mention another, of the existence of which the catalogue gives no indication, but which those of our readers visiting the exhibition once more before it closes at the end of this month will do well to see. In the southern corridor, near the refreshment department, but in a part quite removed from the other photographs in the same corridor, is a large series of exceedingly interesting photographs, illustrative of subjects connected with the important colony of Queensland. The photographs are for the most part tinted, and, being hung in a somewhat dark portion of the corridor, without anything to call attention to their photographic character, they are easily overlooked. They consist chiefly of landscapes with figures, and illustrate the geographical, geological, and agricultural characteristics of the country. The geological illustrations have been carefully selected and classified, and present examples of the granitic, trappean, volcanic, paleozoic, mesozoic, caenozoic, alluvial, and metamorphic formations, of considerable interest, and especial value for educational purposes. There are also various portraits and groups of natives, as well as figures scattered throughout the landscapes. The photographs, which are of various sizes, from quarter-plate to twelve by ten—and, in the case of some capital panoramas, much larger—are very excellent, as well as interesting, and will well repay a careful examination.

We are indebted to Mr. Daintree, of the Queensland Government Offices, at Charing Cross, for the information that the majority of the negatives were taken on dry plates, which were carried about in pack bags, and had to withstand a considerable amount of rough usage both before and after exposure. The preservative employed was a novel one, and consisted of a solution of the gum-resin of the Eucalyptus, which is very plentiful in that country. The results are so good, and the rapidity, judging from the presence of figures, so great, that we should like to hear more of the process, and hope shortly to lay more details before our readers.

ORNAMENTAL BACKGROUNDS TO PORTRAITS.

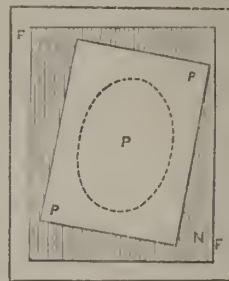
From the communications which have reached us on the subject of the ornamental backgrounds we recently described as exciting attention in the United States, and the various examples of attempts in a similar direction which we have received, many of our readers seem interested in the proposed novelty. We subjoin, therefore, some ex-

tracts from a patent just obtained in America for a method of producing designs to be used for this purpose. We may suggest, however, that where a ruling machine for producing the fine lines is inaccessible, reduced photographic copies of some of the fine printed cottons having fine parallel lines might probably be made to answer perfectly. The specification runs as follows:—

My improvement relates mainly to the production of the background of a photographic picture, but may be used for making designs for printed goods, and for various other ornamental purposes. The main feature of novelty is a negative of clear glass, having fine lines ruled, drawn, or otherwise produced upon one of its surfaces, and so used in printing by the ordinary exposure to light as to produce a background or tint of a peculiar and novel character.

A plate of clear glass, of suitable size, is coated with collodion in the usual manner for making a negative. It is then exposed to light, which produces a uniform dark colour over the whole surface; the plate is then washed, toned, fixed, and varnished. The glass plate thus prepared is now to be placed in a ruling machine, and fine parallel lines made across it. The tool used in the ruling-machine must have a point or edge that will remove the whole of the collodion film without scratching the surface of the glass. The exact breadth of the lines for producing the best effect cannot be definitely stated. I have obtained good results with lines of fifty to the inch, but in this much variation may be allowed. The effect is improved by using both fine and coarse lines. From this ruled plate or negative others may be made in the copying-camera, but the lines are less sharp, and I prefer to make in the ruling machine each negative that is to be used for making the background of a picture.

I will now describe the successive steps to be followed in producing one kind of photographic picture, commonly called a "medallion." Cut an oval opening in a piece of paper or



cardboard, place this in proper position upon the common picture negative, put on the prepared paper, and print in the common frame. The open space being exposed to the light, now contains the picture or face, while the margin that is covered by the mat is not affected. Now place the ruled negative N in the printing-frame F, and upon it lay the picture P, having first covered the face or part that is to be protected from the further action of light with the oval card that was cut from the opening in the cardboard, then expose to light, and print. When taken from the frame the background is found to be printed in parallel lines. Now place it again upon the ruled negative, at a slight angle with its first position, as represented in the figure, taking care to keep the oval card in place; now expose to light, and print again.

On examination of the picture it is found to have a margin or background formed of lines crossing each other at an angle, a great variety of effects being produced by a very slight change in the relative position of the ruled negative and the picture. It will be observed that there are three successive printings: first, the picture or head; second, the background of parallel lines; third, the background of lines crossing or interfering with the first series of lines. When this last or third printing is to be made, the frame should be held up to the light, and the picture placed at such an angle as will give the desired effect. It may be very light and delicate tracery work, or it may be dark, and have a great variety of curved, shadow, and watered figures.

To produce other styles of background the ruled lines on the glass negative may be of various kinds, waved or otherwise.

Instead of making the negative-ruled plate by the photo-

graphic process as first described, the clear glass may be coated with paint or black varnish, and when dry the lines may be cut through this coating by the ruling-machine or other suitable mechanism.

M. DE CONSTANT ON SPLIT FILMS.

In a recent number of the *Archiv* there is a note from M. De Constant on the important subject of split films, for which that gentleman gives a universal remedy. He does not go so far as to state the real cause of this unpleasant occurrence, but he boldly makes the assertion that no negatives which have been prepared in the first place with a coating of albumen have, in his experience, come to grief through the films becoming raised or broken. The communication is as follows:—

"The question lately ventilated by Mr. England regarding the destruction of negatives by the tearing or breaking up of the collodion or varnish film is one of the greatest importance. It is really astonishing that, taking into consideration the great deal that has been said and written upon the preservation of prints, but little of any value has ever been made known upon the subject of keeping negatives, which, by the way, ought, at any rate, to be as well worth taking care of as positives. In England the subject has been discussed, but it behoves Germany to give its opinion also. From a comparison of facts it ought not to be very difficult to arrive at the real cause of these defects.

"Very few of my negatives have been injured from this cause, and only, indeed, when I have employed varnishes of a certain character. This much, however, is certain, that among my own negatives and those of my colleagues, which have been prepared with a substratum of albumen, no one single instance of split films has occurred.

"The negatives of mine which have suffered were contained in boxes standing upon the floor, and therefore placed in a somewhat damp locality. All those which have been wrapped in paper and stored in dry cupboards have remained unaltered."

AMERICAN CORRESPONDENCE.

ORNAMENTAL PRINTING—HOW GALLERIES ARE SET ON FIRE—"FIRST-CLASS OPERATOR WANTED."

Ornamental Printing.—In my last I described to you Mr. Foss' method of printing ornamental background tints. Since then I have received a copy of his specifications and drawings. You may see best to give them to your readers entire. If you do, they will find a very easy method of producing "something new every day;" in fact (except, perhaps, by accident) you can scarcely produce two tints exactly alike.*

How Galleries are Set on Fire.—Some time ago I received the following communication from a correspondent in Saint Paul, Minn.:—

"Some four years ago one of our photographic galleries was destroyed by fire, and the origin of the fire is still a matter of conjecture. This morning an incident occurred in my room, which I think of sufficient importance to the fraternity to send you an account of, and which, I think, accounts for the fire above alluded to.

"My developing-room is very cold, so I have a stove in it, the pipe of which runs its whole length, and then goes up through the roof. The melted snow, rain, and condensed vapour from the wood, run down the exposed pipe, and coming down the outside, and through the joints, form an incrustation on the outside of the pipe inside the room. To catch the dripping, a tin dish is suspended close under the elbow. This morning I made a fire in the stove, with coals and hard maple wood, no pine or kindling of any

kind that would cause a blaze. Perhaps fifteen minutes after making the fire I went into the room; smelling a peculiar smell, I thought the fire too strong, but found the stove only moderately warm; a slight crackling overhead arrested my attention, and on looking up I saw the incrustation on the pipe all a mass of fire. I immediately concluded that my pipe was on fire inside, but examination proved that it was scarcely warm on the cross part, where, of course, the heaviest deposit of soot would be, and on the side of the upright pipe not incrustated, the hand could be held without inconvenience. The flakes falling into the suspended dish set the deposit in it on fire also. In my case there would have been no danger if it had occurred at night, but as in the case mentioned there was just such a pipe which annoyed them by dropping, and as it was in the room where the pictures were trimmed, and the floor was littered with cuttings of silvered paper, it seems to me this incident accounts satisfactorily for what has hitherto been a mystery.

"Perhaps some of your scientific correspondents will inform us what this incrustation is, and how much heat it will require to ignite it spontaneously. One thing I think I know, which is, that it is not soot, as it began to form immediately on the setting up of my stove. From the stove to the cross pipe is nearly seven feet, the cross pipe is over seven, and the fire appeared to have commenced about fifteen inches above the elbow, and spread up and down, making upwards of fifteen feet from the stove. The pipe was put up about six weeks ago, and was new, made to order, and riveted together to avoid any danger of its coming down."

Being unable to solve the "mystery" myself, I referred the matter to Prof. Albert Leeds, of the Stevens' Institute of Technology, of which Prof. Henry Morton is president, and he answers as follows:—

"Such an arrangement of stove and chimney-pipe as is mentioned in the accompanying letter is analogous to the retort and condenser of the apparatus employed in the destructive distillation of wood. From the burning wood a great variety of gaseous liquid and solid products are distilled, and partly caught, partly condensed in their passage through a long tortuous and cold stove-pipe. They are of very different degrees of volatility, wood ether and wood-alcohol being the most volatile pyroligneous acid, acetone less so, and toluene, xylol, cumol, and other hydro-carbons, being very dense. But none of these products are so inflammable as to take fire spontaneously at very slightly elevated temperatures. In condensing upon the interior of a stove-pipe, they would form a crust which would conduct heat very slowly to the exterior, and thus would give rise to the supposition that there was but little heat at a remote part of the stove-pipe to transmit from the interior to the outside; and yet, at the same time, they would be themselves so inflammable as to ignite from sparks carried upward in the process of burning. It is probable that the stove-pipe took fire from internal causes, and not from anything derived from the atmosphere of the room."

The subject is one which should not be disregarded now that the time for putting up stoves is again approaching.

"*First-class Operator Wanted.*"—This quartette of words we have all seen for years, in almost every photographic journal we pick up, heading the advertisement of some photographer in quest of an assistant. I am constantly receiving letters, too, from parties who do not believe in advertising, or in what is advertised, saying:—"You know everything going on—can you recommend to us a first-class operator?" "One competent to take charge of a gallery" is the usual qualification desired. The poor over-worked proprietor finds he needs rest. He has worked several years hard and faithfully to build up a business; but with success has come broken-down health. He must take a "rest." The doctor says he will die if he do not. He resolves to do it, but when he comes to turn over in his

* See page 416.

mind how he is to do it, he is at once confronted with the impossibility of carrying out his plans, unless he can get "a first-class operator" to take his place. Of course, good man, you do not wish to trust your business to any one but a party "thoroughly competent to take charge of a gallery;" but in all these long years that you have been walking along and alone you have been assisting in the defeat of your present desire. Had you been prudent, you would have had growing up around you one or two young men who, being acquainted with your ways and with your customers, would have been better capable than anyone else to have taken your place while "away on a rest." Your mistake is a common one, however, and you and your confrères must begin to correct it now. There are but very few "first-class operators" to be found. They are not "on the tramp." They generally find work where they are known, and are hard to get away. The good ones do not all die early, as Josh Billings believes the good Indians do; but they are previously occupied, and are only to be had when they are not pleased with their situation, and want to change their base.

There is a class of "operators" here, and, no doubt, in your country as well, whom I may designate as those who learn to "do the work in the short way." For example, a boy of seventeen or eighteen goes into a gallery, learns how to coat and dip a plate, and, perhaps, how to adjust a head-rest and "draw" a focus. He gets a few ideas on light and posing, can make a print, and spoil it with his dirty fingers, has a fuss with his employer, quits the gallery, and goes about offering his services as "a first-class operator." In the course of a year he is engaged at a dozen different places in as many different towns. He is found out to be an incompetent "botch" wherever he goes, and he becomes discouraged and dissipated, thus bringing disgrace upon his profession.

The fault is with the employers as much as with the employés. If they will employ only those who are good workmen, the incompetent will soon be driven from the field, and one can almost always find "a first-class operator."

If young men taking up photography as a profession will thoroughly master it, they will have no trouble to get a good paying situation, for there are always plenty of demand for "a first-class operator." The scarcity of them is another strong argument sustaining those of your good people who are in favour of some revised plan of educating assistants and making "first-class operators, competent to take charge of a gallery." Let us all help.—Truly yours,

EDWARD L. WILSON.

Philadelphia, September 1st, 1871.

FRENCH CORRESPONDENCE.

Paris, 18th September, 1871.

ABOUT a year ago—a short time before the siege of Paris—I received from a skilful photographer at Alexandria, in Egypt, two very charming pictures which were exceedingly interesting. They were carte portraits, in relief, and in the form of medallions upon a grey background representing a kind of framework. One might easily have taken them for oval enamels, like those produced by Lafon Camarsac or Deroche, mounted upon cardboard. The producer of these pictures promised to forward me a description of his method of operating if I deemed the subject sufficiently worthy of notice. Subsequent circumstances prevented, of course, the realization of this promise, but I have learnt that during the last few days an analogous process, if not actually the same one, has been very successfully put into practice by M. Baur, of Paris. The process he has named "Photo-relief enamel," and the following is the description given by him of the method.

Take a glass plate, with a perfect surface, a little larger than the dimensions of the picture; it is cleaned as

thoroughly as possible, and collodionized in the ordinary fashion, and the film allowed to set for four or five minutes. It is subsequently passed into a gelatine bath (an aqueous solution containing five per cent. of gelatine). Another bath, containing a ten per cent. solution of gelatine, is prepared, and the print immersed therein, together with a sheet of thin Bristol board, and the collodionized plate is then lifted from the first bath, and the print applied face downwards, care being taken to dissipate any air bubbles that may be formed. Finally, the Bristol board is placed at the back of the image, and made to adhere firmly thereto. The whole is allowed to dry for a period of twelve to twenty-four hours, according to the surrounding temperature. To finish the operation, one cuts with the point of a penknife round the margin of the cardboard, and then, lifting one corner, the picture is carefully detached from the plate. If the surface of the glass in the first instance has been properly cleaned the print will leave the plate very easily. Finally, the mounted print is put under a suitable press, and this embosses the picture and imparts to it the form and relief exhibited by a medallion, oval or square, according to the description of the die employed.

M. Baur, who produces the presses in question, does not give further particulars, but furnishes more detailed information when supplying the presses. At the same time he is willing to furnish photographers with as many specimens of his relief-enamel pictures as they may wish for, if they will forward to him unmounted albumenized prints of the ordinary kind.

These pictures have, as I have said, a very pretty effect, which might be much heightened by tasteful colouring with aniline pigments. They are, at any rate to the Parisian public, a perfect novelty, which will be received with favour. Already M. Baur has entered into communication with the principal ateliers, and has commenced the publication of portraits of contemporary celebrities in this novel and beautiful style.

A Bordeaux journal, *La Gironde*, has lately given an account of the work executed during the war by a photographer of that town—M. Terpereau. In this connection we find another example of defective administration, which neglected to supply, not merely to officers, but even to commandants of corps d'armee, typographical documents of a most indisputable nature. We find, both in the provinces and in Paris, that the most surprising efforts have been made by private firms to make amends for this lapse on the part of the Government, and to supply documents so highly useful, for the time being. With but limited material and labour at his disposal, M. Terpereau was able in a short space of time—which, under the most favourable conditions, would have been excessively short—to respond to the demands of the authorities, who became at length enlightened as to their shortcomings, and to supply the demands that were made upon him from day to day. More than others, photographers possess the gift of ingenuity, and if they are not all inventors in the most rigorous acceptation of the term, they are scarcely ever at a loss to contrive makeshifts and invent subterfuges sufficient to overcome the difficulties with which they have to contend. M. Terpereau has once more proved this fact, and I very much regret that I am unable to reproduce here at full length the letters he has written respecting the obstacles of every nature which required to be surmounted. Briefly, he produced in his studio, done between the 25th December, 1870, and the 25th February, 1871, as many as forty-two maps, and struck off from twenty-five to fifty copies of each. If, instead of commencing at the end of December, the task had been begun at the outset of the war, and taken up throughout France, there would have been at the disposal of the authorities a collection of typographical documents which would most certainly have influenced the disastrous events which we have now to deplore. Let us hope that the lesson we have learnt will not be thrown away.

The committee nominated to receive subscriptions for the

family of Niepee De St. Victor held a meeting a few days since. It appears that the bad fortune which accompanied our late friend during his laborious existence has attached itself to his family after his death. In fact, the subscription had scarcely been started when the war broke out, and at the present time, unfortunately, we have in France so many misfortunes of our own, that it is difficult to believe in a satisfactory termination of the committee's labours. It is therefore to foreign photographers, to those who have cherished a remembrance of the works of this indefatigable and generous inventor, and to England above all, that we address ourselves, asking our neighbours to do what they can in the cause, and to add to their offering that which we ourselves would have given in happier and better times. We have already received so much sympathy from our neighbours across the Channel as to make us hope that in this particular instance also they will not fail to reply generously to our appeal.

ERNEST LACAN.

PHOTOGRAPHY ON WHEELS.

BY J. E. MADDEN.

I SEND you particulars of a dark box on wheels, which may be useful to some of your subscribers, and which I am making for my own use this autumn. I work 8½ by 6½, but I think the size of my box will be roomy enough for 12 by 10. The dimensions are 2 ft. 6 in. by 2 ft. 1 in.

Fig. 1 represents the box packed for travelling. The

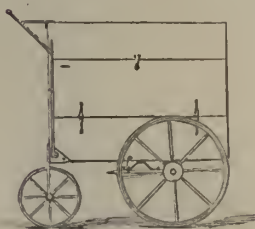


Fig. 1.



Fig. 2.

wheels are 18-inch perambulator wheels, with india-rubber tyres. On the bottom of the legs there is a small spring on which the box sits, and these and the tyres will, I think, prevent breakage.

Fig. 2 represents the box elevated for work. To elevate it merely requires to release the fastening (hook or small strap) which holds the box down on the legs, drop the handle you push it by, when the front legs fall (these are kept in place by a spring catch on the edge of the box), give it an upward and forward pull, and it now rests on the four legs, and only requires the stays to be hooked in the legs to make it perfectly rigid; open your front, slip on your black cover, and arrange your seat. I intend developing my pictures sitting, and have a camp stool which packs up with the legs, and all is ready for work.

Fig. 3 is a front view packed and ready for trundling.

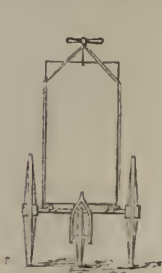


Fig. 3.

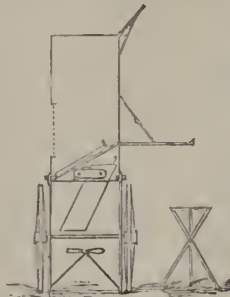


Fig. 4.

Fig. 4 a front view, open for work, with the end removed

to show the arrangement I propose for my bath, which I intend to be a double one.

You will see in fig. 4 a flap, which, when the box is packed, folds back against the glass window. This keeps the bath in a division to itself, so that no splash or drip can get to it. On this flap the dark slide rests, and is out of the way and always at hand. This dark chamber is marked by the dotted line on fig. 2. The window is just a shade larger than the dark slide, so that it can be passed in and out, and consists of two panes of amber flashed glass, one fixed, the other moveable; and by keeping the bath in the dark the window can be always open, save when actually manipulating the sensitized plate. The legs do not revolve on the axle; and, by unscrewing the bolts which fasten the box to the legs, taking the lynch pins out of the wheels, and removing the front wheel, they can be all packed in the box, or strapped on it, for railway or other conveyance travelling, and, when wanted, can be put on again in less time than it has taken to describe the operation.

I will not describe internal fittings, as every one has his own dodge about these. The only dodge I have is, to make my bottle divisions of wire, covered with tube india-rubber, and india-rubber rings on the bath keep it tight in its case. My intention is, that everything should pack in the box. The size can, of course, be varied to suit large or small plates. The sitting position is much easier and less fatiguing than a standing one during development.

TRANSPARENCIES FOR THE LANTERN ON WET COLLODION.

BY VALENTINE BLANCHARD.

[At the wish of several of our readers, we reprint from one of our YEAR-BOOKS, now out of print, some hints on the production of transparencies for the magic lantern on wet collodion.]

A long box will be needed, painted black on the inside, and open at the top, but with a lid to cover it up when in use. This box must be four times as long as the equivalent focus of the lens to be employed. If, for instance, an ordinary quarter-plate lens be used, of about 6 inches solar focus, the box must be 24 inches long.

At one end must be a groove to hold a carrier or frame, contrived to hold the negative. Into the middle of the box may be placed the outer portion of the camera, carrying the lens, or pair of lenses; whilst at the other end the inside portion of the camera, holding the dark slide and focussing screen, may be made to slide. The lens must be turned towards the negative, and, if the transparency is to be of the same size as the original negative, must be placed in the middle of the box. It will be necessary to determine beforehand what lens is to be employed, and the distance needed to give a picture as large as the original. If enlargements are needed, the part holding the lens must be brought nearer to the negative, whilst for reductions it must be nearer the dark slide. The box may either be enclosed, so as to place the negative directly opposite the zenith, or, if this be not convenient, it may be worked in a horizontal position, a sheet of white card or paper being placed in front of the negative at an angle of 45°, so as to receive the light from the sky, and reflect it through the negative.

A small stop should be employed in the lens, for the greatest sharpness is needed; and even when the lens is considerably stopped down, the exposure will not be, with a moderately dense negative, more than a minute. If stereo negatives are to be copied, two lenses must be used, and a partition must be carried from the centre of the negative up to the lenses: this must be exactly in the middle. A partition will also be required from the back of the lenses up to the dark slide. Care must be taken to make these two spaces perfectly dark chambers; for

if this be not seenred, disappointment in the results will follow. The plates must be cleaned with scrupulous care, and immersed in a bath slightly more acid than usual. The collodion must be made of a very deep straw colour by the addition of tincture of iodine, and should be as free as possible from structure. The developing should be weak, not more than ten grains to the ounce, and with more acetic acid than usual—twenty drops to the ounce will not be too much—for it is important to get the greatest transparency in the shadows possible.

I like the double sulphate of iron and ammonia better than the ordinary protosulphate of iron, as there is less tendency to fog with it. To secure either certainty or success, I need scarcely say, an intelligent knowledge of photography, and some manipulatory skill, are necessary at the outset.

The great aim should be to get vigour combined with delicacy, therefore careful timing of the exposure is most important. The plates are best fixed with cyanide of potassium, and should be washed afterwards with more than usual care. They must now be carefully dried by the fire. These transparencies are best toned by a saturated solution of bichloride of mercury, followed by a weak solution of hydrosulphate of ammonia, care being taken to well wet the plate before applying the mercury solution, and wash well between each operation. The colour will be determined by the strength of the hydrosulphate of ammonia solution. Experience alone will determine the best proportion, but about six drops to the ounce of water will be found an average proportion. After the plates are dry they will be made more transparent by being varnished; but great care is needed to avoid dust in this operation. A capital test as to their suitability for the lantern is to lay them on white paper; the lights should show only white paper, but the shadows should be perfectly black.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.*

NATIONAL PHOTOGRAPHIC ASSOCIATION—PHOTOGRAPHY AND THE WAR—DRY PLATE EXPERIMENTS—CONSUMPTION OF COLLODION IN PREPARING PLATES—ALLEGED DIFFERENCES IN THE ACTING POWERS OF TWO STEREO LENSES.

It is a difficult task for the European correspondent to furnish photographic novelties to the American reader immediately after the exhibition of the National Photographic Association, which, during the five days of its session in Philadelphia, offered such an abundance of what is new and desirable to know. Last year I followed with admiration the proceedings of the Cleveland Convention, having the honour of being its guest. I did not believe that it could be surpassed, and still the reports inform us that the Philadelphia gathering was richer in interesting lectures, practical discussions, and important resolutions, while the exhibition itself was more beautiful, than its predecessor, and the abundance of the practically important matter which was offered to the Philadelphia Convention will not only benefit the American, but photographers of all countries. When I contrast my correspondence with this superabundance, it appears poor to me. We in Europe have also photographic societies, in Berlin, London, Vienna, Paris, &c., but we have none which, like a broad belt, stretch across a continent. We have not even been able to effect a union of the societies of the same country. Your great national union has no equal.

With us the season is at present very dull. The Photographic Society has commenced its vacation, and concluded its session with a detailed report by Mr. Schwieler, photographer of the so-called detachment for field photography, which had accompanied the German armies to France, in order to take views, for the purpose of constructing from

them topographical maps. These views had frequently to be taken when exposed to the fire of the enemy. "How is this possible?" is a question which has been frequently put to me, and many a one has his doubts about the matter; still in itself and theoretically it is perfectly correct, and in its principles very simple.*

The collodio-bromide of silver process, to which Mr. Lea has devoted years of research, is now practiced by many workers in dry plate photography. I myself have worked this process repeatedly, although I did not succeed as well as I desired. The cause of my failure was blisters on the developed picture film, an annoyance with which we meet otherwise only in the positive process. The gum with which the dry plates are coated is certainly the cause. I tried, therefore, a very weak solution of gum, and the blisters diminished, although they did not disappear entirely. It is still better to dip the plate in water after it has been gummed. It is probable that this trouble will manifest itself less with a powdery cotton than with the horny one which is at present at my disposal. Another uncertainty of the result is caused by the addition of the acid. This is changeable, according to the strength of the acid and the nature of the cotton, and requires experiments with every new collodion which is employed.

I have recently tried to answer by experiments whether or not the chloride has anything to do with the process. I prepared a pure bromide collodion and a chloro-bromide collodion, exposed both for the same length of time, and developed; the difference was very trifling, and I can say positively that the part which the chlorine played in the process is of very little moment, and is more a secondary action, similar to that of the nitric acid in the negative bath. I feel convinced that the time is not very distant when we will have a dry process which is in its results as certain as the present wet process; still the best dry process will have this objection: wet landscape plates are generally developed at once and on the spot; the view or the object is fresh in our memory, and we recognise at once if all the details are represented on the plate as the eye has seen them in nature. If necessary, we can take the plate and compare it with the original. It is different with a dry plate: the plates are developed at home, sometimes only the next day; frequently we have forgotten some details in the view, the main points are still fresh in our memory, we cannot always remember if a rock or a tree in regard to light or shadow corresponds with the reality if all the small parts which delight the eye are visible. To judge of all this from memory is absolutely impossible, and memory does not reach that far, and it has happened to me frequently to meet with persons who were delighted with their dry plates until they compared nature with the pictures, when they found out (which they would have seen with a wet plate at once) how much was wanting in the picture. Such disappointments become more pronounced the less familiar we are with the view or the object which we photograph, and the longer the time which elapses between exposure and development. These objections will always remain, no matter how certain the dry plate process may become in its results.

I had lately the pleasure of becoming acquainted with Captain Baden Pritchard, of the War Department, Woolwich, London, well known as a zealous and celebrated photographer. He came from Norway, where he had exposed a large number of the Liverpool Dry-plate Company's plates. He carried only a small camera for plates of carte-de-visite size, with a Dallmeyer wide-angled lens, and some plate holders. The whole affair was packed in a leather bag taking altogether not much more room than the case of a large-sized opera glass. A sample plate, which was developed in my presence, gave very satisfactory results. The above mentioned plates are rather high in price as yet.

I have tried recently to find out how much collodion is required to coat a plate, and was surprised to notice how many plates can be coated with the bromine dry-plate

* Philadelphia Photographer.

* See article by Mr. Schwieler in our last.

collodion, which is very rich in ether. The consumption of collodion depends, of course, a good deal on the manner of pouring it out. Some operators pour thick and heavy, others light. For trial I used at first my ordinary collodion, containing 1½ per cent. cotton; to coat a plate of 100 square inches surface required 14.5 cubic centimetres (about 230 grains, or half an ounce). One of my pupils, Mr. Galde, who pours very light, consumed of the same collodion for 100 square inches only 9.3 cubic centimetres (about 143 grains, or one-third of an ounce). Of the dry-plate collodion, which contains much ether, I required only 7.8 cubic centimetres (about 120 grains); so that 3 cubic centimetres (46 grains) of this collodion will be sufficient for coating a plate of triple carte-de-visite size.

Lately I met with a photographic error, which may perhaps occur frequently. Somebody complained that he could not obtain two stereoscopic objectives of the same intensity of light. This complaint is a very frequent one; but the two lenses in question I had tried myself, and had found them exactly alike. The gentleman made a picture in my presence, and the right side of the plate proved to be less intense than the left. I requested him to reverse the lenses, to place the right lens to the left, the left to the right; the resulting pictures showed the same discrepancy: the picture on the right was feebler than the left. It was evident that the lenses did not cause the difference; but the cause is easily explained when we remember how unequally sensitive the different parts of one and the same plate are. When we coat a plate and allow the excess to run off over



the corner *a*, we will find that generally the part *c d* is heavier coated than *a b*. This thinner coating is always less sensitive than the thicker one, as every photographer knows from experience. If now, as most operators do, the plate is placed in the plate-holder, the corner *a c* being downward, the thin and less sensitive part will be to the right, and with perfectly equal lenses will give a less intense picture than the other one. That this was the real cause in the above-mentioned instance was demonstrated at once by placing the plate into the plate-holder in such a manner that the thin, nest coating was to the left. We may use this circumstance however, to advantage; if it does happen that we have two objectives the intensity of which is different, we should place the one with the least intensity opposite the thickest part of the coating of the plate; otherwise it is advisable to coat the plate as evenly as possible. In Loescher and Petsch's stereographs the right-handed picture appears frequently shorter exposed—i. e., darker than the one to the left.

M. GOUPIL'S METHOD OF REPRODUCING OIL PAINTINGS.

BY M. SCAMONI.*

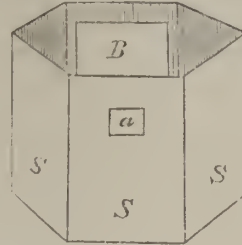
New oil paintings, after being stretched in a horizontal position upon a table, are covered, in the first instance,

* *Photographische Mittheilungen.*

with a coating of albumen, a broad badger hair pencil being used to render the film as even as possible. The white of egg must have been well beaten up previously to its application. Old and partly faded pictures are brushed over with glycerine by means of a soft sponge.

The exposure is best made in the open air, upon a roomy terrace, or in a free and open yard.

Pictures of but ordinary dimensions are enclosed in screens of a suitable height, made of a black material, so as to prevent all chance of reflected light, as shown at *S S*. In the



frame work opposite the picture is an opening, *a*, through which the lens is placed. Pictures with a very light sky are placed hending forwards opposite the instrument, or are turned round with the sky downwards. When but very slightly actinic colours are present in the picture, an exposure of from four to five minutes is necessary.

To prevent the rapid drying of the wet plates, it is advisable to place opposite the sensitive collodion film (at one and a-half lines distant) a bright and clean sheet of glass, which prevents the evaporation of the nitrate of silver solution. The collodion contains iodide of potassium (very finely powdered), iodide of cadmium, bromide of zinc, and bromide of ammonium. The sensitizing bath is made up of—

Nitrate of silver	...	...	7 grammes
Distilled water	...	...	100 "
Crystallized nitrate of zinc	...	...	3 "

In winter it is found advantageous to leave out the proportion of zinc specified above altogether, but in that case the amount of silver in the bath must be raised from seven to eight grammes.

The above method of reproduction is that employed at the well-known establishment of MM. Goupil and Co., of Asnieres.

NOTE ON ALBUMENIZING GLASS PLATES.

BY JOHANNES GRASSHOFF.*

I HAVE no doubt that in many studios the plate-cleaner is still an important personage, and yet this ought scarcely to be the case, seeing the many advantages obtained by the employment of albumenized plates. Whenever defects do happen which are really due to a bad albumen film, the fault mostly lies with those who have applied the solution and prepared it, and not with the coating itself. For some time past I have pursued the practice of albumenizing my plates, and this is the way I set to work.

The plates are taken from the muriatic acid and rubbed over well, especially at the edges, with a duster; with old plates the process of cleaning should be repeated two or three times with fresh water, the glass being allowed to remain in the last change of water until required for use. My albumen I now mix in a different manner to previously: the white of two eggs is added to its bulk of distilled water, and into the mixture is put three or four drops of carbolic acid; the whole is then whisked up into a stiff froth for five or ten minutes, and then allowed to stand; in one hour's time the albumen can be employed.

Of this solution four or five grammes are taken and diluted with one hundred grammes of distilled water, filtered, if possible, without air-bubbles, and allowing the liquid to run down a glass rod. The plates are taken out

of the water, set to drain, and then covered with the diluted albumen solution in the ordinary manner; in this way all air-bubbles are avoided. The superfluous solution is caught up in the filter, and may be again used, although, of course, one need not be very stingy as regards the employment of this very inexpensive preparation. The paper filter is thrown away, and a fresh one employed on the next occasion, when another supply of diluted albumen is used, taken from the stock solution.

The plates are allowed to drain and dry upon a negative stand of the ordinary description, one corner downwards, and when a damp and low temperature prevails they should be placed in a warm locality to dry. Quick desiccation is always good, so that no unnecessary dust or dirt may fall upon the surface; if exposed to the sun for but a few minutes it suffices to render the plate perfectly dry. A current of air, and even the aid of a bellows, is beneficial in this way, for when a long time elapses during the process of drying, markings of a marble character are apt to be formed, which subsequently become defects in the negative.

The plates are afterwards placed in the reserve box ready for use, and may be dusted, but not upon the face; the reverse of the plate, if at all soiled with albumen, may be rubbed with a clean cloth or with filter paper. The collodion is applied to the albumen surface as usual.

Although what I have here written down may appear exceedingly complicated, the method is in reality very simple and easy, if properly carried out; the best results may be obtained even with the worst plates, provided that the collodion and the silver bath work well together, and they are not, as sometimes happens, upon a war footing.

PORTRAITS A LA SALOMON.

BY C. STERNBERG.*

THE commercial success which has followed the so-called Salmon portraits induces me again to say a few words on the subject of their production. Some time since I communicated a method by means of which such portraits were producible; but it is not, of course, by following prescriptions alone that good results can be obtained, careful consideration and study of a good specimen being necessary.

On the present occasion I take the liberty of communicating a method which has been used for some time in several renowned studios for the production of the beautiful deep tones which characterize this special class of photograph.

Brilliant albumenized paper is silvered, and, after drying, fumed for the space of five minutes in ammonia vapour. The printing is allowed to go very deep until the shadows are completely bronzed, and the pictures are then washed for about a quarter of an hour in rain-water to which a little acetate of soda has been added. They are then treated for a short time in a gold bath containing a small amount of copper, and finally dipped into a compound solution thus put together:

A.—Water	...	...	...	1 litre
Crystallized acetate of soda	...	...	...	40 grammes
Bicarbonate of soda	...	...	...	40 "
Chloride of potassium	...	...	...	10 "
B.—Water	...	...	...	1 litre
Double chloride of gold and sodium	...	...	...	4 grammes

After these compounds have been dissolved, and the solutions made up separately, two parts of A are added to one part of B and one part of rain-water, and thoroughly mixed, and this combination is then used as a toning bath.

After sufficient treatment in this solution the prints are removed, and fixed in a weak hyposulphite bath.

PHOTOGRAPHY FOR THE UNINITIATED.

BY CHARLES WAGER HULL.*

LETTER No. 4.

HAVING made up all the solutions required for the production of a negative, we will now proceed to consider a few points of importance, which must always be remembered in the production of a landscape picture; for it is of this branch of our art that I shall have most to say, leaving portraiture to those who follow it professionally, not only for the reason that they can and do far excel any work we would produce, for the reason that their lenses, skylights, and facilities for retouching are better than ours are ever likely to be, but as well for the reason given you in my first letter, of healthful out-door exercise, and the study and fuller appreciation of nature's glorious and ever varying beauties.

A bright day with cloudless sky is, as a rule, less to be desired than one of softer and somewhat changing light. The bright day is more likely to give you pictures wherein the contrast between light and shade is too marked, destroying the half-tone or intermediate shades, without which no picture has value. The sun, as a general rule, should never be directly in front of your camera, nor directly behind, inasmuch as the shadows thrown by the objects you are photographing are lost to you, and your picture will lack that roundness and stereoscopic relief so valuable in all.

In placing your camera, always avoid, if possible, a position directly in front of the object you propose having as the main feature of your picture. Suppose there is a house in the country which you wish to photograph; fancy how badly your picture of it would look if you placed the camera exactly in front, so that no portion of it could be seen but the front; it would resemble an architect's drawing of the elevation, and would, like such, be lacking in perspective. Always, in such a case, choose a position to the one side or the other, and have within your picture the side, or a portion thereof, as well as the front. By this means the piazza, the mouldings and trimmings, and all projecting points will have relief, and not appear flat upon the face of the building. It is quite common to see photographs made by men who should know better in this pancake style of art, they evidently considering the position of but trifling moment.

Always give special attention to your foreground; never, if you can avoid it, have a long stretch of lawn, or level of any kind, between you and the object photographed. Change position until some bush or rock falls within your foreground, if possible. If this cannot be done, bring up the gardener's wheelbarrow, with rake and fork, to break the foreground, and aid the relief of those objects more distant. Such, of course, cannot always be done; this is one of the misfortunes of our art; the artist supplies these defects with his brush, adds them as wanted, and omits them if useless or inelegant; we can only do so to a limited extent. I was astonished, only a few days since, to hear an old hand at our art say he scarce ever used his ground glass; he could judge near enough by looking over the top of his camera. Such might suit him, it would not me. I fuss by the half-hour, often for a point of view, cut branches off trees, and have often cut trees down when out among wild scenes.

For architectural subjects, always have the camera level; if not, the building falls from or towards you, as you elevate or depress the camera; on landscape work, this rule is not so absolute, although it has the same effect; yet the slanting of a tree a trifle more or less would probably never be known; however, the general and better rule is to keep level, if possible; bring in more foreground or more sky by raising or lowering the movable front of your camera to which the lenses are attached.

Always use as large an opening or diaphragm in your lenses as will properly define the picture; small openings cut off the light so much that deep shadows are often lost in your picture, as the light from such, feeble at best, is

* *Photographisches Archiv.*

* Continued from page 407.

thereby made so weak that you fail to secure any impression upon your plate, consequently a black patch is the result; black patches, whether upon one's eye or upon one's pictures, never improve the looks of either. This black patch business is the greatest trouble; with wide angle, short focus, small diaphragm lenses, such are very good when you are in close quarters, very near your object; but, as a general thing, and for general work, they should not be used. I do not wish to be understood to assert that wide angle lenses are useless; far from it; I only wish to have it understood that, as they are rather dangerous tools, they should be used only when so near your object that those of longer focus fail to give upon the ground glass the picture desired. Lenses for stereo work, upon a plate 5 by 8 inches, of about six inches focal length from back lens, give, as a general rule, the most pleasing effects. I find that all my wants for stereo work are fully covered by lenses of $4\frac{1}{2}$, $6\frac{1}{2}$, and $9\frac{1}{2}$ focus, the last but seldom used, and then only for views of very distant objects, or when some nearer object is to be made to nearly cover the plate.

We now approach that portion of our work in the actual production of a negative, and which I shall endeavour to explain in as few words as possible, leaving for final consideration the troubles and difficulties which are most likely to bother you. The work to follow can properly be divided under eight different heads, as follows:—Cleaning the glass; collodionizing the glass; sensitizing the film; exposure in the camera; development of view; intensification; fixing; varnishing.

In purchasing glass, always choose that which is most nearly flat, free from blisters and scratches, and as nearly colourless as possible. If the glass is new, it will only be necessary to place it in a dish of water acidulated with the nitric acid of commerce, in about the proportion of five parts of the first named to one part of the last; allow it (as many pieces as the dish or tray will contain) to remain for several hours; pour off the acid water into a bottle for future use, and fill the tray with water, which may be changed several times. Under a faucet of running water next wash well on both sides, rubbing with a piece of Canton flannel or other clean cotton cloth, and place in a plate-rack (which, by the way, I forgot to mention in my list of articles required). If you choose to adopt the old-fashioned way of cleaning with alcohol and rotten-stone, the plates should be wiped dry with a towel kept only for that purpose. The object in wiping dry is to prevent the water from leaving lines or streaks, as it often does when allowed to dry spontaneously. After this has been done, place the plate to be cleaned in a plate vise, and dust on to the surface a little powdered rotten-stone, and shake on from a small bottle with a cork stop out away as to permit a few drops of alcohol to fall upon the plate. Now, with a pad of Canton flannel or Joseph paper, rub briskly the whole surface, and finally polish with another pad of same material. This rubbing must be continued until the breath blown upon the surface dries off evenly and quickly. Both sides of the plate must be treated in this way. Finally, dust off the surfaces and edges to remove any adhering particles of the rotten-stone. This most important and most tedious operation must be well done; any half doing of it will be sorely repented subsequently.

A plan far better than this, in my opinion, is to flow each plate with a dilute solution of albumen in water; it saves all the rubbing, and holds the film of collodion firmly to the plate. I invariably use it. Prepare the dilute albumen about as follows:—In a clean bottle drop the white of one egg, add to it twenty fluid ounces of water and five to ten drops of ammonia; when all are together, cork bottle, and shake well several times. Now take another bottle (eight-ounce), place in it a funnel, through the neck of which pass a piece of cord until it touches the bottom of the bottle, then roughly wet a small wad of cotton wool with water, most of which squeeze out, and place same into neck of funnel, which will hold the piece of cord firmly in its

place. Into the funnel pour a portion of the diluted albumen, which, filtering through the cotton, follows down the cord to the bottom of the bottle without creating any bubbles, which it would do if allowed to fall. Having nearly filled your bottle with the albumen solution, proceed as follows:—The plate, after thorough washing and rubbing under the faucet, is held for an instant to drain, but while still wet has poured over its surface the albumen; it is then placed in the plate-rack to drain and dry. This must be performed in a room free from dust, and will probably require a couple of hours, after which they can be placed in plate-boxes for future use, which may be months afterwards, if kept in a dry place. In flowing the albumen upon the plate, you should proceed as follows:—Upon the tips of the fingers and thumb of the left hand balance the wet plate, while with the right hand carefully lift, without shaking, the bottle of albumen, place the lip of the bottle upon the plate, and, with a steady hand, pour evenly from the bottle enough to cover the plate; move it backward and forward several times so as to thoroughly take up any surface water left, when it may be allowed to run off from one corner into the sink. Do not pour from the bottle from a height, or your plate will be covered with bubbles, but hold close as described; bubbles must be carefully avoided. This plan of cleaning plates is now quite generally in use.

When plates have been used and are covered with a film, it will be better to immerse for some hours, until the film is loose, in a solution of about 1,000 grains of sal soda to one pint of water; rinse off and place in the dilute acid water as described, and subsequently treat as before directed. There are many formulas for cleaning plates of old films, but none, I think, more simple or effectual than the one I have just described.

For very hard old varnished plates the soda solution may be warmed, which will hasten its action.

It may appear to the uninitiated that I have been very particular in this matter of cleaning plates, yet I am satisfied that such will ere long as fully appreciate its importance as I do. I had all but forgotten to mention two quite important points: the choice of the surface of plate upon which to flow the film of collodion. Every plate has one of two faults, viz., a hollow or concave side, and a side with some small imperfections, as blisters or scratches; if these last be very small they need not be considered; if at all prominent, and fall upon such part of the plate as to be of little account, such need not be rejected, providing you place the film on the side of the imperfections, in which case the shadow which such cast will be of trifling moment, while if on the back or glass side of the plate, they being removed from the paper, when printing, the thickness of the glass, an uneven spot upon the print will be the result.

As to the concave side of plate, which you can readily discover by looking along the edge, it is always best on such to place the film, for the reason that when placed in the plate-shield for exposure in the camera, the pressure of the spring upon the door at back of plate will serve to bend the glass to a straight or level surface, while if the convex side was coated, the effect of the spring's pressure would but increase its convexity, and make bad worse.

Before placing in the plate-box the dry albumenized plates, mark it by some word, as "clean," facing which always turn the prepared side of each plate. Trifling systematic habits of this kind often save much trouble, great blunders, and help to insure good work, with gratifying results. I had hoped in this to have produced one first negative. Excuse the delay; I'll try to do better soon.

Correspondence.

COAGULINE—COPPER IN SILVER, ETC.

SIR,—Here are two or three bits of experience, which, if you should deem of sufficient interest, are likely to be of service to country photographers who, like myself, have had to

plod their weary way through difficulties which will come at times.

Having read about the good qualities of coaguline, a transparent cement, the production of Messrs. Ray Brothers, Stockport, I was induced to try it on a glass support on the corner of a plate-holder which had become detached. I cemented it on again with coaguline, and was for some time afterwards troubled with stains on that corner of negative resting on that corner of the carrier. I tried it also on a broken glass bath. After two or three plates sensitized in the nitrate solution placed in the piece bath, I was brought to a standstill by a dense fog. Having poured out the nitrate solution, I laid the bath in the open air. A shower came on. I shortly after took it up, and found the coaguline on the outside turned into a jelly-like substance. I understood the cement would resist water, but I found it to act in the same way with a glass dipper which I had put by for weeks to set. The coaguline pressed outside the joined glass became soft on being put into water, so that I could scrape it off with my finger-nail. Such is my experience with coaguline.

Last winter I reduced my residues by the saltpetre process, producing metallic silver. I first boiled the residues in dilute sulphuric acid, then again in hydrochloric acid, but could not quite get rid of the copper. My negative bath had a bluish green tinge; but, as Dr. Van Monckhoven observes that "the nitrate of copper, which is the cause of colour, exercises no effect in the bath," I continued to work with it all spring and summer, until a few days ago, when I put it in the oven to evaporate the ether and alcohol. While hot I put a few drops of liquor ammonia in to neutralize it. A milky precipitate was formed, which, being filtered out, left a thick bluish-green sediment in the filter. The bath came out transparent and colourless. The ammonia appears to have rid the nitrate solution of the copper.

I have also tried sensitizing albumenized paper on a nitrate solution containing nitrate of copper. The printing and toning appeared to go on all right, but when the prints were put in the hypo, the high lights bleached fearfully, and the prints became useless.—I am, sir, yours truly, F. JACKSON.

PHOTOGRAPHERS' ASSISTANTS.

DEAR SIR,—I intended to have written a reply to Mr. Welch's last letter but one ere this, but changes have taken place, and business has hitherto prevented my doing so, though the delay is not to be regretted, as, during the pause, "A First-Class Operator," "Fair Play," and last, though not least, Mr. Bovey, have each expressed his views, which would be very good, only, unfortunately, they are all on the wrong side of the argument, as neither Mr. Welch nor myself ever said anything about "first-class operators." It is the "assistant operators" whom Mr. Welch attacks, and whom, to the best of my poor ability, I wish to defend from so sweeping a condemnation as that gentleman thinks proper to indulge in. The "First-Class Operator" and "Fair Play" are, therefore, answered; but I would just ask them if we are not to have any assistant operators? My experience of the first-class ones is, that they require a lot of waiting on, so some one must do the work. If "First-Class Operator" will procure me a situation as plate-cleaner at a weekly salary of 30s. I will accept it, as there will be little or no anxiety attached to such a position.

Mr. Bovey has greatly misconstrued my letters on this subject. I never (cortly or otherwise, that I am aware of) said anything about the paying of salaries, for I consider 25s. to 35s. per week very good wages for an assistant operator. He has no more, scarcely as much, brain power to use than an ordinary mechanic earning the same or less amount. "Dragging down photography!" cry Mr. Bovey and some others. Not so. What is the assistant operator? He should clean and coat plates, develop, varnish negatives, copy, &c. (making himself useful if he can), enlarge, spot out negatives and prints, also take a negative once now and then. So much the better, and let him be paid accordingly, but not to "take charge of the studio!" He is the mechanical man as distinguished from the artist. The artist must have his man to grind his colours, prepare his canvas, &c., and the assistant operator is just in a similar position; and I contend, despite Mr. Welch's emphatic assertion to the contrary, that there are plenty of good assistants to fill such places at an average salary of 30s. per week, who will do their work well and conscientiously. It is not so much a matter of payment as treatment, or how is it that one man will be always changing his assistants, while his neighbour, who

only pays the same, or even less, keeps his about him for years?

The hitch is, that some gentlemen, who only employ one or two hands, want too much for their money. The assistants must not only do all I have written above, and wait on them in the studio when there are sitters (of course, at that time, being a nobody), but, when that same party comes again with a friend, and the master is out, must fill his (the master's) place to the sitters' and employer's satisfaction. Of course, the sitters never have their whims with him: don't move just as they are in a nice position; never want to be taken in some ridiculous manner; don't look it, if not say it, "Oh, he's only the assistant!" When, badgered and bothered by them, he takes something, of course it does not please (sometimes not even when good). The employer is dissatisfied—assistant sulks—bitterness on both sides—no good assistants—no good employers! Who is to blame?

If Mr. Bovey will take the trouble to enquire of some of the gentlemen in "alloy practice," he will find seventy or eighty per cent. never worked as assistants in their lives. They are the Bohemians of the profession—men that have "caught it up," as they express it. Still it must be, and generally is, admitted, that the multiplication of studios does lower prices, no matter if the work be good, bad, or indifferent. I know of assistants leaving and opening in opposition, at once lowering the prices, and, in the end, their old employers have had to do ditto. It is from such a cause that the Liverpool photographers are at the present time taking cartes (good ones, too) at 5s. per dozen.

It is true that many young men have fallen from the ranks of the assistants who would doubtless have made good operators, still there are lots left—their name is legion—and if the employers try to improve what they have already got by kind treatment and generous forbearance, such as Mr. Bovey has always experienced (but I am afraid it's not many of us can say the same), we shall then have no gentleman rushing into print and libelling a body of men just because he got an indifferent one, and wishes to air his opinions as to apprentices. But my brother assistants don't seem to care, or cannot answer. A horrible thought comes across me: can it be true, and are those I know personally the exceptions? If such is the case, just consider the feelings of your truly,

A LITTLE PHOTO.

PS.—One more word for Mr. Welch. I want his definition of a good assistant operator, not a first-class one.

A TROUBLE WITH GOLDEN SYRUP.

DEAR SIR,—Would any of your correspondents who have used Mr. Robinson's "Golden Syrup" kindly tell me if they have met with the following defect, and, if so, how it is to be remedied?

I have heard of fog and stains sometimes resulting from the use of the golden syrup, but generally some reason has been given for the failure. In my case I have met with neither fog nor stain, but the following, which is at times very provoking. After that the negative has been well washed, intensified, fixed, and finally dried, I find all over the surface of the plate little black stars or spots. These seem to be on the film, not in it. They cannot be removed, however, and, of course, print white in the proof. They are not clean black spots, but have a halo round them, and show chiefly in the sky. I have tried more than one sample of syrup with the same result. The first negatives which were treated with the syrup were entirely free from these spots; since then I have been much troubled with them, and should be much obliged to anyone who could help me to get rid of them for the future, as the use of the syrup makes wet plate photography in the field about four times easier than it was before.—Yours very truly,

Abergavenny, Sept. 18th, 1871.

W. J. A. GRANT.

PS.—I may say that I do not believe it to be dust, as the spots are at regular intervals, and not very close together.

THE COLLODIO-BROMIDE PROCESS.— WORTLEY v. LEA.

SIR,—I must beg you to accord me sufficient space in order that I may answer the discourteous and unjust attack made upon me by Mr. Carey Lea in your pages.

In order to show clearly the difference between Mr. Carey Lea's process and mine, I shall place side by side two most important points, and in which it appears to me the difference between the two processes is clearly set forth.

Mr. C. Lea, *British Journal of Photography*, February 10th, 1871:—"If I do not use still more (excess of silver than ten grains) it is only because I do not see any use in loading down the solutions with silver."

I maintain that this is a great distinction, and one which has been apparently overlooked by Mr. Carey Lea. In the course of this letter I shall prove, according to the laws of chemistry, how and why this sensitiveness is obtained, and why my process differs entirely from that of Mr. Carey Lea.

Mr. Carey Lea intimates that his chemical knowledge is such that it is impossible he could have made any error; but in the *British Journal* for this year, page 68, Mr. Carey Lea, in calculating the quantity of free nitrate he supposes his collodion to contain, entirely omits any calculation of the amount of silver reduced by the two minims of aqua regia added to each ounce of his collodion. This error the editors of this journal, in their leading article of the same date, point out at the following words:—

"Having said so much in explanation, we cannot avoid noticing that Mr. Lea has left wholly unreplicated the observations we made on the addition of nitro-hydrochloric acid to the collodion. A very cursory perusal of our former article will show that we attached chief importance to this acidification of the collodion, and we ventured to suggest that in this matter Mr. Lea had much under-estimated the influence of one of the materials he employs in preparing the emulsion. We show that the addition of nitro-hydrochloric acid to the sensitized collodion means simply the removal of more or less of the 'large excess' of nitrate of silver, the amount of the latter removed being proportional to the quantity and strength of the acid mixture added. We ascertained, by direct experiment, that two measured minims of the strong acid directed by Mr. Lea to be added to each ounce were capable of precipitating 2.13 grains of nitrate of silver. We must, therefore, regard a body which is capable of producing such an effect as a very important constituent of the collodio-bromide emulsion—one, moreover, whose effect should be very accurately measured. If, when working in warm weather, Mr. Lea treats his collodion with two minims of acid of the above strength, and nine grains of nitrate of silver per ounce, he could only have two-tenths of a grain of nitrate of silver free in the emulsion. The chances of loss are sufficient to render it highly improbable that any real excess of nitrate of silver could be present; in fact, only a skilled chemist, working with a delicate balance, would be likely to avoid appreciable excess of bromide in the emulsion."

Now, however, Mr. C. Lea recognizes the error that he made, and allows that 1.38 grains of silver is reduced by the aqua regia, and thus showing how erroneous were his calculations at the time it was pointed out how very small, if any, excess of nitrate of silver he held in his collodion.

Mr. C. Lea states in his article that he claims that he could have patented the use of an excess of nitrate of silver; but in a paper read at a meeting of the Liverpool Amateur Photographic Society, Feb. 27th, 1866, Mr. Edmund Phipps states that he uses a collodion composed as follows:—

Bromide of cadmium	...	...	...	6 grains
Bromide of ammonium	...	...	...	2 "
Collodion	...	...	...	1 ounce

This collodion is directed to be sensitized with 11 grains of nitrate of silver.

Now Mr. C. Lea in your last issue makes the equivalent of 10 grains bromide of cadmium and 2 grains bromide of ammonium to be 13.33 grains of nitrate of silver. In the formula then published in February 1866, by Mr. E. Phipps, he, while also using 2 grains bromide of ammonium, only uses 6 grains bromide of cadmium, and we must, therefore, deduct from the 13.33 grains, as mentioned by Mr. Carey Lea, the amount of silver that the mixed 4 grains of bromide of cadmium would convert. In the *British Journal* for the 11th August Mr. Sutton states that 5½ grains bromide of cadmium will convert about 7 grains of nitrate of silver. Taking then the calculation as a basis, it will be seen that the 4 grains of bromide of cadmium that Mr. E. Phipps used less than what Mr. C. Lea did some four years afterwards would have converted

Col. Stuart Wortley's process, as insisted on from his first publication of it:—"The complete saturation of the collodion with nitrate of silver is the key to my process, and is the *sine qua non* in order to obtain the utmost sensitiveness and delicacy of detail of which the process is capable."

5½ grains nitrate of silver—this would be the allowance for anhydrous bromide of cadmium; but as Mr. Phipps probably alluded to common commercial bromide of cadmium, I shall give Mr. Carey Lea the benefit of that doubt, and allow 4 grains only of nitrate of silver to be converted by those 4 grains of bromide. Mr. Phipps' formula in 1866 will then stand thus—

Bromide cadmium	...	...	...	6 grains
Bromide ammonium	...	...	...	2 "
Sensitized with nitrate of silver	...	...	...	11 "
Deduct equivalent to bromides	...	...	...	9.33 "

Excess of nitrate of silver over bromides 1.67 "

It is singular that though Mr. Phipps did not appear to have wished to have worked with an excess of nitrate of silver, Mr. W. H. Wilson, in a paper read at a meeting of the Liverpool Amateur Photographic Society March 30th, 1869, repeats Mr. Phipps' formula, but lays great stress on the necessity of having an excess of nitrate of silver, and proposes to add 1½ grains instead of only 11 grains to the 3 of collodion, to be more certain of having an excess. Plainly, then, Mr. C. Lea has been anticipated with regard to collodion having to be made with excess of nitrate of silver.

In regard to pyrogallic acid in the preservative, which he claims, this has also been used previous to his proposal of it, and is alluded to by the editors of the *B. J. P.* of the 17th March, 1871, in these words:—"Pyrogallic acid is also known to act as a preservative or organifier for the dry plate film, and in a communication from Mr. Lea which we published on the 3rd inst. our readers have the benefit of Mr. Lea's experience in this direction." I take it, then, that pyrogallic acid having been known as a preservative previous to Mr. Lea's adoption of it, that gentleman's experience alone would not be sufficient to support a patent. As it is, however, I have given up the use of the pyrogallic acid, and have published that fact in the *PHOTOGRAPHIC NEWS* last week. Plates prepared with pyrogallic acid are deficient in keeping qualities.

With regard to patenting slight washing, in Mr. E. Phipps' paper of March 30th, 1869, he also recommends the same slight washing that Mr. C. Lea a very considerable time afterwards proposed to adopt. This would have prevented the patenting of that point.

Again, Mr. C. Lea says he could have patented the addition of nitrate of silver in solution to collodion; but this had previously been done, both in the collodio-chloride and Wothlytype processes, long before Mr. Lea proposed it, and the substitution of alcohol for water as a solvent would certainly not allow of such a patent being supported. The use of aqua regia, I have no doubt, would bear a patent, but owing to its rotting effect on the film, and its uncertain action in collodion saturated with nitrate of silver, I have been compelled to give up its use, and shall, in the course of this article, point out what I propose as its substitute.

Mr. C. Lea asks what I could have patented in my process? Now, it oddly enough happens that when I first published it a friend of mine found great fault with me for not having made the process the subject of a patent. Under no circumstances should I have dreamed of patenting a process which owes so much to others than myself; but, anyhow, I did not for a moment believe that it was patentable. My friend, however, determined to prove his point, obtained a clear dictum from an eminent authority, to the effect that if the saturation of collodion with nitrate of silver had not been previously proposed, and if it, in truth, gave photographers the advantage of working with three times the rapidity of any other dry emulsion process, that would be amply sufficient to support a patent, novelty and utility being the points that are considered in the English patent law; and it certainly must be deemed to be utility to increase the rapidity of a photographic process by three times.

[The remainder of Col. Wortley's letter will appear in our next.—Ed.]

Talk in the Studio.

A PHOTOGRAPHIC GALLERY OF STUDENTS.—At a ladies' college at Poughkeepsie, U. S., before the close of the recent term, the whole of the young ladies were photographed by Mr. Elbert Anderson, of Kurtz's Gallery, New York, who was engaged some days in his pleasant task. Professor Morse presented the

college with the first Daguerreotypes produced in the United States.

ECLIPSE PHOTOGRAPHY.—Mr. Brothers writes to *Nature*, in relation to his recent notes on eclipse photography, as follows:—“From letters I have received, it appears that the table of exposures given in my ‘Notes’ is not correctly understood. It is necessary to explain again that the reason why the plate exposed 8 secs. gave a better result than the one exposed 30 secs. was because the eclipsed sun was nearly covered by cloud during the long exposure, and was quite clear during the short. The 30 secs. plate would have been greatly over exposed for certain details, but the outer corona would probably have been more clearly defined. By giving some plates short and others long exposures, it was intended to show different effects, as would certainly have been the case if we had been favoured with a cloudless sky. I am informed that it is proposed to attempt to obtain uniformity of results by using the same kinds of instruments and chemicals at all the stations. So far, good. But where is the certainty that the hands that will use the chemicals and instruments will produce equality of results? It is about the same as giving to a dozen men pens, ink, and paper, and expecting from them twelve specimens of calligraphy all alike. It would be preferable to decide beforehand whether negatives, or positive, or both are to be taken, and then to allow the operators to choose their own methods.”

THE SUNBEAM.—The greatest of physical paradoxes is the sunbeam. It is the most potent and versatile force we have, and yet it behaves itself like the gentlest and most accommodating. Nothing can fall more softly or more silently upon the earth than the rays of our great luminary—not even the feathery flakes of snow, which thread their way through the atmosphere as if they were too filmy to yield to the demands of gravity, like grosser things. The most delicate slip of gold-leaf, exposed as a target to the sun's shafts, is not stirred to the extent of a hair, though an infant's faintest breath would set it into tremulous motion. The tenderest of human organs—the apple of the eye—though pierced and buffeted each day by thousands of sunbeams, suffers no pain during the process, but rejoices in their sweetness, and blesses the useful light. Yet a few of those rays, insinuating themselves into a mass of iron, like the Britannia Tubular Bridge, will compel the closely-knit particles to separate, and will move the whole enormous fabric with as much ease as a giant would stir a straw. The play of those beams upon our sheets of water lifts up layer after layer into the atmosphere, and hoists whole rivers from their beds, only to drop them again in snows upon the hills, or in fattening showers upon the plains. Let but the air drink in a little more sunshine at one place than another, and out of it springs the tempest or the hurricane which desolates a whole region in its lunatic wrath. The marvel is that a power which is capable of assuming such a diversity of forms, and of producing such stupendous results, should come to us in so gentle, so peaceful, and so unpretentious a guise.—*Boston Journal of Chemistry.*

To Correspondents.

- THE MAN WHO DID CARTES AT 1s. 6d. PER DOZEN** replies to J. R. Griffiths, that if he will send him a stamped and addressed envelope, he will send the information as to cost of materials, &c., direct.
- F. W. T.**—You have not carefully read the article. Col. Wortley refers to a method of reproducing negatives which we proposed some weeks ago. If you will read our article, as well as Col. Wortley's, and follow the instructions, you will succeed. The plates to be used are collodio-bromide plates, and the nitric acid is to be applied before fixation. Of course, if you apply nitric acid to an ordinary fixed negative you destroy it, leaving nothing whatever but a collodion film. A developed, but unfixed, collodio-bromide plate has an image in metallic silver embedded in bromide of silver; nitric acid dissolves the metallic silver, and leaves an image in bromide of silver, which, after further development or intensification, acquires printing intensity. This method of reproducing negatives had not been proposed before the publication of our article. You can use Liverpool plates for the purpose. The alteration in address shall receive attention.
- W. J. A. G.**—It is probable that the ice supplied in the morning would only serve to keep the solutions sufficiently cool during the day. If it kept them of the temperature of ice-water all day it would be a little too cold. The aim should be to preserve a temperature not higher than 60°, nor lower than 50° Fahr.
- C. HOUNSELL.**—The edition of 1854 is the last.

A. DUFFER.—The fact that the face is not sufficiently dense enough in your negatives, whilst other lights—such as the hands—are so, suggests that the face is imperfectly lighted. Place yourself in the position of the sitter, and, without changing the position of the head or raising it, look if the light of the sky can be seen, or whether it is intercepted by sash-bars, &c. If so, bear in mind that only so much direct light falls on the face as you can see when in the sitter's position without raising your head. 2. Black spots are not uncommon in that process; try another. 3. After a negative is fixed, pyro and silver furnish the simplest means of intensifying. First make a solution of iodine one grain, iodide of potassium two grains, water one ounce, and apply to the negative, expose to the light for a few seconds, wash, and apply pyro and silver. There are various methods of intensifying after varnishing; we prefer that with tincture of iodine, which we have often described.

W. F. M.—The “Christian Martyr” is by a French painter, whose name escapes our memory at the moment. We believe it is not copyright in this country; but you will easily ascertain by examining the engraving for the publication line.

BLISTER.—The yellow brown stains are caused by imperfect fixation. If the hypo solution were fresh, and really of the strength you mention—one of the salt in four of water—we should fear some mixture or impurity in the hyposulphite. Such spots of imperfect fixation are usually due to the use of old or weak hypo solution. They may be due to the prints having stuck together, and so prevented the proper action of the solution. Sometimes a like effect may arise from immersing the prints the moment the hypo is mixed. As a great fall in temperature takes place in hypo solutions during the process of dissolving the crystals, the fixing power at the first few moments is much reduced, and might so cause imperfect fixation. Double albumenized paper is not so easy to fix as the less highly albumenized samples, and is more prone to blisters. Warming the solution a little, or the addition of alcohol to the fixing bath, will lessen the tendency.

J. C.—Your operations are all right except in one or two particulars. You must expose less or develop less, or probably a little of each. You really obtain too much deposit on the plate, which buries the image, and renders it dark and smudgy when examined by reflected light. A transparency which is excellent when examined by transmitted light—that is, when it is looked through—is too dark when looked at. If you add a little more acid to your developer, and stop the development much sooner, you will secure the desired result. In developing, instead of looking through the plate to watch the process of development, place something white—a dish, for instance—and look at it. We prefer pyro development for such pictures. A solution containing three grains of pyrogallic acid, three grains of citric acid, and twenty minims of acetic acid in two ounces of water, answers well. It is especially important to have no trace of fog, as that will show at once in the lights when the image is in contact with white paper.

SIGMA.—The metallic effect seen at the back of the negative is always due to the use of damp or imperfectly cleaned plates. 2. The chief defect of the portrait enclosed is imperfect lighting, due to having been produced in a general diffused light, instead of light from a specific direction. 3. With a good portrait lens the portrait would have been produced in less than one-fourth of the time, but would not have been better otherwise.

II. MAYOR.—At present we see no reason to doubt the stability of the image; it might possibly change colour, but probably only to darken a little. If you will send details, we shall have pleasure in publishing and eliciting discussion on the subject.

D. G. (Middlesbro').—Undoubtedly some skill and practice are required to produce fine opalotypes by development; but as the process is precisely the same as that used for producing eburneum pictures, in which Mr. Burgess and others constantly succeed perfectly, and the same as producing the Saroni photo-crayons, in which so many succeed, you need fear no especial difficulty. Follow the eburneum instructions which we have published several times, only using opal glass; or follow the instructions we have given for producing photo-crayons, and, with patience and care, you will certainly succeed. It is, however, much more easy to produce fine tones by the collodio-chloride process.

SOUTH DEVON has been trying Col. Wortley's dry plates, and find them exceedingly sensitive, but difficult to intensify. In our own experience, and in that of Col. Wortley, so far as we have seen it, there is no difficulty in securing intensity by adding ammonia freely. If, however, our correspondent cannot secure as much intensity as he desires in this way, let him fix the negative and intensify with pyro and silver in the usual manner.

Several Correspondents in our next.

Several Articles in type are compelled to stand over

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15 Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.

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THE STATUS OF PHOTOGRAPHERS AND ASSISTANTS.

No question of a personal character can possess a more vital interest to photographers than that involved in the status, duties, qualifications, and remuneration of operators and other assistants. There are few professional photographers who have not the necessity to employ assistants in some departments of the photographic establishment. And their culture and elevation, and the maintenance of such relations of employers and employed as shall conduce to their mutual interests, must ever be a matter deserving of the gravest consideration. A correspondent, in a recent issue, suggested that in discussing means for the education and training of assistants the question is treated too narrowly; that the broader and more important question of the culture of photographers, without respect to their position as employers or employed, is more deserving of consideration. This is, undoubtedly, within certain limits, true; but it must be borne in mind that, as a rule, the photographer commences his career as an assistant, and it is as assistant we must consider him in relation to the question of training; further, not all employers are photographers, and hence it is of vital importance to fix the qualifications and status of the assistant; and furthermore, without some definite standard of qualification in assistants, the all-important question of duties and remuneration cannot be easily or satisfactorily determined.

The question will then arise, can any standard be fixed, and can any method of attaining to that standard be rendered available? The question is important, and grows in importance. A system of apprenticeship solves the problem in the view of some; a course of training securing a diploma or certificate is proposed by others. Is the photographic community strong enough, and can it be made united enough, to determine upon any plan? Can any new system involving the possession of a recognized standard of qualifications be adopted without prejudicing the position of the assistants of various grades already constituting a very important portion of the photographic community? Many of our correspondents suggest the importance of endeavouring to secure some conference of professional photographers to discuss these questions so disordered by many. Can it be secured? Here is a letter making some suggestions in this direction.

"The correspondence that has lately appeared in the NEWS on the subject of 'Assistants' and 'Apprentices' in our profession has suggested to me the idea whether it be not practicable to hold a conference, of a similar character to that recently held in America, of photographers from all parts, who may visit London during the exhibition in November, to discuss the subject of apprenticeship,

and the intellectual and art education of youths who may have a taste for and desire to follow photography as a profession. Also, to organize some means by which young men, and those willing and competent to take them as articulated pupils or apprentices, may be brought together. There are many minor, yet very important matters connected with this subject, on which the collective experience of our brethren from various parts would be of great benefit."

In the following paragraph a new question is raised by the same correspondent:—

"There is one point of considerable importance that requires some consideration; that is, a guarantee ought to be insisted upon, that young men shall be prevented, at the expiration of their term, from *immediately* starting in opposition in business to those to whom they are indebted for their education. I have had some unpleasant experience recently in this way, from a young man who is indebted to me for all the knowledge he possesses, and in whom I took a good deal of interest. As soon as he got sufficient knowledge to be somewhat useful, he left me without any cause or notice, in the busiest season, when his services could be least spared, as printer, and has since been engaged to fac-simile my series of local views. I merely mention this circumstance to show how requisite it is that we who have gained our experience from long practice should have some protection from our pupils. I am willing to take one or two youths as articulated pupils if I can meet with the right sort, but as there are already far too many who are totally devoid of all claim to the name of artist, in the profession, I should be sorry to take any who have not a taste for artistic pursuits."

We print the comments on the latter subject chiefly for the purpose of offering a few words of caution. If ever a conference of photographers for discussing business questions be secured, they must be careful to avoid any attempt to make general laws to suit particular cases. All questions as to the right of commencing business, soon or late, in opposition to teachers or previous employers, must be matters of private bargain and arrangement, and can never be permitted to enter into general arrangements. An apprentice who has completed his term of service, or an assistant, has a perfect right, provided no bargain to the contrary exist, to enter into business when and where he believes he will succeed. Whether it be good taste or not to enter himself in direct opposition to a late master, or not, is a distinct question, the answer to which would be governed somewhat by circumstances.

We do not intend to enter into any discussion of the questions involved here: our aim is simply to suggest that if a sufficient number of photographers are interested in securing a conference at which trade or professional considerations may be discussed, we shall have pleasure in giving publicity to the views of our readers on the subject.

THE PHOTOGRAPHER'S HINTS TO HIS SITTERS.

THE custom of issuing a series of hints or instructions to sitters is not uncommon among photographic portraitists. We have seen in this country some very cleverly written little brochures, consisting of hints, suggestions, and varied forms of information, interesting to the sitter to read, and of importance to the photographer to communicate. We have recently received from the United States a little tractate, of which some scores of thousands have been issued by the publishers of the *Philadelphia Photographer*, entitled, "The Photographer to his Patrons." It consists of a neatly printed little tract of twelve pages, of which eight are occupied by hints and instructions to the sitter, the remaining four (which consist, of course, of the wrapper) being devoted to the trade announcements of prices, styles, notices, &c. The address to patrons is kept ready for use by the printers, and the remaining four pages are printed in accordance with the instructions of any publisher giving an order to the publishers in question, who supply them to photographers by the thousand, ready for issue, at the rate of twenty dollars, equivalent to about four pounds sterling per thousand.* Some extracts illustrating the character of the work may be interesting to our readers. After some introductory remarks as to the injudicious habit of many sitters, who come in a great hurry to have portraits secured, the work proceeds:—

Photography is not a branch of mechanics, whereby a quantity of material is thrown into a hopper, and with the grinding of grim, greasy machinery, beautiful portraits may be turned out. The day when a daub of black and a patch of white pass for a photograph, you are well aware, is ended, for you will not receive such abominations yourself as likenesses of those near and dear to you, and especially of the one dearer to you than any one else—namely, your own dear self.

To produce pictures different from these requires skill, good taste, culture, much study and practice, to say nothing of an expensive outfit and a properly arranged studio. With all these the photographer must know how to manage a most obstreperous class of chemicals, fickle as the wind, and, therefore, he needs all the assistance from you that you are able to give him in the sundry ways explained further on. He is entitled to the same respect and consideration from you as your minister, your physician, or your lawyer, and it is just as essential that he should have rules for the best government of his establishment as it is for any one else whom you patronize; consequently you should be quite as unwilling to trespass upon such reasonable regulations as he may make as you would to apply a fly-blisters when your physician orders you to take soothing syrup. Remember, then, that it is he who takes the picture, and not you; that it is he whom you hold responsible for the result, and not yourself; that it is he who knows best (or ought to) how to take it, and not you; and that his reputation suffers if he fails, and not yours. For the sake of a good result, then, try to submit to the suggestions of your photographer. We guarantee satisfaction.

When to Come.—A bright day is not necessary. In fact, the light is best when the heavens are clouded, and the sun shines through the clouds. Light-haired and light-eyed subjects should avoid a very bright day if convenient.

A "light-cloudy" day is not objectionable if it is not actually dark. The only difference between the two is, that on a dark day the sitting is prolonged a few seconds.

Arrangements for the babies should be made so as not to interfere with their daily sleep, as they look and feel so much better and sweeter after a nap. The morning is also best for them, and a clear day, because the light works more quickly. Avoid coming late in the day.

Never expect to enter a photographic studio and to be taken at once—on the jump. It is worse than running after a railway train as it steams away from you: in both cases you generally have to wait. We wait on you in turn.

How to Come.—Never come in a hurry or a flurry. Rod takes black, and red faces take black. Moreover, if you are pushed for time your pictures will present a worn and wearied expression, which you will not like, and which will compel you to

take the time for another sitting. Arrange matters at the office, or the shop, or at homo, or with your creditors, so that you can take it perfectly easy during the operations of awaiting your turn and the making of your picture. If you do, the likeness will be calm, peaceful, and true to you, and you will feel repaid for your tranquillity. Ladies who have shopping and an engagement with the photographer on the same day will please be careful to attend to the latter first.

How to Dress.—Dress is a matter which should have your careful attention. The photographer is very much tried by his patrons sometimes, who place upon their persons, when about to sit for a picture, all sorts of gew-gaws and haberdasheries which they never wear when at home or when mingling among their friends. The consequence is, some miserable distortions and caricatures, which chagrin all concerned. Dress naturally, and think a little while you are about it. Fancy shapes and styles soon change, and sometimes the dress in a picture will sicken one of it, when the face is all that could be desired.

The question is often asked, why actors and actresses take the most pleasing pictures? The reason is, because they study the principles of art and good taste in the pursuit of their profession, and they understand how to dress. Moreover, they generally bring with them not only just what they think may "look pretty," but also a selection of articles—such as veils, flowers, curls, braids, and laces—which give the photographer a choice, and often make the picture, by adding to the graceful folds and lines in it. They also give us permission to use these to heighten an effect or cover a fault.

The best materials to wear, for ladies, are such as will fold or drape nicely—for example, reps, winceys, poplins, satins, and silks. Materials with too much gloss are objectionable, though we can generally overcome that, and many other things, by managing our light.

The various colours known in the dry goods market take about as follows:—

Lavender, Lilac, Sky-blue, Blue-purple, and French Blue take very light, and are worse, photographically, than pure White. Corn colour and Salmon are better.

China Pink, Rose Pink, Magenta, Crimson, Pea Green, Buff, Plum colour, Dark Purple, pure Yellow, Mazarine Blue, Navy Blue, Fawn colour, Quaker colour, Dove colour, Ashes of Rose, and Stone colour, show a very pretty light grey in the photograph.

Scarlet, Claret, Garnet, Sea Green, Light Orange, Leather colour, Light Bismarck, and Slate colour take still darker, and are all excellent colours to photograph.

Cherry Wine colour, Light Apple Green, Metternich Green, Dark Apple Green, Bottle Green, Dark Orange, Golden and Red Brown, show nearly the same agreeable colour in the picture, which is dark, but not black.

Dark Bismarck and Snuff Brown generally take blacker than a black silk or satin, and are not very agreeable to drapo. A black silk looks nice on almost anybody; and, if not bedecked with ribbons or lace that will take white, generally pleases.

The lists of colours above apply as well to silks as to woollen goods, though a silk will generally take lighter than a woollen dress, because it has more gloss and reflects more light. Striped goods, or goods having bold patterns in them, should never be worn for a picture. Avoid anything that will look streaky or spotty. White drapery, with deep folds, the bodies trimmed with laces, puffs, &c., are fine for shadow pictures.

By a careful study of the above, you can readily see how to dress. A great patch of white does not look well on a dark dress, therefore avoid pink or blue ribbons and trimmings on such dresses, and *vice versa*.

Ladies with dark or brown hair especially should avoid such contrasts. Open lace-work collars and embroideries are prettier than solid ones, which latter are apt to take white.

Ladies and children with light hair should dress in something lighter than those whose hair is dark or brown. We will give you a photographic reason for this. Light substances photograph more quickly than dark; hence, if a fair person wears dark dresses, either the person or the dress will be overdone, and *vice versa* with a dark person.

In the matter of head-dress exercise good taste. Few ladies seem to understand how to arrange their hair so as to harmonize with the form of the head, and blindly follow the fashion, be the neck long or short, or the face narrow or broad.

A broad face will appear still more so if the hair is arranged low over the forehead, or parted at the side.

* We believe our Publishers contemplate issuing a similar little work. They will be glad to communicate with photographers desiring particulars.

A long neck becomes dreadfully stork-like when the hair is built up high, while a few drooping curls would change the whole effect most agreeably. A high forehead in a lady is improved by being hid with the hair or curls also. In a profile picture do not press the hair too closely to the head, or display too little of it.

Powder should be allowed on freckles where the artist thinks best. Powdered hair gives good effects.

Gentlemen will do well to give attention to the matter of colour in dress, as directed in the remarks to the ladies.

How to "Behave."—This subject we broach reluctantly, but we often meet with opposition from our patrons which is certain to spoil the results, and which absorbs much time. For our mutual good, permit us to be frank.

The head-rest must be used, not to *give* the position, but that you may *keep* it. The natural pulsations of the body cause it to move (in spite of the strongest will) sufficient to make your negative useless. Time will be saved, then, by its use.

Wink as much as you please, but don't turn your eyes. While sitting for your picture forget all dofulness, and also forget where you are. Whistle Yankoe-doodle mentally, or think of some pleasant thing that will enliven your spirits and impress a pleasant look upon your face. Merely think enough of what you are really about to keep still, and not a whit more. Let your photographer pose and arrange you. He is responsible, and will do his best. On this point see foregoing remarks.

Better leave your friends outside the screen while you are having your picture taken. You do not want to be stared out of countenance, nor your photographer does not want to be interfered with.

Sitting pictures are preferable to standing ones, generally, for the most graceful attitudes can be secured in them. This point the photographer can best decide for you. Trust him. In groups also submit to his taste.

You cannot judge of your picture from the negative, so please save our time by not asking to see it. We will show you a printed proof, and sit you again if it is unsatisfactory. Please give us time to print your pictures carefully and well. Hurry in finishing makes bad work.

The Children.—We are always glad to take a reasonable amount of pains with children. They are subjects that make lovely pictures, but they are often difficult to secure. We can always get something of them; and if it is not satisfactory the first or second time, it is not apt to be so at all that day, and it is best to bring them again.

Never *threaten* a child if it won't sit, and never *coax* it with sweetmeats. Permit the operator to manage it from the beginning. Dress the little ones with care and good taste. Avoid startling plaids and gaudy colours, or a variety of colours. Dark dresses should not be put on them. Let the photographer choose the position.

A sitting or kneeling attitude is best, for few little ones stand quietly long enough to have a picture taken.

Business.—We are prepared to make all classes of photographs in the best styles, of all sizes, examples of which will be found at our establishment.

All the popular styles and sizes are regularly made as they become known.

Frames.—Nearly every photograph larger than a carte should be, and is, framed. A careful inspection of our stock before you purchase is, therefore, politely requested. We like to see our pictures hung in tasteful frames, &c. and are, therefore, willing to sell them at a small advance, in order to have our work present a creditable appearance in your drawing-room or parlour.

Copying.—Careful attention is given to making copies of other pictures. Enlarged pictures may be made as large as life from the tiniest locket picture, and made in every way satisfactory by careful and judicious

Colouring.—Photographs from nature or from other pictures we colour in the best styles in oil, water colours, crayon, pastel, or ink, at rates to suit all circumstances.

Prices.—Our prices are kept at reasonable rates. There may be work done for less, but we ask that *quality* be given the preference.

Critical Notices.

A MANUAL OF PHOTOGRAPHY. Intended as a Text-Book for Beginners, and a Book of Reference for Advanced Photographers. By M. CAREY LEA. (Second Edition, Revised and Enlarged. Philadelphia.)

ALL who have seen Mr. Lea's very complete and excellent manual will readily understand that such a work was sure to reach a second edition, and as it must inevitably always take a standard position, we shall hope to see many further editions called for. In speaking of the first edition we expressed our very high opinion both of the plan of the work and its execution. The second edition retains, of course, all the good qualities of the first, and possesses many valuable additions. Where the author has found that the progress of the art permitted improvement in the work, he has not only added new matter, but has re-written much of his matter, and upwards of a hundred pages, containing important novelties of a practical character, have been added. In fact, as the author states in his preface to this edition, fully one-half of the work is new, and the number of engravings, which are all excellent, is nearly doubled. We have only to add that the work is published in this country by Mr. H. Greenwood, of Liverpool.

VIEWS IN SARK. BY THOMAS SINGLETON.

WE have before noticed favourably some of Mr. Singleton's views in the Channel Islands. We can commend his present series to lovers of picturesque scenery, as admirable photographs of the wild and rocky Sark coast.

RETOUCHING: ITS USE AND ABUSE.

WE extract the following remarks on the subject of retouching, and especially as to the danger of abusing the facilities existing for modifying or sophisticating photographic portraits, from a report presented to the National Photographic Association of America, by Mr. G. Wharton Simpson, as a member of the Committee of Progress. After some introductory remarks on the tendencies of photography during the twelve months past, which did not call for extended comment, he says:—

I shall not attempt, therefore, to enter into any estimate of technical photographic progress in this country. There is not one of you, I apprehend, that is not familiar in greater or less degree with the majority of the improvements in photographic appliances and processes which have been proposed for years past, whether in your own country or in the Old World. In passing these things with a merely incidental allusion, I do not wish in any degree to ignore their importance. Photography, of all the Fine Arts—and I assume its position as one of the Fine Arts as too well established to need vindication here—photography of all the Fine Arts, is probably least plastic in its nature, is most bounded by material conditions, and hence it is of vital importance that the photographer should possess every material aid which can be rendered available in his art. But I assume your familiarity with these things, in order to confine myself to one form of progress which has of late had its full share of the attention of photographers, the value and legitimate results of which demand serious consideration. I refer to the now almost universal practice of supplementing the action of light by working upon the negative.

Perhaps few things in connection with photography have fascinated the portraitist or the public more than the pictorial results of retouched negatives; and when the retouching is effected by artistic hands, and confined to judicious limits, no effect is more legitimately satisfactory. The rage for portraits from retouched negatives which has of late years spread over America as well as Continental Europe and

England, commenced, I believe, originally in Paris; the method having been first practised in the atelier of M. Lewitsky. In his hands the retouching of the negative was effected with such delicacy and judicious reticence that few suspected the source of the peculiar beauty of these portraits. The striking pictorial qualities this method yielded first stood confessed as the result of artistic manipulation on the negative in Germany, and prints from such negatives produced in the studios of Berlin and Vienna began to attract attention throughout the world. Bold effects of lighting, in which the masses of shadow and half shadow were rendered transparent by exquisite detail and reflected lights; texture of singular delicacy and tenderness, with a degree of modelling and solidity hitherto unknown in connection with such delicacy, and an amount of mechanical perfection very unusual, were the familiar characteristics of the new school of photographic portraiture. If the results of the new treatment required any justification beyond their beauty, it was not difficult to supply it by reference to the inherent shortcomings of photography. And in referring to these matters I may here and at once express my conviction that retouching on negatives is not only justifiable, but, within certain limits, desirable for various reasons, of which I may mention three of a specific character.

I. Because of the inherent incapacity of photography to render in monochrome the accurate relations of colour. The yellow tint of freckles, which in nature is scarcely distinguishable from the white and rosy tints of health in a brilliant complexion, is rendered by photography as a series of black spots. Simple truth demands the aid of the artist to modify this and similar errors.

II. Because of the accidental errors of photography, specks, stains, and results of imperfect lighting, and similar sources of evil, which, if uncorrected, destroy delicacy, definition, and modelling.

III. Because of the accidental and temporary defects in the model in the shape of scars, pimples, blotches, and other passing imperfections, which, being of a temporary character in the sitter, should not be perpetuated in the photograph. For these and other reasons, regard for natural and artistic truth demands some amelioration of defects which tend to render the photograph unvarnished as well as unpleasing.

Confined within the limits here indicated, retouching on the negative is, in capable and judicious hands, a legitimate and wholesome adjunct to the result of light and the lens. Carried beyond these bounds, or attempted by the ignorant and incapable, it becomes one of the most dangerous and degrading innovations to which photography could be subjected. The highest claim of photography is its unerring, its uncompromising truth. Destroy this, and it is degraded into a mechanical tool, fit only to be the servant of servants. It is the truth of photography which gives universality to its value, and obtains for it equal recognition in science, art, and industry. It is truth which renders its record precious to the astronomer pursuing his investigations amid other worlds; it is its truth which gives value to its renderings of the glimpses which the microscope gives of an otherwise unseen world; it is its truth which renders it valuable to the pathologist in accurately recording the appearance of morbid physical conditions; it is its truth which makes it valuable to the artist in rendering exquisite detail with a degree of faithfulness unequalled by any other agency; it is its truth, and the trust which that truth has engendered, which give its special charm to photographic portraiture. It is, in fact, in all things upon its literal truth, its unswerving faithfulness, that its highest recognition is based. The term photographer has become idiomatic in our language to express accuracy of resemblance. A good photograph often possesses a subtlety of resemblance scarcely suspected until accident points it out, and at times brings out characteristics of race or mental capacity scarcely noticed in the original model. It was no mere baseless fancy which one of your own most accomplished authors illustrated when

he referred to the sudden revelation of family likeness, made by the truthful sun-picture which had not been apparent in the original. Nathaniel Hawthorne only eloquently states the simple fact when he writes:—"There is a wonderful insight in heaven's broad and simple sunshine. While we give it credit for only depicting the merest surface, it actually brings out the secret character with a truth which no painter would ever venture upon, even could he detect it." Another of the noblest writers America possesses, and one, happily, still among you, Dr. Oliver Wendell Holmes, has admirably expressed his estimate of the truth of photography in his exquisite interpretation of the classic fable in which Marsyas is flayed by Apollo, for he regards the photograph not simply as the semblance of the sitter, but as an actual skin or film of light projected direct from his body to the sensitive plate. This vital truthfulness of photography, it cannot be doubted, then, is its most precious characteristic. And this truth is in danger from the practice of retouching the negative incapably and beyond its legitimate limits. The human face is undoubtedly, to him who can read it, the index of the mind, the expression of the soul. Each thought, each aspiration, each struggle, each generous emotion, each passion, each tender impulse, has written its history in lines, more or less apparent or occult, upon the face, and in the perfect photograph that history is transcribed, and in the clumsy and arrogant retouching much of that history is blotted out.

My friend, Mr. O. G. Rejlander, an artist and photographer of rare ability and conscientiousness, recently remarked, at a social reunion of photographers, that he regarded it as nothing less than a calamity that in after years, when photographic portraits of the mighty dead came to be examined, it would be necessary to refer to the years 1869, 1870, and 1871 as the years of photographic falsehood—the years when the photograph was sophisticated to such a degree, not on the point where it could be easily detected, but on the negative, where its detection was more difficult, that no reliance could be placed on its presentment. This, gentlemen, is not a pleasant anticipation. How Americans as well as Englishmen would prize a good photograph of Shakspeare, or of Milton, or of Oliver Cromwell; but we should desire it with every wrinkle, and line, and scar, and wart, as Oliver insisted his portrait should be painted. Our interest would be seriously diminished if we knew that the negatives had been sophisticated until all true life had been worked out of them. And it is not only truth, but some of the best characteristics of beauty, which are at times sacrificed. The luscious tenderness of flesh in beautiful health, so delightful in a good photograph, is at times destroyed, to give place to the smoothness, polish, and stony deadness of marble. All life is gone; the suggestion of a breathing, feeling, living face, is sacrificed to produce a pretty, smooth mask.

I do not ask the photographer to forego such a valuable power as he possesses in the retouching of the negative; but let it be used by artists who understand and prize art truth too much to sacrifice photographic truth. Let not those who know nothing of the drawing of the human face, and who have not skill in the use of the pencil, attempt to lay presumptuous hands on the negative with a view to modify its light and shade or texture, and so, perchance, utterly destroy its truth of drawing. Let us aim to secure the most perfect photographic results, so as to render the use of the pencil for modifying photographic defects as little necessary as possible. Then let the pencil be used reticently and cautiously by capable hands, keeping carefully within the limits which a reverent regard for truth will dictate, always remembering that the use of retouching is to be strictly remedial, modifying and ameliorating accidental and temporary defects, and softening, but never obliterating, markings to which photography, even with its inherent shortcomings, may have given an exaggerated rendering.

Foreign Miscellanea.

The cameo medallion portraits, pressed up in relief, appear just now to be a favourite style of picture both in Germany and France. From all sides we have received details of the manner of preparing these charming pictures.

Captain De Milly, under whose immediate superintendence the military photographic establishment at the Depot de la Guerre, at Paris, was placed, and whose reputation as a practical photographer stood very high, was killed during the second siege of Paris. He had, we believe, been promoted to be Commandant of Battalion for his arduous duties during the war with Germany, and had escaped unscratched from that bloody campaign. It was at the very last of the Communist battles that Commandant De Milly fell at the hands of his own countrymen.

Dr. Vogel has been absent from Berlin for some time, and is now staying in Galicia; on his return to duty it is his intention, we believe, to go systematically into the question of carbon printing.

Some of the micro-photographic films actually employed in the pigeon post to Paris during the siege will in all probability be exhibited at the approaching photographic exhibition in Couduit Street. A method of photo-engraving upon glass has been elaborated by M. Despaquis, a description of which will be shortly given before the French Photographic Society.

Thirty-one medals and twenty-three honourable mentions have been awarded to exhibitors at the Paris Photographic Exhibition of last year. Many English artists have been successful in obtaining awards, but the name of Blanchard, whose six large pictures attracted some attention at the time, has, for some unaccountable reason, been omitted from the lists of honour.

Helios complains that articles are taken from its pages without acknowledgment, and requests that in future all borrowed communications may have attached to them the source whence they come. Such a proceeding is only fair.

The Dresden Photographic Society has established a benevolent fund for the help of distressed photographers.

Not only have the *Moniteur de la Photographie* and the *Bulletin* reappeared in Paris to testify to the vitality of Parisian photographers, but the large number of advertisements in the local papers in regard to photographic requisities and supplies of "articles de Paris" show that this branch of industry is again being rapidly pushed forward.

We are glad to hear that Mr. Woodbury's exertions have been recognized by the French Photographic Society, which has awarded that gentleman one of its annual medals. In the report of the committee appointed to make the award, a graceful tribute is paid to the labours of Mr. Woodbury. The other annual medal has been presented to M. Becquerel.

M. Leon Vidal, who will be remembered as the able secretary of the Photographic Society of Marseilles, has recently published a pamphlet on photography considered as an industrial art. Many of the statistics quoted by M. Vidal are very interesting, and imply a great deal of perseverance in collecting facts bearing on the subject. He states that there are as many as 2,957 photographers in the United States.

In a recent article on dry plates in *Licht*, the results of the latter are described as bearing the same relation to those of wet plates that a dried and preserved leaf or flower bears to the fresh uncalled blossom. The *simile* is, we fear, in many cases, but too correct.

The application of a preliminary coating of albumen to the glass plate is now an almost universal custom in Germany. No polishing of the plate is in this way necessary, and old plates are stated to be quite as capable of employment as new glass just received from the factory.

The French Photographic Society is at present enjoying

a *relache*, and will not meet again till next month. The Berlin Society for the Advancement of Photography has likewise adjourned for its usual holiday.

At the recent art exhibition in Dresden some half dozen medals were distributed among exhibitors of photographs.

The last number of the *Mithteilungen* contained as illustration one of the photographs taken by the Photographic Staff attached to the German army; the sketch shows some of the ruins of Strasburg after the capitulation of the town, and, as the editor justly remarks, not the most vivid description or skilful drawing could convey such an idea of the scene as does the little photograph in question.

M. Schœne communicates to the *Mithteilungen* the method adopted in New York, and in America generally, for the production of so-called porcelain pictures, and which are simply collodio-chloride pictures printed upon opal glass in the well-known manner.

The exhibition of the Bengal Photographic Society will open on the 16th January next, and close on the 25th February, and all pictures for exhibition must reach Calcutta by the 7th January. Four gold medals and six silver medals are to be awarded.

M. Kruger publishes an article in *Licht* upon the employment of egg shells as a ready means for preserving and renovating collodion.

M. Kruger likewise announces a new and rapid manner of reducing chloride of silver, which is stated by several eminent photographers to be of great importance. The method is not published, but the discoverer advertises his readiness to impart the information to any photographer in exchange for a certain *honorarium*. MM. Fritz Haugk, Schippaug, Kleffel, and others, speak in favourable terms of the process.

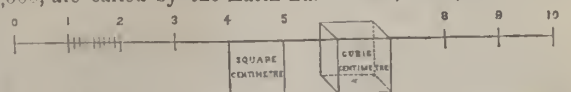
The Victoria cards are still much advertised in Germany, but the *format* has not, as yet, taken firm root in this country.

AMERICAN CORRESPONDENCE.

WHY WE SAY GRAMMES INSTEAD OF GRAINS, ETC., ETC.— IMPROVED METHOD OF TREATING ENGRAVED BLOCKS, ETC. FOR ELECTROTYPING.

PHOTOGRAPHIC publishers frequently receive complaints from their readers on account of their habit, in giving the formulæ from their French and German exchanges, of using the French metrical system of weights and measures instead of converting them into the English weights, &c. "If you would take a little more trouble," says one correspondent, "to translate the weights and measures, you would save some of your more ignorant readers a great deal of trouble." Now, I happen to know that photographic publishers and editors do not use the French system because it saves them the trouble of making the necessary calculations to render them "in English," but because of their desire to familiarize their readers with this system, in the hope or ultimately converting them to its use. If photographers would practise it awhile they would much prefer it to the old system; and in order that those who wish to may have it plain before them, I will try to show up some of its advantages.

The basis of the French system is the metre. The length of the metre is obtained by taking the length of a meridian circle of the earth, dividing it into four equal parts, and taking the ten-millionth part of one of these pieces. From this one standard, the metre, the measures of length, of volume, and weight, are derived; the multiples by 10, 100, or 1,000, are designated by the Greek words deka, hecto, and kilo, while the divisions by 10, 100, or 1,000, are called by the Latin names deci, centi, and milli.



The above figure shows the length of the centimetre.

Now divide one of these into ten parts, and each part is called a millimetre. But let us see now how this measure of length is applied to obtaining the standard of weight and capacity. If we construct a box which is exactly a decimetre long, wide, and deep—or, in other words, a cubic deci-decimetre—and fill it with distilled water of a temperature of four degrees Celsius (39·2 Fahrenheit), this being the temperature of its greatest density, we shall obtain the quantity which is designated by the specific name of "litre." The litre is subdivided by 10, 100, and 1,000, to which divisions the above-mentioned Latin names are prefixed, or multiplied by 10, 100, or 1,000, when the Greek words are used, as has been stated above. It is evident that out of such a box, containing a cubic decimetre of water, we should be able to fill a thousand boxes of a capacity of a cubic centimetre each; and the weight of one of these cubes of distilled water of the temperature stated above is called a gramme, the multiples of which by 10, 100, or 1,000, are called deka-grammes, hectogrammes, and kilogrammes, while the divisions receive the names of decigramme, centigramme, and milligramme. It follows, as a matter of course, that the weight of a kilogramme of water (1,000 grammes) is equal to the weight of a "litre."

The above description embraces all that is necessary to know for the special purpose which we have in view, the adoption of this system for photographic purposes.

We have, therefore, with the French method, for the ordinary purposes of our profession, to deal with:—

<i>For measures of volume,</i>	<i>For measures of weight,</i>
The litre,	The gramme.
The cubic centimetre.	

While with the English standard we have—

<i>For volume,</i>	<i>For weight,</i>
Quart,	Pound,
Pint,	Ounce,
Gill,	Drachm,
Ounce,	Scruple,
Drachm,	Grain,
Scruple,	
Minim;	

not to mention the differences which exist between the apothecaries' weight and the avoirdupois.

In conclusion, I will give a few examples, showing the working of the two systems.

We wish, for instance, to prepare a collodion which shall contain two per cent. of gun cotton, the proportions of alcohol and ether being equal. With the French measure we simply say:—

Alcohol	490 cubic centimetres	}	1 litre
Ether	490 " "		
Cotton	980 20 grammes		

while with English measure we should, at the start, have the trouble of finding a unit, the grain being too light, while the ounce is too heavy; but taking the latter quantity, we should have:—

49 ozs. of Alcohol	= 3 pints and 1 oz.	}	6 pints 4 ozs.
49 " Ether	= 3 " 1 "		
98	=		
2 " Cotton	= 2 "		

Or, we wish to prepare a bath of the strength 1 : 10; in other words, for every part of silver ten parts of water: with the English measure the avoirdupois ounce is generally used for this purpose, and the weight would be:—

1 ounce of water,
43·75 grains of nitrate of silver.

This quantity, being very small, requires multiplication, and the resulting grains of silver have to be divided again by 437·5, in order to obtain ounces. With the metrical weight we simply say:—

10 cubic centimetres water,	
1 gramme silver;	or,
100 cubic centimetres water,	
10 grammes silver;	or,
1 litre water,	
100 grammes silver.	

When the term "parts" is used, the application is particularly easy, as the choice of the unit is left to ourselves, and any necessary multiplication is made by either 10, 100, or 1,000, and we arrive at the result by an easy mental calculation.

England has now partially adopted this system; Germany, which certainly has no reason to be prejudiced in favour of France, has adopted it entirely; and I hope that the time may not be very distant when photographers will avail themselves of this, the most practical of all the present systems of weights and measures.

Improved Method of Treating Engraved Blocks, etc., for Electrotyping.—Parties who are familiar with the electrotyping process know of the disadvantages and dirt of the present method of using plumbago powder upon the face of the block to prevent sticking to the wax mould. A patent has recently been granted for a substitute, which at the same time makes the process a much cleaner one, namely, the use of alcohol as its equivalent, and glycerine prepared as follows:—"To one quart of alcohol add about a wine-glass of glycerine, and mix it thoroughly; pour out a quantity of the mixture into a flat dish, and apply it to the surface of the type or cuts with a soft brush (such as used by electrotypers), brushing it carefully all over the surface with which the wax comes in contact. The alcohol will then evaporate, and leave a very thin coating of glycerine upon the face or form of the cut, sufficient to prevent the wax adhering to the type or wood-cut when it is pressed into it, whether the wax had previously been coated with the plumbago or metallic, or not."—Truly yours, EDWARD L. WILSON.

NICKEL PLATING AS APPLIED TO PHOTOGRAPHIC PURPOSES.

BY JOHN SPILLER, F.C.S.

ABOUT ten years ago, when visiting the bank-note printing establishment of Messrs. Bradbury and Wilkinson, in Fetter Lane, I was shown some nickel-coated plates from which the "nature printing" specimens had been prepared, and had an opportunity of seeing the electro-deposition of pure nickel upon copper and other metals practically carried out as one of the branches of their printing operations. This process was being applied conjointly with, or as a substitute for, the method of steel facing (*average*) of which they are the patentees, and it struck me at once that the permanent quality of the nickel deposit so formed was capable of wider application, and might serve as a means of protecting steel objects from the rusting influence of damp air.

At my suggestion a few steel articles—particularly a dinner knife, spatula, and split ring—were coated with nickel, in order to test the degree of protection which such a process would offer when applied to swords, bayonets, helmets, breast-plates, spurs, harness chains, and steel accoutrements generally. The experiment proved perfectly successful, and without prejudice to the colour, and steps were then taken with the view of submitting the idea to the notice of the War Office authorities, particularly as the cost of applying such a process did not appear likely to stand in the way of its general adoption when the great saving of time in cleaning these articles was duly taken into account.

Beyond establishing the fact, no immediate result followed, and from that time to the present year the applica-

tion of electro deposited nickel has, so far as I am aware, been restricted to the specific purposes for which Messrs. Bradbury and Wilkinson have continued to apply it in their establishment. Within the last two or three years fresh attempts in my original direction have led to the employment of this process in America, where a patent was taken out for the application, and a company now working under a licence of the American patentees has recently commenced operations in London and Birmingham. I am indebted to the energetic manager of the Plating Company (Limited), Mr. Chauner, of 34, Kirby Street, Hatton Garden, for the opportunity of inspecting a vast collection of objects to which the nickel coating has been applied, and have been furnished likewise with small specimens of copper, brass, and steel coated with the metal in question, by which I am enabled to substantiate the statements made in their prospectus relative to the wonderful degree of protection afforded to the underlying metals by the superficial deposit of pure nickel. I have since had my regulation sword coated at their works, and find it now perfectly secured against rusting in wet weather, and so easily kept in condition that the blade and scabbard require only to be wiped with a wash leather, instead of undergoing the tedious process of burnishing, to fit it for appearance on parade.

A small square bar of steel similarly coated has been repeatedly immersed in water for hours together without showing any signs of rusting, and I find it possible to bury it in flowers of sulphur for several days without tarnishing the lustre of the nickel surface. Neither has this latter severe test any effect upon the copper and brass bars upon which the nickel coating has been applied, and these metals may even be immersed in an aqueous solution of nitrate of silver without effecting the reduction of that metal. In one of the angles only, where the coating seems to be imperfect, was there any indication of silver reduction in the case of the brass tube, the steel bar being perfectly protected over the whole surface against the action of silver and copper solutions. Here, then, is a valuable property which I was not led to anticipate in the case of electro deposited nickel, for I could not have predicted from my chemical knowledge that a metal of the zinc and iron group would be proof against the action of nitrate of silver; but the experiment proves it to be so, and we must regard pure nickel as belonging (from this point of view) to the class of noble metals, resisting, like gold and platinum, the attack of sulphur and of highly corrosive metallic solutions.

The nickel facing when burnished has a whiter colour than polished steel, although not equal to silver itself, its aspect being rather that of rolled platinum. A chemist to whom I showed the specimens pronounced them at once to be very similar to platinum in regard to colour, thus confirming my own impression on this head. It withstands the action of heat also remarkably well, for the fusion point is very high, and oxidation occurs only at elevated temperatures. With the view of testing its general applicability to laboratory work I am having a brass scale-pan coated with nickel, and will report later as to its success. For fine balance beams and weights, lens mountings, reflectors, laboratory microscopes, Sykes' hydrometers, still worms, egg beaters, camera fittings, and a variety of apparatus used by the chemist and photographer, the nickel coating will, probably, find extensive application; and I have seen some oval picture frames of very pretty effect made from stamped brass coated with nickel. It remains to be mentioned that burnished and matt surfaces of this metal may be used in combination for ornamental purposes.

WHERE TO GO WITH THE CAMERA.

BY A PRACTICAL MAN.

A WEEK in South Wales, allowing another one for the going

and returning, would prove to many a most agreeable and pleasant fortnight's holiday, calling in as an adjunct either the camera, pencil, or pen. The most advisable route will be by the North Western Railway to Birmingham, and from there to Aberystwith, an interesting and picturesque market town and sea-port on the coast of famed Cardigan Bay. In the old charter descriptions the town appears under the name of Llanbadarn-Gaewg. It must at one time have been well fortified and protected, as many fragments of walls, outposts, and other defences of masonry, are to be seen and met with. The Castle forms a very prominent object, placed on its craggy foundation, and jutting with peculiar and marked effect into the sea. It was taken from the Britons by "Strongbow the Bold," and held by him under grant and license from Henry I. Aberystwith is the Margate of Wales, and the great point for which sea bathers and valedudinarians of the Welsh districts invariably make. The Terrace reflected in the clear waters of the expansive Bay, with the adjuncts of boats and various small craft, makes a capital picture, and offers many good points for moonlight and sun-set dodges.

The great card of the district is the Bridge, named after his Satanic Majesty, and was the title of an opera that some sixty years back brought out the genius of the great English vocalist, Braham, as a singer and composer. "Is there a Heart that never Loved?" "The Picture Song," and "Rest, Weary Traveller," will ever remain popular, and speak for themselves and their talented author. Wales is not the only place favoured with Satanic wonders, as the "Devil's Jump," in the county of Cornwall, the "Devil's Punch Bowl," in Ireland, are in their way as renowned and oft visited as the "Devil's Bridge," of Wales. It is a most romantic affair—built, it is said, by the monks of an old abbey that flourished here in the twelfth century. There are many good points from which the bridge can be taken, in each of which some peculiar and different feature will be obvious and marked. The rush of the torrent, boiling, seething, and foaming, amid a mass of ferns, foliage, and huge boulders, is a grand and impressive sight, particularly after a flood, when the torrent takes a variety of surging Lu-Lu leaps before descending to its final bed. Caldecot Castle, annexed to the Duchy of Lancaster by Bluff King Hal, is one of the places of mark, particularly the "Gateway" of the great entrance, which shows peculiar and unusual features from the battlements, resting on massive corbels, boldly sculptured into heads, and supporting pointed arches. The strength, excellence, and massiveness of the masonry of this old vestige of the past is most striking and marked. Overlooking what is generally termed the Caldecot Flat or Level is Castle Pencead, an old mansion of the time of Henry VIII., built, probably, from the material of some former old castle; it has the peculiar feature of an imposing gateway with a circular arch. This part of Wales is unusually rich in old castles and fortified houses—the remains of a great necessity of a former period, when the inhabitants and owners were continually subject to the hostile visits and inroads of usurpers and invaders.

The Vale of Neath, with the great Cil-Heptsc Fall; the Porth-yr-Ogof, a large dark cavern of deep water; the remains of the old Abbey of Neath, founded A.D. 1149, together with numerous other views, are objects of general note, many with peculiar legends fixed to them, and others highly eulogized in the strains and verses of the bards of old, who, from different points and different hills, poured forth the inspired language of encouragement in order to cheer on their followers in their numerous desperate but unsuccessful conflicts with their invaders and oppressors.

Ports, harbours, bays, castles, caverns, waterfalls, cascades, glens, vales, bridges, abbeys, old houses, &c., are to be found throughout Wales in great profusion. Modern enterprise, with the facilities of quick transit by road or rail, has within the last few years opened up places of great interest to the collector of scenes and views that the artists of the

olden time had but little opportunity of visiting; advantage can now be taken of this change, and used by many with pleasure, advantage, and possibly profit.

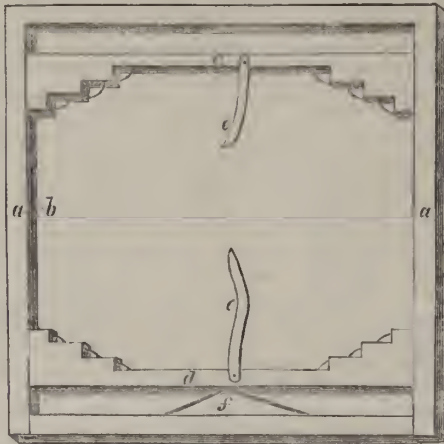
A CONVENIENT PLATE HOLDER.

BY ALEXANDER J. SIMPSON.

EVERY year I look out anxiously for the arrival of your excellent YEAR-BOOK, feeling convinced that I, an enthusiastic amateur residing in the Australian bush, with limited means and rude appliances, will be sure of meeting some useful hints and a great deal of very interesting information.

As I have seen articles on some very simple and commonplace matters, I thought I might venture to send you a rude diagram and brief description of a plate-holder which I have had in use for twelve months or more. I may preface my remarks by stating that all my efforts in photography have been made with appliances constructed by myself, and my knowledge has all been gained from books, the most valuable of which has been your journal.

The plate-holder consists of a square frame, the sides of



which, *a a*, are grooved on the inside, as seen at *d*; in these grooves slide firmly two cross pieces, *c* and *a*; these are notched, as seen in the diagram, and have the corners fitted with silver wire, although I never used anything but well varnished wood for the plates to rest against; the bottom of these bars, *d*, has a couple of pieces of wood or metal, which are hinged underneath the bar, and in proportion to the angle at which it is set, so they support the bottom bar higher or lower, the point of this support fitting into little notches made for it, *e e*, one or two steel springs (varnished and waxed), which press upon the top and bottom of the plate. It will be seen at a glance that by bringing these two notched bars together, and increasing the number of steps or notches, you may take in almost any size of plate, from one-ninth to whole-plate size; the bottom bar only requires to be supported. By marking the edge of the other frame, you can fix your bars for any sized plate without trying in the plate. I have also the width of each separate set of notches marked on the bars.

I made my own camera with a bellows body of leather, with rings of wire placed at intervals, very much like a lady's crinoline—basil being the leather used. I have also invented a camera for the successive exposure of a number of dry plates without the aid of any dry-plate box. I had worked out this idea long before I saw any notice of Mr. Cooke's camera, and I believe the principle is altogether different in my own invention.

HINTS ON PRINTING.

WE condense from the *Photographic Times* (U.S.) some valuable hints in relation to the formulæ and manipulations most successful in printing albumenized paper.

The Printing Bath.—The strength of the silver bath should be varied according to the weather—strengthened in cold and reduced in hot weather—the following being about right:—

When the thermometer reaches—

80°-100°,	use the bath	18 to 20	grs. strong
60°-80°,	"	"	25 " "
50°-60°,	"	"	30 " "

If colder, 45 to 50 grains. The weaker the bath the more alcohol will be required to coagulate the albumen, and *vice versa*.

The silver bath ought never to be stronger than 8 or 10 per cent. (1 : 10), because a higher percentage easily causes its drying up in drops or oily streaks, furnishing useless copies. To retain its necessary strength, add one-third of an ounce of a silver bath 1 : 8 for every sensitized sheet.

Time the floating of the paper according to the weather, as much as you would time a sitting according to the light, hot and damp weather requiring less time than cold or dry weather. One of the leading New York photographers floats in hot weather only three seconds, while some other papers require two minutes.

Dry paper quickly, both after floating and fuming.

The ammonia nitrate silver solution is recommended in hot weather in preference to the fuming process.

Do not fume in the silvering room.

An ounce of alcohol to 8 or 10 ounces of solution will tend to preserve the lustre of the paper.

Floating the paper on alcohol before silvering will certainly preserve the silver bath from discolouration.

New paper requires shorter time in floating than old paper.

Keep the paper in a cool, dry place, where no chemical fumes can injure it.

Silver baths which have become red can be discoloured in the simplest manner by adding a solution of carbonate of soda and shaking it well. Even a brown bath may be readily cleared up in this manner. There is no loss of silver, because the precipitate of carbonate of silver is gradually dissolved.

A few drops of permanganate of potassa, or saturated solution of gum camphor in alcohol, added to the bath, will clear it in a few minutes; filter, and it is ready for use.

Toning Baths.—Prepare in sufficient time toning bath 1, before using. Some baths require two hours, some two days. Less gold is required if the bath be milk warm.

A pinch of salt added to the bath gives brighter pictures. As a rule, neutralize with acetate of soda in preference to bicarb. soda, but tungstate of soda is preferable to either. Just neutralize, and then add 20 grs. tungstate to 1 gr. gold; dilute with boiling distilled water, and when cool the bath is ready for use. This bath is less liable to mealiness than others. Strengthen old bath for use again. If the hypo bath is acid, neutralize with ammonia.

The following is a good toning bath:—

Saturated solution of borax	...	1 ounce
Water	...	6 ounces
Gold solution	...	2 drachms
Strength of gold solution,	3 grs. to the ounce.	

Use in two hours.

This is another good formula:—

Water	...	32 ounces
Acetate of soda	...	60 grains
Table salt	...	60 "
Gold solution	...	2 ounces

Use in twenty-four hours.

Particular care should be taken before toning not to get

any hyposulphite of soda on your hands while working, or during the washing of the pictures.

The best photographs are not the results of having wonderfully valuable formulæ, so much as the use of good chemicals and careful manipulation in the whole process.

ON A SEMI-SWINGBACK, APPLIED TO A STEREOSCOPIC OR RECTANGULAR CAMERA.

BY M. NOTON.*

THE origination of the above combination, which I have the pleasure of placing before the members of this Society for their inspection this evening, came about in this way:— Taking with me the above-mentioned camera (before the alteration), and a few plates in the changing box, on the 10th July last, for a day's out, I went to see some friends at Disley. Upon arriving there I found there was "a deal o' land out o' level," and I and my camera would be a "limited" company directly. The lens I had with me should have been somewhere about ten times the length of focus it was, more or less in some cases, instead of about eight inches only. From the dining-room window could be seen on the left hand Strines, about two miles off, and on the right New Mills, at about the same distance—too far off, in fact, to think of firing at, especially as a light thin smoke was hanging about in the distance. So, after a jolly good breakfast, I started off to do the village, as I thought.

I intended to have done a great deal that day, for I got up at half past four that morning, walked not quite three miles across Manchester to the railway station, carrying my traps with me, and had plenty of time to spare before the London and North Western Railway train started, at a quarter to seven, for Disley.

For want of knowing the bearings of places and objects, and having to attend strictly to meal times, and the hot sun, and rambling about from one place to another, the day slipped over, and after all I had exposed only three plates by tea time. Some objects were too far off, some too near, some too high up, and some too low down, and would have been distorted had I pointed the camera upwards or downwards—that is, I mean to say, not the objects, but the representations thereof on the ground glass would have been. Such a state of things would never do. My other lenses were quietly at home when they should have been there, and for want of a swing back I had to deprive myself, and the camera too, I suppose, of the gratification of taking an impression upon the plates patiently waiting in the changing box to take their turn.

Well, in due time we arrived safely at home again, for not one of the eggs with which the camera was packed full were cracked or broken, which fact I shall put in as evidence. Next day I set to work to contrive to make the camera a little more convenient, and not quite so restricted to objects near a horizontal line.

To make the alteration in wood would require four thicknesses of at least a quarter-of-an-inch each. To make room by widening the near end on each side full half-an-inch involved too much alteration of the original, and then the back end would have been wider than the front; so the camera had either to be without the intended swing, or I must try if I could make it in metal. Four thicknesses of tin plate measured one-tenth of an inch. This I could manage to squeeze out of the dark slide. I admit that sheet brass would have been decidedly a little more aristocratic, but, as I had only just enough tin, and not enough brass of that strength, I used the former. A complete gimbal I knew it would be impossible to apply, so I set out with the intention of being satisfied with a power of pointing the camera upwards only. This I have done, and I can have now a maximum angle of twenty degrees, the sensitive plate being still perpendicular, which, I am sure, will be a great convenience, and prevent disappointment to

me in the future. But I am no better off, looking downwards, than I was before.

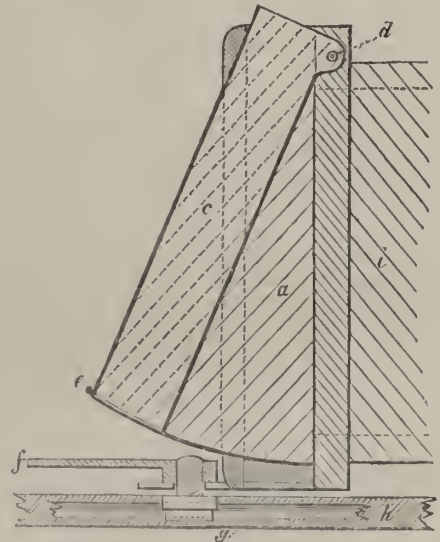
The camera on the table will enable you to see immediately the whole of the arrangement of the semi-swingback. I have also made a drawing, with a short description of it, for publication.

In the progress of the work I found the concave bottom of the swing casing interfered with the binding screw of the screw adjustment. This caused me to make an alteration and improvement at the same time. The nut not being easy to reach, the concave bottom covering over it so much, I have attached a lever to it, the small central screw being taken out altogether.

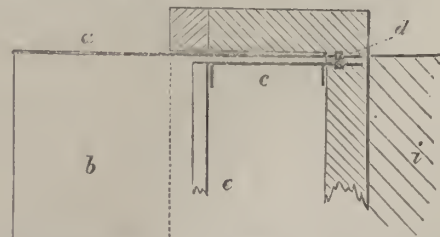
By moving the lever to the right the sliding body of the camera is set at liberty to move inwards or outwards for roughly focussing. The lever, being then moved to the left, clamps the sliding body—not to the baseboard, as it used to do, but to the plain part of the screw rod of the fine adjustment motion, the exact focus being now completed by turning the milled nut at the back end of the baseboard as usual. The clamping is done by a ring being interposed between the rod and the brass tongue carrying the lever nut. There is nothing at all to prevent a square camera being fitted up with a similar semi-swingback.

Since writing the above I have found that the inside of the concave bottom must be blackened, or a bit of black cloth laid there, to stop any reflection upon the sensitive plate when the swing is drawn out considerably for use, and when using a long-focus lens.

Reference to the Drawing.—Fig. 1, a side elevation of part



of the sliding body of the camera, and one side of the semi-swingback. Fig. 2, a plan of the left-hand side—a, one



side of the swing casing; b, concave bottom; c, one side of the swing turning on the centre d. The two sides of each swing arc turned up about an eighth of an inch the whole length, to form a groove for holding the dark slide or focussing glass; e, a brass rod, one end soldered to the bottom end of one swing side, the other end of the rod to the oppo-

* Read at a meeting of the Manchester Photographic Society, Sept. 20, 1871.

site swing side. There is a small binding screw with a lever nut for fastening the swing at the angle required to the concave bottom, a slot being cut through not shown in the drawing; *f*, lever nut for fastening sliding body of camera; *g*, part of plain screw rod; *h*, baseboard of camera; *i*, sliding body.

Correspondence.

THE COLLODIO BROMIDE PROCESS— WORTLEY F. LEA.*

I AM anxious now to call attention to a point on which Mr. C. Lea does not appear to have laid sufficient stress; namely, that it is the chloride produced by adding hydrochloric acid to the collodion that acts as a restrainer in the bromo-chloride process, and the results that I obtain by the addition of a chloride to the collodion are superior to any that can be obtained by the use of the acid, as recommended by Mr. Carey Lea. Lest Mr. C. Lea should claim this as his process also, I beg to call attention to letters from Mr. W. H. Davies and Mr. W. H. Harrison in the *British Journal* for June 28 and Aug. 2, 1877, respectively: the latter gentleman, especially foreshadowing the use of a chloride in an emulsion process in the following words:—"Doubtless, in the combined plans of Messrs. Sayce and Simpson, chlorides without free nitrate may be held in suspension in collodion, and used in this manner with more commercial advantage than can be the case with such strong baths."

You are well aware that Mr. C. Lea, in originally making his calculations as to the amount of silver in his collodion, entirely omitted to allow for the amount of silver reduced by the aqua regia (see *B. J.*, Feb. 10, 1871), and it was not till the editors of that journal pointed out to him his error that he took cognizance of the fact. This has, of course, somewhat weakened the faith that one would otherwise have in Mr. C. Lea's calculations.

It must not be forgotten that in hot weather Mr. C. Lea only uses 9 grains of nitrate of silver to the ounce, and it is not very easy to say precisely how much silver is precipitated by the aqua regia, owing to the uncertainty as to the size of the drops or minims. The latest calculations I can find as to the amount of silver decomposed by the addition of certain quantities of bromide and aqua regia to the collodion is one by Mr. Sutton in the *B. J.* for the 11th August, 1871. He states in this that about 5½ grains of bromide of cadmium will convert about 7 grains nitrate of silver; the 5 grains of bromide of cadmium added by Mr. C. Lea may, therefore, be reckoned to convert 6½ grains nitrate of silver. The 1 grain bromide of ammonium will convert 1¼ grains nitrate of silver, while Mr. Sutton states that 2 minims of hydrochloric acid will convert 3 grains nitrate of silver. The 1½ minim of hydrochloric acid contained in the 2 minims of aqua regia added by Mr. C. Lea to his collodion will convert 2 grains of nitrate of silver, and we have thus the following calculation:—

Converted by 5 grs. bromide of cadmium	6½ grs. silver
" 1 gr. " ammonium	1¼ " "
" 2 minims aqua regia	2 " "
	10¼

being a conversion of 10¼ grains of nitrate of silver to the ounce. I cannot, then, see how, on this calculation, Mr. C. Lea can have excess of silver, even when using 10 grains to the ounce; and, of course, still less when, as he says he does in hot weather, he only adds 9 grains.

I have avoided taking up your space with calculations made by myself, and have preferred to rely on those made by others, though I am convinced, both by calculation and in practice, that the amount of silver said to be reduced by the aqua regia is understated.

I feel that I am taking up too much of your space in a matter which may, after all, be considered personal between myself and Mr. C. Lea; but I feel bound to make a stand against the manner in which Mr. C. Lea has endeavoured to claim my process as his, and I feel that were such a claim to be permitted, it would go far to prevent any one from attempting to improve, for the benefit of photographers at large, any known process; and that I do not think would be in any way just.

* Concluded from page 455.

I have pointed out in the course of this article that an excess of silver was used by Mr. W. H. Wilson, Mr. Phipps, and others, previous to Mr. C. Lea's publication of the fact that he did so, and I trust, therefore, that that gentleman will see cause to modify his somewhat extravagant claims.

To sum up, then: my process, I must reiterate, consists as follows:—A minimum of bromide of cadmium only (bromide of ammonium having, I find in practice, various disadvantages); a small proportion of a chloride, not added in the form of aqua regia, owing to the rotting effect I find it to have on a collodion film when used for large plates; then a saturation of the collodion with nitrate of silver; washing in two waters; the use of a preservative containing gallic acid, which I have substituted for pyrogallic acid, owing to its far better keeping qualities and greater sensitiveness. And with regard to whether this process is identical with Mr. C. Lea's, or whether I may not fairly claim it as mine, owing to the great sensitiveness obtained by the saturation of the collodion with silver, I must leave for the photographic public to determine. Meanwhile, if any of the numerous correspondents who Mr. C. Lea says have written to him on the subject, would like to put the matter to the test, I should be glad at any time to produce plates prepared by my process to test against any prepared by Mr. Carey Lea's formula, and to guarantee that mine shall be at the very least twice as sensitive as the others. The editor of either of the photographic journals, or any well-known dry-plate photographer, to be the umpire.—Yours truly,

STUART WORTLEY.

SURFACE FOR RETOUCHING.

DEAR SIR,—As a unit amongst photographers who firmly believe in the efficacy of that comparatively new power, "retouching" of negatives, permit me to tender you my thanks for your remarks, and the letter of Mr. G. Piercy, Jun., concerning it, in the *PHOTOGRAPHIC NEWS* of the 8th inst.

My experience, like that of most who work in the same direction, points to the simplest means as generally the best; and although Mr. Piercy's method bears that construction, I have found a great saving of time, and much less "persevering friction" required, by adopting the use of a "medium" which (supplied me by a German friend) absorbs all moisture from the end of the finger, at the same time protecting it, and at once starts the surface producing operation, which, once started, can be available for a dozen negatives or more.

I have not yet tried the fixing plan, but it appears promising, though revarnishing I consider most permanent in case of large numbers of proofs being required.

Confirmatory experience, and the pleasure I felt in reading that of another, must be my apology for trespassing on your well filled space.—I am, sir, obediently yours,

CHARLES HALPEN.

PHOTOGRAPHY ON WHEELS.

SIR,—The dimensions given in this week's issue *PHOTOGRAPHIC NEWS* of the developing box I have got up are not quite correct, and may lead any one who is taking up the design astray. The true dimensions are: 2 ft. 6 in. long, 2 ft. high, 1 ft. wide. On reference to fig. 4, you will see that when the box is open for work you have a width of 2 ft., viz., 1 ft. width of box, 1 ft. flap you develop on.

The simplest plan for keeping the box down on the wheels is with a rod which runs through the eye in the leg, and through screw eyes in the bottom of the box; and this plan is the best for keeping the box rigid when at work.

J. E. MADDEN.

Dublin, September 25th, 1871.

TANNIN SOLUTION.

DEAR SIR,—To filter a strong tannin solution expeditiously, so as to obtain a liquid perfectly clear, is a somewhat troublesome matter. I have tried various modes of saving time in this operation, but until this morning ineffectually.

The following method suggested itself to me to-day, and has proved so successful that I venture to think some of your readers who practise the old tannin process—which, without disparaging others, I consider, upon the whole, the most certain of all dry processes—may be interested in its description. I required 8 ounces of tannin solution, 15 grains to the ounce.

The tannin (120 grains) I placed at the bottom of an 8-ounce measure, and added to it about $1\frac{1}{2}$ ounces of the water. I then worked it well up into a thin paste. The remaining 6 ounces of water I boiled in a glass flask over a spirit lamp, and then gently added, stirring continuously, the tannin paste. The effect was surprising, for on pouring the solution, whilst still warm, into the filter, which had been previously well wetted with distilled water, the solution passed through perfectly clear, and showed not even the slightest trace of any insoluble matter in suspension.

I have always, hitherto, dissolved the tannin in warm water, but I found it exceedingly difficult to get a *perfectly clear* solution; and I certainly know of no method by which this can be secured half so expeditiously or effectively as the one I now describe.—I remain, dear sir, yours faithfully,

September 23rd, 1871. W. L.

GREEN TINT IN COLLODIO-BROMIDE PLATES.

SIR,—In Lieut. Abney's letter in *NEWS*, 7th July, he holds that the green tint in collodio-bromide plates can be produced by prolonged exposure, and the use of a stronger solution of restraining bromide, and developing with liquor ammonia.

I have, since last Saturday, exposed eight of Col. Wortley's plates, and my experience is directly contrary to Lieut. Abney's. The first plate I gave thirty seconds, which developed to a decided green tint, but the details of foliage were insufficient. The next had sixty. This gave a beautifully detailed negative, but the colour was "pinkish" or salmon, and the same with the next, to which I gave ninety. In neither of the other three did I get the green tint (exposed on different subject). This afternoon I exposed two more. At three o'clock the light was dull, at half-past wretched. The first had two, the second eight minutes. The short exposure gave the green, same tint as Col. Wortley's specimen negative, but not so vigorous; the eight minutes' exposure the brown. There is not a wonderful difference between the two negatives in deep shadows of foliage, considering the one had at least three times as long as the other. Col. Wortley states (*NEWS*, June 30th), that "plates containing excess of silver are three times as sensitive," &c., and I wish to ask you whether in your experience you consider the colour a test for free nitrate, and, according to Col. Wortley, sensitiveness. This seems to me the only point in the process that requires thoroughly clearing up.—I am, sir, yours faithfully,

Erith, 20th September, 1871. W. G.

[Our experience has not been very extensive in this process, but, so far as it goes, it confirms that of Col. Stuart Wortley, to the effect that the green tint is a test of the presence of free nitrate.—Ed.]

A COLOURIST'S GRIEVANCE.

SIR,—Your columns being ever open to ventilate a grievance connected with photography and its surroundings, I trust you will not consider me too obtrusive if I draw your attention to one which presses very heavily upon photo-colourists. Unhappily, I am one, and, as such, I am about to ask you to raise your powerful voice and pen against the unjust and unreasonable length of credit which not a few of our "patrons" venture to take, unasked for by them, and altogether without our permission.

"Would it surprise you to hear" that I have outstanding accounts varying in every gradation of time from three months to three years? Such, however, I am ashamed to say, is the fact. I need not to tell you that artists are actually, as well as proverbially, poor, and therefore cannot afford to give credit at all—most certainly, not long credit. Moreover, photographers have no reasonable plea for requiring, nor excuse for taking, credit of the art colourist, for, as a rule, they give none; and even in the few cases where they do allow a little credit, they have no right to throw the burden of it upon our shoulders. What would these worthies say of us if we kept them as long without their pictures as they keep us without our money? Would they not grumble bitterly, and consider us most unreasonable? But wherein, pray, lies the difference?

I have also to remark upon the uncourteous behaviour of some of these long credit gentlemen: those who allow repeated applications by letter for a settlement, but take no notice whatever, vouchsafing no reply of any kind. Meanwhile, their

"favours" are bestowed elsewhere. It is, however, but justice to the profession that I should admit that there are photographers possessed of better conscience and conduct than those above referred to, who do unto the artists they employ as they themselves would be done by, and who pay their accounts in reasonable time. Their work ever has our earliest and best attention.

Should these remarks happen to fall under the notice of any of my brother artists, it would, perhaps, be well, for all concerned in this matter, for them also to state their experience; for it might turn out after all that I am one of "Miss Fortune's" special favourites.—Yours faithfully,

September, 1871. PALETTE.

[The grievance is undoubtedly a serious one, but we fear the only remedy rests in the hands of colourists themselves, who should decline to keep open accounts on such terms.—Ed.]

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The first meeting after the summer vacation was held at the Memorial Hall on Thursday, the 14th inst., the Rev. Canon BEECHEY, M.A., president, in the chair.

The minutes were read and passed, and Messrs. Jno. Chadwick and N. Wright elected auditors for the ensuing year.

Mr. NOTON then read a short paper descriptive of "A Semi-Swing Back applied to a Stereoscopic or Rectangular Camera" (see p. 465), and exhibited a camera to which he had adapted such a back.

Mr. CHADWICK spoke in favour of swing backs, and said he had succeeded in securing a view of Haddon Hall, which he had failed to obtain with an ordinary camera.

The SECRETARY, referring to the letter from the chairman in the *British Journal*, said he had written to Canon Beechey asking him to bring a few specimen plates, and to say a few words on the subject to the meeting, and he believed Canon Beechey had come prepared to do so.

The CHAIRMAN said he had great pleasure in complying with the request of the secretary, but having received a very courteous letter from Col. Stuart Wortley, in which he announced the kind intention of sending him a pound of his own collodion and sensitizer, he felt bound to withhold any judgment he might have been inclined to pass upon the Lea-Wortley plates till he had tried them with the improver's own collodion. He spoke, however, in strong terms of approval of this bromide process, whether it was as rapid as dry plates, or only more rapid than the Liverpool plates. He produced several negatives on Liverpool and on Wortley plates, and also on his own collodio-bromide dipped plates with beer preservative. The varied colour of the Liverpool plates contrasted strongly with the dark green of the Wortley plates, and with the quiet brown of the dipped ones. He ought to state that the Liverpool plates were specially made for him by Mr. Mawdsley, and all gave good printing negatives, though in the endeavour to work up the red into a black he had, in several instances, over-developed them, but they were very clear and free from fog. The beautiful, clear, clean appearance of the Wortley plates—indeed, all he had made on the Carey Lea principle—must be apparent to everyone. He attributed this to the aqua regia in all the collodion he had used. He had yet to try how far the excess of silver recommended by Col. Stuart Wortley conduced to the great sensitiveness which several persons who had tried them asserted, and how far the gum preservative, or the pyro in it, conduced to that sensitiveness; but the meeting would see that every gum plate had blistered, although alcohol had been used throughout the development; indeed, the plates seemed to blister as they were rubbed, even with half alcohol and half water. That the plates would prove a most valuable discovery, to whomsoever due, he could not doubt, and when he had further experimented with Col. Stuart Wortley's own materials, he would be happy to read a paper thereon.

Some of the old hands at collodio-albumen thought the negatives inferior to those by the old process, but looked forward with interest to the president's future experiments.

The meeting closed with the usual complimentary votes.

C. ADIN, Hon. Sec.

Talk in the Studio.

BRITISH HOSPITAL FOR DISEASES OF THE SKIN.—Mr. Alex. Rivington, honorary secretary to this hospital, desires to acknowledge, through our pages, the sum of £1,000, sent from V. S. T. for the purposes of the charity.

RETOUCHED NEGATIVES.—We have received from Messrs. G. Tuohy and Co. a series of portraits which are exceedingly satisfactory examples of the result of retouching the negative. Wrinkles, rugosities, treckles, &c., are softened, giving a fine but stony texture; unhappy expressions are made most pleasing, and this, apparently, without diminishing the likeness—probably in many cases, at least in the eyes of sitters and their friends, improving it. One specimen, a child looking, in the untouched copy, painfully frightened, in the retouched example wears a bright natural expression, such as the mother would love to look upon; another, a young lady frowning, is made to wear a natural smile. In all cases the relief and modelling are improved, and the features finely rounded, hard and deep shadows softened and made transparent, giving pictorial value as well as interest as portraits. Messrs. Tuohy offer to photographers aid in this direction on terms which must meet with ready appreciation.

ONLY AN ARTIST.—At Bow Street, Phillip Holland, a lad of about ten years of age, was charged by Lawrance, one of the London School Board Officers, with being found destitute in the streets. The boy was brought up on a similar charge some time ago, and was given up by the magistrate to his father, but had again run away from home. The father, however, insisted that he should not be sent to a school, as he was of such use at home, especially for "nursing the baby." The man also complained of the boots which the workhouse authorities had given this and another boy during their stay in the workhouse. Mr. Vaughan said that the workhouse could not be expected to find clothes for all his children. The father said he would find them himself if he could afford it, but he was "only an artist"—that was to say, he solicited customers outside a photographer's shop at 1s. 6d. a day. Mr. Vaughan said that as he was so poor it would have been better for him to have allowed the boy to go to a school, but he would deliver him up this time. If, however, the boy was charged again, he would certainly be sent to school.—*Pall Mall Gazette.*

WHY CIRCLES PLEASE THE EYE.—Prof. Muller, in a course of lectures in Berlin, offered a simple and mechanical explanation of the universal admiration bestowed on these curves. The eye is moved in its socket by six muscles, of which four are respectively employed to raise, depress, turn to the right, and to the left. The other two have an action contrary to one another, and roll the eye on its axis, or from the outside downward, and inside upward. When an object is presented for inspection, the first act is that of circumvision, or going round, the boundary lines, so as to bring consecutively every individual portion of the circumference upon the most delicate and sensitive portion of the retina. Now, if figures bounded by straight lines be presented for inspection, it is obvious that but two of these muscles can be called into action; and it is equally evident that in curves of a circle or ellipse all must alternately be brought into action. The effect then is, that if two only be employed, as in rectilinear figures, those two have an undue share of labour; and by repeating the experiment frequently, as we do in childhood, the notion of tedium is instilled, and we form gradually a distaste for straight lines, and are led to prefer those curves which supply a more general and equitable share of work to the muscles.

To Correspondents.

MAGIC.—We prefer the acetate bath where warm tones are required. Take two grains of chloride of gold, one drachm of acetate of soda, and ten ounces of water; mix one or two days before use. This will give rich fine tones if good negatives are employed. But you must bear in mind that it is impossible to secure fine tones by any kind of toning bath unless the negative be sufficiently vigorous to permit tolerably deep printing. It is scarcely necessary to add that good paper and sensitive bath in good condition are essential to good tones. Letters reaching us on Thursday are not in time for answer the same week.

M. F. D.—Very highly albumenized paper is apt to crack like the example enclosed if it is suffered to get perfectly dry before mounting. The best preventive consists in mounting the prints before they are what is termed "bone dry."

D. T.—Your cards have some good mechanical qualities: they are clean and sharp; but the lighting is utterly wrong, and hence the flat effect of which you complain. Your principal light is directly in front of the sitter, hence there is no relief in the features; and there is too much top light, which causes the black shadows under the eyes, chin, &c. Arrange your light so that a high side light from one side prevails, lighting the shadows on the retiring side by means of a reflecting screen; this will give you relief without harshness. The black corners are due either to the use of a lens of too short focus, not covering well, or to placing the background a little too far back, so that the corners are not properly illuminated—most probably the latter. The tones are not bad, but a little too black.

G. L. R.—You will probably be able to buy collodion for use in the collodio-bromide process better than you can make it; but if you wish to try the experiment of making it yourself, take two pints of commercial oil of vitriol, and one part of nitric acid at 1:340, mix in a jar, and place in a pan of water at a temperature of 180° to 200° Fah. This will raise the acids to a temperature of about 160°. At this temperature immerse the cotton, which must be pure and dry, in loose tufts, taking care not to immerse more than can be perfectly covered by the acids. All the cotton to remain immersed for ten minutes, and then wash very thoroughly and dry. Dissolve this at the rate of five or six grains to the ounce in equal portions of ether and alcohol, the former anhydrous, and the latter at about 820 sp. gr. Methylated solvents may be used. Use the sensitizing salts in the proportions recommended by Col. Wortley, and develop according to his instructions.

STUDENT.—There are various methods of ascertaining the equivalent focus of a lens. The simplest is probably that which we proposed some years ago as follows:—Take any simple diagram and focus it, obtaining a sharp image on the ground glass of precisely the same size as the original. Then unscrew the lens and measure carefully the distance between the ground glass and the original; one-fourth of this distance is the equivalent focus of the lens. The tables of enlargement given in our YEAR-BOOKS of course all refer to the equivalent focus.

C. M.—The defect in your prints appears to be due to the use of a toning bath too soon after it was mixed, giving the irregular bleaching effect known as mealiness. This defect may arise from other causes, such as nitric acid in the nitrate bath, &c.; but it most frequently results from the use of a newly mixed toning bath. What toning bath have you been using?

C. W. A.—We shall have pleasure in seeing you.

D. DE CLERCY.—We will hand the matter to our publisher, and ask his attention.

LUCCELLUM.—The subscription and postage of the NEWS to America is 17s. 4d. per annum.

J. C.—The use of pyrogallic acid for development in producing transparent positives will, as a rule, render necessary somewhat longer exposure than is required with iron development. Experience is, however, the best guide as to exposure. After a little practice you will be able to adapt your operations so as to secure pretty good results from all kinds of negatives; but, as a rule, a somewhat thin, but clean and bright, negative answers best. The more perfect the detail, gradation, and definition, the better for the result. For vignetting it is only necessary to place a piece of cardboard with an oval aperture midway between the lens and sensitive plate. The size of the card and aperture will, of course, depend on circumstances, but a card about 16 inches by 12, with an aperture 8 by 6, will answer; by moving it nearer to or further from the lens the size of the vignette may be varied. If the card can be kept slightly in motion the gradation of the vignette will be softer and better. The tissue paper is scarcely desirable. We shall be glad to give you further hints if necessary.

Several Communications stand over until our next.

Several Correspondents in our next.

PHOTOGRAPHS REGISTERED.

Messrs. W. and D. Downey, Newcastle,
Photograph of Lieut.-Col. Alhusen.

Messrs. Chaffin and Son, Yeovil,
Photograph of Dr. C. M. Tidy.

Mr. E. Lawton, Southend,
Photograph of Group of Inmates of Rochford Union.

Mr. R. H. Preston, Penzance,
Photograph of A. Smith, Esq.

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15 Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.

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ELIMINATION OF HYPOSULPHITE FROM PRINTS.

ABOUT five years ago considerable interest was excited amongst photographers by the discussion of methods of eliminating the final traces of hyposulphite from prints with more certainty and efficiency than it was done by successive changes of water. Dr. Angus Smith proposed to effect this by adding peroxide of hydrogen to the final washing water, for the purpose of oxidizing the last traces of hyposulphite of soda and hyposulphite of silver, and converting them into innocuous sulphates. M. F. Hart had previously proposed to effect a similar result by means of chlorine water; and he subsequently improved on this suggestion by proposing and introducing a dilute solution of hyposulphite of soda. Although theoretically correct, and in a greater or less degree practically efficient, none of these methods came into general use. The peroxide of hydrogen was expensive, and it tended in some degree to bleach the prints. The hypochloride of soda solution was cheaper, but the care required in its use, and the precautions necessary against leaving in the print a trace of chloride of silver formed by the liberated chlorine, seemed to militate against the general adoption of the plan. These things need not have militated against its use, and probably ought not to have done so, but the fact remains. We now find another method of effecting the same result proposed in America. We recently published the proposal of Mr. H. J. Newton, of New York, to employ a weak solution of acetate of lead in the final washing water. A mutual decomposition of the acetate of lead and hyposulphite of soda takes place, issuing in the formation of sulphate and acetate of soda, and a little more washing completes the operation.

Doubtless every plan which promises increased permanency to silver prints is well worthy of careful attention; but it may not be out of place to reiterate here what we have so often before expressed, that in the majority of instances the mischief is less due to imperfect washing than to imperfect conditions in the fixing bath. The causes of fading are most commonly set up in the fixing bath by some of the various methods which issue in a liberation of sulphur; the use of the fixing bath a second time; the use of it too weak; the immersion of the prints whilst containing any trace of acid; or a variety of causes, will set up the decomposition in the hyposulphite by which the elements of fading and change are generated within the print. Perfect fixing conditions, it should ever be remembered, form the chief basis of stability. Careful washing, and, as far as possible, rapid washing, are of course necessary elements in securing permanency, and, in our own estimation, rapid changes of water, and occasional thorough draining or pressure between changes of water, best secure complete

washing; but we place Mr. Newton's plan before our readers as one worthy of trial and examination. Some remarks on the subject by Mr. H. T. Anthony in the *Bulletin* may be read with interest. He says:—

“Mr. H. J. Newton, of this city, has advised us of his success in using acetate of lead for decomposing the last traces of hyposulphite of soda in prints. As this is a chemical process which works rapidly, its introduction will be a great public benefit, because the old mode of washing involves not only great loss of time, but a great expenditure of water. In some localities the question of water is very important, and we hasten to lay the matter before our readers, in order that they may avail themselves of its advantages at the earliest possible moment. A solution of acetate of lead is made of the strength of one grain to the ounce of water. This solution should be made of the pure crystalline acetate, and not of the opaque crusted article usually sold. This is the strength for use; it may be made stronger for stock. After the prints have been well washed in three or four changes of water, they are to be placed in the lead solution. Here the little remaining hypo is immediately decomposed, forming sulphate of lead and acetate of soda. After remaining a few minutes the prints are removed, and finally washed in three more changes of water. This can very easily be tried and tested by the starch and iodine tests, or by laying away for comparison prints made by this and the old process.”

REDUCTION OF NITRATE OF SILVER BY MEANS OF CHARCOAL.

A VERY simple method of reducing nitrate of silver, analogous to that some years ago mentioned by the late Mr. Hadow, is given in the *Archiv der Pharmacie*, by Mr. C. F. Chandler. If crystallised or fused nitrate of silver be placed upon glowing charcoal, combustion forthwith takes place, the silver remaining behind in a metallic form, while nitrous oxide and carbonic acid are freely given off. The nitrate of silver is fused by the heat developed by the reaction, and is imbibed through the pores of the charcoal; as every atom of consumed carbon is replaced by an atom of metallic silver, the original form and structure of the charcoal are preserved intact in pure silver.

By proceeding in this manner it is possible to produce silver structures of any desired size, possessing in every way the original form of the wood. A crystal of nitrate of silver is in the first place put upon a piece of charcoal, and a blow-pipe flame is then applied in the vicinity, in order to start the reaction in the first instance, and as soon as combustion commences crystal after crystal may be added as these one after another become consumed. The silver salt is liquefied, and penetrates into the charcoal, where it becomes

reduced. Pieces of silver may in this way be prepared of one or two ounces in weight, which exhibit all the markings and rings of the original wood to a most perfect and beautiful degree.

COLLODIO-CHLORIDE OF SILVER FORMULÆ.

IT were an endless and profitless task to continue any discussion on matters of photographic history with a writer who manufactures his facts to suit his purpose. But as Mr. Sutton, in returning to the question of collodio-chloride of silver, again mis-states facts, which may injuriously affect the practice of readers whose slight acquaintance with his writings may not have familiarized them with the untrustworthiness of his statements, we very briefly point out his last errors. He first quotes a formula, which he finds in the YEAR-BOOK OF PHOTOGRAPHY for 1870, upon which he states our claims as a discoverer in 1864 are based; he then calls that formula ours, and proceeds to point out that in his estimation it is "troublesome, bungling, and unscientific." If the formula were ours it would not concern us much in what estimation he held it; but we have to state categorically that the formula is not ours, that it was never published as ours, and that our claims are not based upon it in any way whatever. Our claims are based upon the formulæ we repeatedly published under our own name upwards of half-a-dozen years ago, and which at that time Mr. Sutton quoted, showing that his present mis-statement is rather the result of intention than ignorance. In the formulæ we gave on the first publication of the discovery, we stated exact details based on theory and proved in practice, in a manner which, oddly enough, coincides very closely with what Mr. Sutton so many years after remarks should have been done in stating formulæ. We gave the exact proportion of nitrate of silver present per ounce in the alcohol of a certain specific gravity of which the collodion was to be made, and the exact proportion of an alcoholic solution of a chloride, the definite proportion of the chloride of silver and nitrate of silver being clearly stated. No water whatever was used, the nitrate of silver being dissolved in the alcohol, the proportion soluble, and the best mode of securing its solution, all being stated with precision. The principle upon which the proportions were based was that which we had found to work well in ordinary printing, namely, the use of five grains of nitrate of silver to each grain of a chloride which required three grains of nitrate to decompose it, leaving two grains of nitrate in excess. This plan, within certain limitations, we have always found to work well, either in ordinary printing or in the collodio-chloride process, and we still adopt and recommend it.

The formula which Mr. Sutton quotes was contributed by a correspondent, to whom it was accredited in the NEWS and in the YEAR-BOOK for 1866. It was accompanied by very fine specimens produced by its use. It was recommended on the score of its easy preparation in a small way, which rendered it desirable to many experimentalists. We tested it, and found it successful, and therefore published it for the benefit of those who did not wish to undertake the more perfect but somewhat more elaborate method of dissolving nitrate of silver in alcohol; but, in publishing it, we always directed readers to the complete details in former volumes, to which, however, it did not answer the purpose of a writer determined on perverting the truth to refer. Correcting the mis-statements of such a writer is like undertaking the task of Sisyphus. In future we shall leave them to the oblivion into which, when unnoticed, others of the same character, from the same source, have generally fallen.

NOTE ON THE CHEMICAL FOCUS OF PHOTOGRAPHIC LENSES.

WE have been favoured by Dr. D. Van Monckhoven with an interesting note on the chemical focus of lenses, which he has recently contributed to *Photographische Correspondenz*.

Having recently had occasion to examine an astronomical lens possessing a diameter of four inches and a visual focus of sixty inches, in reference to its chemical focus, I have come to the somewhat unexpected conclusion that photographic lenses are not exempt from chemical focus, if examined with but sufficient care.

In the examination of the lens in question, I employed a sighting object at a distance of 500 metres in a clear and tranquil atmosphere. I found a light chemical focus of one and a-half millimetre. In the plane corresponding to this focus I placed an arrangement of two threads crossing one another, and essayed to enlarge the image of the distant sighting object and of the cross by means of an aplanatic lens eleven lines in diameter; but I could not obtain a clear image either of the sighting object or of the cross. I then occupied myself with the study of the aplanatic lens, and by the aid of the method I am about to describe I was successful in discovering its chemical focus.

An aplanatic lens employed in the ordinary manner—namely, for the reproduction of objects upon a wet collodion film—does not possess any chemical focus. I can even move the ground glass to a distance equivalent to a thousandth part of the focal distance of the lens without finding upon the collodion film any sensible difference in the image. Nevertheless, if I substitute for the wet collodion dry tannin plates, on which the image is produced in a finer detail, I find that the operation of focussing is of a much more rigorous description, and that the same becomes even more delicate if, instead of tannin plates, I use silvered and iodized glass, or, in other words, Daguerreotype plates. In the last case, if the object that I reproduce is very fine—as, for instance, threads crossed upon a frame—I already find a chemical focus, and especially the lenses employed to enlarge.

Today I shall confine myself simply to the statement of this fact, which will surprise many, and especially opticians, to know. For if, as a rule, the lenses now constructed do not apparently possess a chemical focus, it is only because the wet collodion plates that we use are not sufficiently delicate to show the result. This is apparent under a microscope. By enlarging twenty or thirty times, an image obtained upon wet collodion appears to be constituted of grains of sand. Tannin, albumen, and similar plates furnish images which will allow of enlargement three times as powerful, and plates silvered and treated as Daguerreotypes may be enlarged to as much as two hundred diameters. It is by employing plates of this nature that the existence of a chemical focus is proved in lenses which otherwise appear exempt from this phenomenon.

I shall be in a position to explain these facts and their origin more clearly as soon as my experiments in this direction have terminated.

TESTIMONIAL TO THE LATE WILLIAM BLAIR.

OUR proposal to recognize the services of the late William Blair by a fitting testimonial, which should assist his bereaved family, has, we have reason to believe, been received with favour by many photographers. It was our desire, in the first instance, to have secured the constitution of a committee, in whose hands the funds should have been placed, and under whose guidance they should have been administered; and we had hoped that, a suitable treasurer being appointed, all contributions would have been received by him, and all acknowledged from time to time in both the journals. Since our proposition was published a similar proposal has been made

in a contemporary journal, and a subscription list opened by the editor. We still think that the matter would be more satisfactorily worked by an independent committee of (say) three persons, and the contributions acknowledged weekly; but in order that a good work may not "hang fire," we will undertake with pleasure the present duty of receiving and acknowledging subscriptions. Those of our readers who wish to express practically their recognition of the long continued, disinterested, and efficient services of Mr. Blair to the art will please forward contributions to our office—cheques and post office orders payable to G. Wharton Simpson—all of which will be duly acknowledged in the NEWS. Should any more comprehensive arrangement be made, our readers shall be duly informed of the matter. The following subscriptions have been already promised:—

Sarony and Co., Scarborough	...	...	£1	1	0
John Spiller, F.C.S.	...	...	1	1	0
G. Wharton Simpson	...	...	5	5	0
J. H. Dallmeyer	...	...	5	5	0
Autotype Company	...	...	5	5	0

A VERY SENSITIVE TEST FOR HYPOSULPHITE SALTS.

A TEST for hyposulphite of soda and other salts of a like nature, which has before been mentioned, is described in the *Jahres-bericht der physikals Verein zu Frankfurt*. It consists in the employment of permanganate of potash. If one decigramme of pure permanganate of potash, together with a gramme of chemically pure caustic soda (the latter prepared from sodium), is dissolved in half a litre of distilled water, a fluid is obtained possessing a very marked and beautiful red tint. This forms the testing liquid, and can be employed at any time to detect the presence of any hyposulphite salt. A very minute quantity of the latter contained in any solution is at once discoverable, if the liquid to be examined is added to the tinted testing solution. The latter, on the addition of even the slightest trace of a hyposulphite, loses on the instant its reddish tint, and assumes instead a greenish hue, the permanganate of potash having undergone de-oxidation.

This change of colour, which may be equally called forth with a thousand other oxidizable bodies, is, nevertheless, but rarely of use, as the phenomenon can only in very few cases be practically applied, in order to prove the existence of traces of hyposulphite, as well in sulphates as in hyposulphite and neutral salts. To the photographer the test for hyposulphite is frequently of great importance, especially in the examination of cards and mounting boards, which, if perfectly white, not unfrequently contain the injurious salt, if not to a considerable, at any rate to a very injurious, degree.

Another test, better known to photographers, is that of iodide of starch, which loses its slightly blue tint in the presence of hyposulphite. Whether the permanganate of potash test is more delicate than the iodide of starch is not stated; but they are evidently both of them very suitable for employment in the studio.

FRENCH CORRESPONDENCE.

IN the last number of the PHOTOGRAPHIC NEWS I noticed a paragraph, under the title of "Foreign Miscellanea," announcing the death of Commandant de Milly, director of the photographic establishment at the Depot de la Guerre. In one of my previous letters, written shortly after our disasters, I mentioned this sad event, which, like the writer of the "Miscellanea," I attributed to the civil war. The first news of the catastrophe came to me from Versailles, being contained in a journal that published a list of the daily casualties. I at once proceeded to the War Department, and was there informed

that Monsieur de Milly had just been killed in the trenches while in the discharge of his duties as an officer of the staff.

You may judge of my surprise and joy, then, when, towards the month of August, I saw pass before me in the Rue de Rivoli a carriage in which was seated, in the enjoyment of perfect health, my friend the Commandant, who was just then quitting the gardens of the Tuilleries. The news announced in the journals, and confirmed afterwards officially, was, therefore, but one of those errors which are, unfortunately, not very rare in moments of confusion like those we have just passed through. I decided at once upon calling upon the amiable Commandant to press his hand once more, and to chat over his recent arduous work. This resolution I had not, however, had time to put into practice, when last week, while at the shop of a maker of photographic apparatus, who works for the Depot de la Guerre, the latter said to me, "I suppose you have heard that poor M. de Milly is dead." "Dead!" I replied, "not at all; it was a false report, and I have since had the pleasure of meeting him." And I told him how I had seen him in his carriage. "Yes," said my informant, "the Commandant, it is true, escaped the perils of the Prussian war, as likewise that of the Commune, but a few days ago he was, unfortunately, the victim of a fatal accident." And then, to my grief and amazement, I was told that the Commandant was returning on horseback to his quarters at Saint Maude, when a regiment marched up the street with their drums beating. The horse took fright, and M. de Milly wanted to dismount, but his spur caught in the trappings, and he fell so badly that he received at once his death-blow. My informant, moreover, wound up his sad story by stating that he himself had been present at the funeral.

I must admit that this last bit of news was even more sad to me than that which had been falsely circulated in the first instance, for there is something so mournful and irritating in such a denouement to a life of so much successful toil, and which has passed safely through a series of real dangers. M. de Milly had the honour of being the first to create a service of photography attached to a public department in France, and proved, by the important results arrived at, the true value of such a step. He had on the one hand to overcome difficulties connected with the routine of the office and matters of discipline, as also obstacles of a real nature that obstructed his way in the precise elaboration of photographic applications. Not only was it necessary for him to discover and perfect methods for obtaining reproductions and reductions, with mathematical exactness, of maps, plans, &c., connected with the War Department, but it was also incumbent on him to modify and adapt the apparatus he employed in his work. I know better than anyone with what conscientious zeal he collected all useful hints and memoranda, and with what perseverance he studied these until he was successful in producing negatives fulfilling all the conditions that were required. He prosecuted his researches with the utmost eagerness, and occupied himself much with the problem to transform a photograph into an engraved plate or lithograph, in order to multiply copies thereof in as economical a manner as possible. There was no photo-engraving or photo-lithographic process which this studious officer had not fully investigated. It was not enough for him to read of and experiment with a process, he visited the establishments themselves where the operations were conducted; and, with this view, he proceeded to England, Belgium, Russia, and Austria, to study the most practical processes, and to search for information as to the construction of improved instruments. Success crowned his many efforts and arduous labours, and the studio at the Depot de la Guerre was able to produce mechanical prints which could vie with the most perfect productions of this kind, while at the same time

a considerable saving was effected to the State by this method of working. The services of M. de Milly, which were especially appreciated during the siege, caused him to be nominated a field officer on the staff, and an officer of the legion of honour, and he enjoyed the great satisfaction of knowing that his exertions had not been without result, and that he had rendered himself truly useful. And it is under these circumstances that an ordinary accident has torn him from us while full of energy and youth, from his duties and from his friends. It is certainly a most deplorable event.

I shall, I trust, be pardoned for entering at some length into these details; but M. de Milly has for a long time past inspired me with deep sympathy. I have followed his progress from the commencement. He was the first in France to admit photography as an auxiliary into one of our public institutions, and has proved by his success that I was right in pointing out, for nearly twenty years, in all the journals with which I was connected, the advantages to be obtained from the employment of photography by the State. He preceded me in my practical efforts in connection with the history of the city of Paris, and which the late events forced me to abandon after having benefited the administration by a saving of fifty per cent., and by producing results superior beyond comparison to those before obtained. More fortunate than myself, he was able to continue along the path of progress, and to occupy himself with applications of our noble art. Thus I deplore his loss very deeply, and may be excused, perhaps, in paying this last tribute to his memory.

At the time when Paris was the most closely invested by the German troops, in November 1870, M. Levy, one of the successors of Ferrier, escaped in a balloon with M. d'Almeida, a distinguished physician. These gentlemen offered to the government at Tours their services for the photographic reproduction of despatches destined for conveyance to the capital by Homing pigeons. They had studied the preparation of a film of collodion, exceedingly tough and resistant, which detached itself readily from the glass, and could be rolled up without inconvenience, and attached to the tail of a pigeon; so small, indeed, was the film, that it could even be placed in a hollow tooth, or under one of the nails of one's fingers. On arriving at Tours, after a thousand vicissitudes, M. Dagnon was charged with the exclusive performance of the operations. I send, by way of curiosity, one of these little pellicles of collodion, so that you may judge personally of its lightness and solidity.

ERNEST LACAN.

BLISTERS IN DRY PLATE NEGATIVES.

BY LIEUT. ABNEY, R.E.

FURTHER experience in dry plate work, using albumen as a substratum, confirmed me in what I stated in your columns a few weeks ago. I find that the thinner the coating of albumen on the plate the less liability there is to blistering. My practice is now to dilute the albumen with one hundred times its bulk of water; this gives the needful adhesion to the plate, and, with the "Blanchard brush," is most easily applied. I find that when I used one of albumen with fifty of water I got no blisters, except where the brush had happened to go over the same place twice.

One more cause of blisters I will point out, and that is when the plate, however well cleaned and rubbed up, is greasy or rather repellent to aqueous solutions. After coating several plates with the albumen solution, I happened to take up the first one coated, and found that in several places the albumen solution had been repelled, leaving small holes in the substratum. At the time I thought they would not signify, but on developing a plate, wherever the substratum had not bitten there a blister cropped out. The best plan, to my fancy, is to clean the

plates as usual, then rub a little ammonia and water over them, wash well under the tap, and let them dry; then coat the plate with the substratum with the brush.

Again, there is a difference in the behaviour of the two kinds of blister. If the development proceed till all the detail is out, and the plate be allowed to dry, it will be found in most cases that the blisters will not reappear on the second wetting, and the first development will not have stained the negative to any great extent. With blisters springing from the other defect, at each wetting the blister will reappear.

THE TELEGRAPH ON PHOTOGRAPHY IN THE EXHIBITION.

OUR daily contemporary the *Telegraph*, in an article on photography at the late International Exhibition, has some remarks which will interest our readers, notwithstanding the stale parrot cry it reiterates, denying the claims of photography to rank amongst the fine arts. Some of the singular blunders of the writer of this article will amuse our readers, and tend to qualify the value of his opinion as to the art claims of photography. He refers, for instance, to the large and worthy contributions of Mr. Mayall, of which neither the catalogue nor the Exhibition, so far as we have been able to see, contained a single example, a fact which, as we coincide in the commendation, we have deeply deplored. The error in reference to Mr. England's contributions is pointed out by that gentleman himself on another page. The allusion to the Woodburytype as being only represented by one specimen evidently arises from confounding Mr. Woodbury's new engraving process with the photo-relief or Woodburytype process proper. Other errors need not be specified. We subjoin an extract:—

Official reports of the various sections of the Exhibition, edited by Lord Houghton, are now published, and will remain as a valuable record. We will take one department as an example of that rapid progress in the development of modern arts in which scientific experiments and discoveries are mainly concerned. This department, on which Lieut.-Colonel Stuart Wortley furnishes the report, is Photography. We may hardly agree with him in the desire to widen the scope of photographic subjects, and, by "artistic handling," to "place photography in a far better position as representative of a fine art." To us it appears that the proper range, which is rather a range of utility than ideal beauty, has already been enormously exceeded; but a great concession of opinion is due in this matter to Colonel Stuart Wortley, who has practically won the right to speak of his favourite pursuit with the ambitious tone of an enthusiast. His own pictorial efforts of heliography stand in the foremost rank, and would, taken alone, or in a category inclusive of such "compositions" and "art studies" as those of the Honourable Norman Leslie-Melville, Mrs. Cameron, Mr. Earl, Mr. Rejlander, Mr. Valentine Blanchard, Mr. Slingsby, Mr. Hubbard, Messrs. Robinson and Cherrill, and Messrs. Hubbard and Diston—all of whom contribute photographs of high excellence to the English collection—go far to justify his theory that the future status of photography will depend even more on "the earnest seeking after art," as shown in the treatment of subjects, than on improvements of chemical and mechanical processes. We must, at the same time, demur to any proposition the effect of which is to exalt photography into a fine art. Admirable as are those landscapes by Mr. Earl, we must confess that, viewed as pictures, they appear to us to contain faults, which could not fairly be considered faults so long as the photographer's work purported to be no more than an accurate and useful record or memorandum. This is the feeling which induces us to prize the Alpine views by Bisson and other adventurous photographers; and, at a yet higher rate, the sun-drawings of ancient architectural monuments, whose decay every year visibly advances nearer to obliteration. When we wish to think of photography at its best, to forget its many sins of vulgarity and tasteless trick, we shall always remember the thanks that are owing to this marvellous art of a scientific age for its services in the historical study of architecture. On one point, at all events, we entirely and heartily agree with Colonel Stuart Wortley: the touching and retouching which are necessary to cover the imperfection of prints taken from bad "negatives" merely betray, to a judicious eye, the want of care or skill in the photographer. Perfect manipulation at the beginning would save all the need of artifice—generally tending to coarse hardness rather than to dexterous delicacy—at the end.

It may be noted that the greatest triumphs of photography and the most generally valuable advancement of the art are ascribable to

the laborious experiments of men distinguished by attainments in the higher walks of knowledge, far removed from the glass house, dark closet, and studio of the photographer. Astronomy, leading to the investigation of optical phenomena, and involving the profoundest chemical research, actually generated the new art, as witness the very name of Daguerre; and since his time it will be found that every marked stage—nay, every traceable step—in the progress of his wonderful discovery, has greater or less relationship to science in some older manifestation. In our own country no name is more prominent than that of Mayall; and the owner of that name—the principal owner, that is to say, Mr. J. E. Mayall—is known to be one of the most ardent of experimental philosophers, and especially devoted to astronomical studies. Few who admire the uniform excellence of those portraits for which his establishments are celebrated far and wide are apt to associate the merits of the work with any abstruse idea of “star-gazing;” but it is nevertheless a certain fact that the superior knowledge has materially influenced the skill and judgment on which he has built the first reputation among English photographers. Mr. Mayall, of course, gives employment to many experienced hands; and it is through his name, in effect, that we virtually praise the operations of a whole school. He has largely and worthily contributed to the Exhibition in the Albert Hall; and it is owing to him that Mr. William England’s views in Switzerland, Savoy, and Italy—perfect specimens of their kind—enrich the gathering. British photography—of which, on the whole, Colonel Stuart Wortley speaks with hopeful commendation—is represented by all, or nearly all, the popularly known and esteemed followers of the art. The London Stereoscopic Company maintains the high credit of its portraiture; and a striking quality and character of artistic handling will be discerned in the heads exhibited by Messrs. Hennah and Kent. The fact of Colonel Stuart Wortley’s having called special attention to the “beautiful coloured photographs” exhibited by Messrs. Lock and Whitfield is a peculiarly significant guarantee of their perfection, for the praise is that of a practised photographer who well knows how delicate a point is that of colouring as an adjunct of photography. Mr. E. G. B. Monti exhibits also a remarkably well selected group of miniatures on a photographic basis. The frame, attractive at a mere passing glance, will be found, on close examination, to include a number of delicate pictures, so highly finished as to bear the semblance of enamels, while their breadth and richness redeem the excess of elaboration, which is the only error that a critic could find in the work.

The new processes, or those which were new in recent time, but are already—so fast do we live—growing old, are well exemplified. The carbon prints of the Autotype Fine Art Company, the enamels exhibited by Mr. A. L. Henderson—excellent as photographs, and unquestionably durable—and the Woodburytype, or photographic engraving, are all worthy close attention, as are also the heliotype and Dallastype, the former being exhibited by Messrs. Edwards and Kidd, and the latter by the discoverer, Mr. Dallas. Of the Woodburytype, which is a new and exceedingly valuable invention of Mr. W. B. Woodbury, only one specimen is shown, but we believe that a book, handsomely adorned through the same noteworthy means, and published by Messrs. Cassell and Co., will be among the remarkable *éditions de luxe* of the season of gift-offerings. Colonel Stuart Wortley, speaking from the single specimen exhibited, declares the invention to be full of promise. In the heliotype process, which is the invention of Mr. Ernest Edwards, and is more liberally exemplified at the International Exhibition, the difficulties which are caused by the use of ink of only one thickness have been successfully overcome—or, rather, they have been avoided—for Mr. Edwards has recourse to a double operation, printing the dark shadows first with the stiff ink, and then getting the lights and half tones by a second impression. The carbon photographs of the Autotype Company show a great advance on the first results of Mr. J. W. Swan’s labours. The frame of copies of drawings by the old masters is a notably fine collection.

The brightness of modern photography will be seen in its highest perfection in the Austrian Court. Conspicuous by its subject, as well as by the brilliancy of its effect, is the portrait, by Emil Rabending, of Baron von Wertheim, likenesses of the Emperor and Empress of Austria being also exhibited by the same famous photographer. The somewhat hackneyed device of obtaining a strong side light by laterally removing the cap or screen of the lens is very successfully practised by Adèle; and one life-sized portrait in profile, with the features apparently steeped in sunlight, while the rest of the picture is in shadow, may be instanced as a triumph of picturesque photography. A clear, crisp, blue atmosphere is no doubt instrumental to the excellence of the Vienna photographs, and the same bright and delicate finish of gradation is found in the Australian photographs, which play no mean part in the pleasure yielded by a visit to the New South Wales *annexe*. Mr. and Mrs. Oswald Allen and Messrs. Newman and Co. have sent frames full of subjects that prove to what eminence the artistic spirit has attained in our most distant colony.

ON PHOTOGRAPHY AT THE GREAT EXHIBITION OF 1871.*

It should be premised that the present International Exhibition is the first of a series in which will be represented annually—

- A. All branches of the fine arts;
- B. Scientific inventions;
- C. Horticulture;

and in cycles of from seven to ten years certain selected manufactures and industries. The three specially-selected classes for this year were—

1. Woollen and worsted;
2. Pottery;
3. Educational appliances.

I shall have occasion in this paper to refer to four of the sections named—A, B, 2, and 3.

At the time of the wondrous show in the majestic palace of 1851 the art of photography was young, though there were some very beautiful examples to be seen there. Eleven years later not only had vast progress been made, but the art had become of great practical value. It is not too much to say of it that it had been of universal benefit, and that it had added a fresh charm to most households of refinement everywhere. Steadily it had been doing service in the cause of science, of commerce, of education. It now takes its place by right as one of the indispensable helps in the instruction and civilization of mankind.

It may possibly be thought by some that photography is not so extensive a feature in the present exhibition as might have been anticipated; but I think it will be found to have been employed in very many ways besides those that come under that particular title. Of these it is of importance that notice should be taken.

Of processes connected with photography two are exhibited in practical work—the heliotype, by Mr. Ernest Edwards, and the Woodburytype, by the inventor after whom it is named. I say “practical work;” but this is scarcely correct, inasmuch as the latter processes of printing alone are shown—the most interesting and characteristic portions being produced at the two establishments, in the outskirts of London, that are devoted to the work.

Without entering into all the details of these two permanent printing processes, they may be described, generally, as being based upon the action of light on gelatine combined with bichromate of potash. When the sheet of these combined materials is exposed to the action of light it is no longer soluble in hot water as simple gelatine is; consequently, when exposed to light under a negative, parts are wholly shaded from its effect, others partially, throughout the various degrees of opacity and transparency that form the high lights, the medium tones, or the shadows of such negative. Subsequent washing of the sheet in hot water leaves the picture impressed on the gelatine with all its delicate gradations faithfully reproduced.

In what is called the carbon process, as brought to such perfection by Mr. Swan, whose patent is now worked by the Autotype Company, a film of gelatine such as has been described has combined with it some pigment, which may be carbon, though it is not essential that it should be, and this film, after treatment in the way referred to, and being attached to paper, constitutes a carbon photograph. Such is shortly its method of production. It will be seen that each print by such a process requires to be copied from the original negative.

The process of Mr. Walter Woodbury produces the gelatine print in a similar manner upon a thicker sheet of the material, and makes use of it thus:—A plaster of Paris cast is made from it, and this is again made use of to obtain a mould or matrix of type metal, from which can be printed

* Read at a meeting of the Liverpool Amateur Photographic Association, September 26th, 1871.

† A slight error exists in this statement. The metal impression is obtained direct from the gelatine relief by means of hydraulic pressure.—Ed.

by mechanical means the copies required. This printing is the portion shown in the exhibition building, several presses being at work. There are details of the process that I have not entered into here, for the reason that it has already been admirably described by a former secretary of your Association, in a paper read to you in 1866. It is now worked by a company who have premises at Hereford Lodge, West Brompton. I visited this establishment in the hope of seeing something more of the mode of working—principally to learn how the beautiful pictures on glass were produced for stereoscopic and lantern slides. It being obviously impossible to employ metal presses in these pictures, I was informed that the films are pressed into close contact with the glass by means of the hand.

The process of Mr. Ernest Edwards must now be briefly referred to. Films of gelatine converted, as in a late stage of the first named process, into a sensitive insoluble parchment-like substance, by the addition of chrome alum, perfectly grainless in texture and perfectly smooth, by being dried on level glass plates, have the prints taken upon them by exposure under a negative. The sheet is then attached to a plate of zinc or pewter by being placed in contact with it under water. An india-rubber "squeegee" is then pressed over the film, and the water between it and the metal plate pressed out. The plate and film attached are then soaked in water till the superfluous bichromate is removed, and it is then ready for printing from in the press. By this ingenious method there is speedily and economically obtained the matrix, from which I understand as many as 1,000 or even 1,500 impressions can be taken without detriment to the quality of the prints. This is the heliotype process worked by Messrs. Edwards and Kidd at Willesden, near London.

Numerous and admirable examples of the results of both processes may be seen in the gallery of the Royal Albert Hall, some of the heliotypes being of large size.

It will now be well to take a survey of the other specimens of photography exhibited throughout the buildings, mainly, however, in the gallery of the Albert Hall.

In the Conservatory are hung some of Colonel Stuart Wortley's exquisite cloud pictures on opal glass, by which means they can be seen either as transparencies or otherwise. They have no quotations affixed to them that imply their being taken by moonlight, which, of course, they were not. Some of the enlargements by the same gentleman are also shown. In the same part of the building may be seen six copies from Turner's pictures, also on opal glass.

I may here refer to the very great disadvantages under which many exhibitors have laboured, and which has had the tendency of scarcely bringing up the display of photographs to the date of the exhibition. Contributors had to send in their specimens early in the year, so that in all probability the very latest productions of the art have been the results of last year's work, and consequently recent, and perhaps finer, results could not be shown. It was, probably, an essential rule, but it must have had the consequence named. In some instances the rule seems to have been relaxed, or exception made, for the display now far exceeds that made on the 1st of May. The French *annexe* has been opened, and for the delay in this there was painful and sufficient reason. It is not, however, quite so obvious why the Indian department should have been in long arrears. A number of Australian objects for exhibition did not come to hand till very late, for which, I believe, ample cause is shown. In this latter department, as I shall not again refer to it, I may mention that there are in it half-a-dozen very large likenesses by J. B. Newman, of Sydney, photographed direct; some views of ship-building yards and of one of H.M. steamers, by B. C. Boake.

Of portraiture there is a large and interesting display in the Exhibition; but, excepting that they may here be seen in one building, those who have not the advantage of visiting it may form a very fair estimate from what may be seen elsewhere. Well-known portraitists, both British and

foreign, send specimens of their choicest work. Fritz Leukhardt, of Vienna, shows a number of his characteristic studies of heads, in which he manages to produce such fine effects of lighting. No. 3,549 may be specially named, and No. 195, which is particularly fine. Emil Rabending and I. Lowry, of Austria, are in the same vein of work generally, the latter being very good in this department—the first showing some prints of horses and carriages in the pictures, also, that are excellent. Herr Strelitsky, a Hungarian contributor, has a frame of studies called "chromo-photographs." There are other foreign contributors, amongst whom M. Disderi's name is well and favourably known, as also Mr. Rejlander's studies.

English portraitists are, on the whole, fairly represented—the coloured portraits by Lock and Whitfield; the enamels by Mr. A. L. Henderson, some of which are coloured; the portraits by Mr. R. Slingby, of one of which the reporter on photography speaks very highly indeed; and Mr. R. Faulkner's photographs of children.

Landscape photography does not abound in the present exhibition, but there are some splendid specimens—one of which, of the unusual size of about thirty by twenty-four inches, deserves to be specially noticed and commended as a triumph over difficulties. It is No. 3,508 in the catalogue, produced by Mr. F. C. Earl.

Nearly unique in the superior production of combination photographs the time-honoured names of Robinson and Cherrill are pre-eminent. The prints exhibited cannot be the latest productions of the firm for the reason that has been given, as many were shown at one of the *soirées* of the British Association last year; but they stand almost alone as beautiful representations of waves and clouds in motion. The charming productions of Lieut.-Colonel Stuart Wortley in such work, and the careful results of Mr. Diston, are the only competitors I think of.

There are specimens by new processes shown by J. Maes, of Belgium, called "phototype," said to be permanent, and another by Captain Hannot, also of Belgium, called "heliogravure," though I do not know how they are produced. Mr. W. Woodhury, also, with his usual ingenuity, has exemplified a new engraving process that exhibits a grained surface in the relief of the prints.

Many names must needs be left unmentioned in this review whose works take very high rank; but it is not from any lack of appreciation that they do not appear here—it was simply apart from my intention to name everybody, and equally so to neglect any deserving men.

There are sundry photographs of interest in various parts of the exhibition, the most notable of which are a series to illustrate fish culture, oyster parks, &c., in the museum of Mr. Frank Buckland; and the water works of the city of Pesth, with its modern magnificent arrangements contrasted with the old method, when the supply was doled out by haggard, poverty-stricken men from carts drawn by miserable quadrupeds. There are copies of prints apparently, showing the various uniforms of the Prussian soldiers, and some very beautiful enlargements from medals, by Sergeant Spackman, R.E., of the Kensington Museum.

Unique, with one exception only, in the exhibition, and quite so as regards the perfection of the work, I must now refer to the photo-micrographs of your president, Mr. Higgin. They are in one of the educational departments of the Albert Hall. To my personal knowledge the rule as to their delivery at the place was literally attended to, and yet for a considerable period they were not exhibited at all. The printed regulations of the commissioners stated that *cases* would be provided for the works exhibited; but it appeared that *frames* were not expected to be wanted, and, as these were not found, delay took place. I have certainly no desire to pass hard criticism on those whose labours were both novel and onerous; but it would not have been difficult to send word to the contributor during some part of the three months that intervened from the time of their being deposited till the opening on the 1st of May. However,

they were ultimately framed and exhibited, and if they are passed by by multitudes who are not interested in them, there are many who can understand the triumph over difficulties, the labour, the enthusiasm that combined to produce such results. There are twelve of them, and the microscopic objects from which they were copied are exhibited in juxtaposition. These were perfectly mounted by the well-known microscopist, Mr. A. C. Cole. Mr. J. F. Iselin, the gentleman who writes the report on "The Materials for Science Teaching," thus refers to these productions:—

"There are, in this sub-section of the exhibition, some remarkably good preparations for use with the microscope. The importance of the microscope in teaching natural history can scarcely be overrated, but unfortunately its employment in classes or at lectures is limited. It is to obviate this difficulty that Mr. Higgin has photographed some of the microscopic preparations of Mr. A. Cole, in such a form as to be readily handed round to the students in classes for instruction in geology, entomology, anatomy, &c., and these micro-photographs have already been beneficially used in Rugby School. The specimens exhibited (6,730) possess the advantage of presenting at once to notice the object itself in the form of a microscopic slide attached to the enlarged photographs of the same. It is also proposed to make very considerable photographic enlargements of these micro-photographs for use in lectures, to supersede diagrams on the black board. Of course, no photograph can convey all the beauties revealed by the microscope, but the outline, at all events, will be given with absolute correctness, and so far a micro-photograph must be superior to a diagram or drawing."

I venture to think that these productions are underestimated in the above remarks. Outline could be roughly given in a diagram, but details as produced by this means are far too delicate and refined to be drawn by the subtlest fingers on a board. Great enlargements, such as those referred to, have been produced from Mr. Higgin's copies by the extremely clever manipulator, Sergeant Spaekman, before named, the diatom or object becoming under Mr. Higgin's system visible to the extent of two to six or eight inches across, and again magnified by Sergeant Spaekman's process to something like eighteen inches! I believe that some specimens have been sent for exhibition; I have not, however, been able to find them, though privately I have seen one or two, and been greatly delighted with them.

Mr. Higgin has just one competitor, and that in the French department, who shows some well-executed photomicrographs. They were executed, it seems, at the Laboratory of Natural History, but by whom I regret to say I do not know. One great desideratum seems yet to be the production of photo-micrographs for the stereoscope. Even examples of the experiments that have been made in this direction would have been of service, if a full description of the mode of producing them were given. They would, if successfully done, afford, perhaps, the most perfect means of illustrating microscopic objects, and the markings or structure, that have hitherto been devised by any means whatever.

In the French Court, amongst much that is bright and beautiful and artistic, photography occupies a fair position. In the Indian Department there is a good deal possessing photographic interest—some, as photographs, being below the average quality, but in subject instructive. The Bombay School of Art contributes many of these. I may name, as of value educationally, prints of Indian natives, groups of girls, and of the schools of the country. There are also some beautiful photographs of trees; some of rocks, by O. Mallite; and a series of the Great Temple of Amherst, by Shioshunker Narayer, that are well worth examination.

It remains to refer specifically to the application of photography to the ornamentation of porcelain. Specimens may be seen in case No. 74 of dishes, plates, teacups, and buttons so treated; thus adding another variety of interest to one of the most superb collections of ceramic work that, perhaps, has ever been collected together in this country.

The writer of this communication was induced by your President to prepare a paper for your Association, and on this subject, which, he is conscious, requires an abler pen to do justice to it, and is more than conscious has not been well done. Will the members accept the contribution from a former secretary—not as what he is satisfied with, but to keep up kindly remembrance and interchange of opinion? It has been prepared amid many distractions; and now that the grand exhibition is about to close—of course, for ever, as regards the objects exhibited now—a feeling of regret must needs be felt by those who have seen it in its beauty. It has, however, taught its lesson directly to half-a-million visitors at least, and through them, and the ample and able reports that have been written upon the various sections, will continue to influence beneficially the arts and industries of the world. The mental associations with it, both retrospective and prospective, are most agreeable and full of promise for good. The present charm of it would be out of the writer's power to describe as it ought to be done. It was higher than a mere intellectual treat, intense as that was; and, independent of the scene, and yet adding zest and delight to it, the eye could at will rest upon the flowers and foliage of the adjoining gardens and park; the ear could, from time to time, listen to delightful music; you could walk on a terrace or lounge in a piazza to breathe the open air; you might, in fact, live in the buildings, and have the taste gratified and the mind regaled from hour to hour. In the matter of our special interest it has seemed to grow and improve; and in this department, as in the others, I believe that it will have fully answered the purpose for which it was established. As a vast success I will not cavil at some very obvious faults, most of which may be best discussed elsewhere, and many of which, I believe, by such discussion, may be altogether eradicated from the next Exhibition in 1872.

ON THE ACTION OF SENSITIZERS.

BY DR. H. VOGEL.*

THE interesting communication of Dr. Schultz Sellae, upon the sensitiveness to light of chloride, bromide, and iodide of silver, contained a statement to which at the time of its publication I affixed an editorial note; this statement was as follows:—"The so-called sensitizers are without any influence at all upon wet plates." The affirmation here made disquieted my mind somewhat at the time, and has induced me to undertake a further investigation of the subject, the results of which I now publish.

In my first paper upon the action of sensitizers, I proved that iodide of silver, which is of itself but slightly changed by light, is, nevertheless, subject to a very rapid alteration of colour when in contact with nitrate of silver, tannin, pyrogallie acid, nitrate of mercury, salts of tin, &c., and I explained this by the fact that all these solutions have a powerful affinity for iodine, and absorb it greedily, assisting in this way the decomposition of iodide of silver by light. For this reason I named such bodies sensitive-makers, or sensitizers.

I was at the time prevented by other business from continuing my work, and had, therefore, no opportunity of proving whether with the acceleration of the chemical change there occurred in all cases an acceleration of photographic sensitiveness also, or, in other words, in its capacity to blacken in contact with the developer.

Several of the above-named bodies, which I have, as a class, denominated sensitizers, have been proved to possess the qualification of improving photographic sensitiveness, as, for instance, nitrate of silver; and even Dr. Schultz himself remarks that "the quantitative sensitiveness is in such plates less (viz., those prepared with an excess of iodide of potassium), an iodide of silver plate thus produced requiring

* *Photographisches Mittheilungen*

an exposure of ten or twenty times that necessary for a plate treated in a silver bath."

In the above sentence, then, it is admitted that iodide of silver in the presence of a nitrate of silver solution is much more sensitive; that is to say, in the presence of a favourable sensitizer. Dr. Schultz does not specify with what other sensitizers he has experimented; he alluded casually to chloride of tin, which I have likewise essayed, as an iodine-absorbing substance, and found capable of decomposing iodide of silver and of forming chloride of silver, thus explaining the very visible colouring of iodide of silver when exposed to light in the presence of chloride of tin. This was, however, but a special instance, which may be quite correct, but, nevertheless, it does not justify the affirmation that all so-called sensitizers (iodine-absorbing substances) are without influence upon wet collodion plates. As soon as the compounds interchange with one another, then the circumstances, as connected with iodide of silver photography, are altogether changed.

Bodies, therefore, which destroy iodide of silver cannot, of course, even when they readily absorb iodine, be employed as sensitizers for iodide of silver. Any more can those substances be chosen which, in the presence of light, rob reduced iodide of silver of its capacity of development, as occurs, for instance, with iodide of potassium. In order, however, to discover if also other sensitizers (iodine-absorbing substances), as Dr. Schultz states, are without all influence, I exposed to light a number of wet iodide of silver collodion plates, free from bromine, in the presence of different chemically iodine-absorbing substances. My iodized collodion was prepared from:—

Iodide of cadmium	2 parts
Alcohol	30 "
Normal collodion containing two per cent. of pyroxyline	90 "

The plates were coated with this compound, and sensitized in the ordinary way; the excess of silver was washed off, the last trace being removed by a sojourn of several hours in a solution of iodide of potassium; and, finally, the films were carefully washed. Plates of this kind, as Lea has already proved, are of themselves sensitive, and yield a picture after very long exposure and development by means of a mixture of sulphate of iron and citric acid.

The plates, after systematic washing, were divided into halves, and before exposure one half was covered with a solution of the substance to be tested, and the whole plate then exposed at once in a stereoscopic camera before a white plaster statue; they were afterwards thoroughly washed, and both halves developed with a solution of sulphate of iron and citrate of silver.

In the first place I tried in this way a solution of pyrogallie acid, one part of the acid to twenty-five of water; iodide of silver when freely exposed becomes much more quickly coloured in the presence of the pyrogallie acid solution than when merely immersed in water. An iodide of silver plate exposed in the camera after treatment with the solution yielded a much more vigorous image than the pure iodide film.

Pyrogallie acid solution improves, therefore, not only chemical, but likewise photographic, sensitiveness.

The same was found to be the case with a solution of ferrocyanide of potassium employed in the proportion of one in ten, the chemical and photographic sensitiveness of which has already been proved by Hunt and Reissig. The half-plate exposed in the presence of yellow prussiate of potash yielded, with an equal exposure, a much more vigorous print than that afforded by the other half of the exposed plate.

I finally tried sulphate of soda, which is likewise a substance with a strong affinity for iodine. Iodide of silver exposed to free daylight in its presence soon assumes a greyish tint, and an iodide of silver plate exposed in the

camera gave a much more vigorous image when treated with a solution of this compound.

Caustic potash, also an iodine-absorbing body, improves photographic sensitiveness when, in the form of a dilute solution (1 : 100), it is placed in contact with iodide of silver. A perfectly fresh solution of arsenate of soda behaved in the same manner. It is, therefore, placed beyond all doubt that Dr. Schultz goes too far when he says "the so-called sensitizers are without any influence at all upon wet plates;" but that there exist a series of bodies which greedily absorb iodine, and which not only accelerate change of colour, but accelerate, likewise, very considerably the photographic sensitiveness of iodide of silver.

BLISTERS IN ALBUMENIZED PAPER.

BY DR. J. NAUHAUS.*

ONE of the most distressing defects to be met with in the ordinary printing process is the occurrence of blisters in albumenized paper, the phenomenon showing itself, as a rule, during the washing of the pictures after they come from the fixing bath. Those more minute bubbles which often cover the whole surface of the paper are without importance, as they always disappear again when the material is dry; but it is the large, boggy blisters, which swell up and cover sometimes the space of an inch square, and which, when they collapse, spoil the picture by the numerous folds thus produced, that create such heart-burnings to the photographer, and bring him sometimes to a state almost of desperation.

To remedy these serious defects many different propositions have been brought forward, all of which are without avail; and lately Mr. Clemons, in the PHOTOGRAPHIC NEWS, has proposed the employment of alcohol in a weak sensitizing bath for the purpose of coagulating the film of albumen, and thus preventing its separation from the paper. This last method I have found, unfortunately, of no value, for some experiments recently carried on at the studio of M. Danz yielded but a negative result. We are, therefore, still without a remedy for this glaring defect, although its importance is greater than many other matters connected with photography, and calls for a speedy and reliable solution.

The difficulty cannot, indeed, be met until the true cause of its origin is discovered, for as yet we are quite ignorant of the reason of its appearance. Till we have found out so much, the problem cannot be solved; and all proposals hitherto made are simply so many long shots or flukes in the dark.

ON THE PREPARATION OF GLAZED AND ENAMEL PICTURES.

BY A. SCHRADER.†

THE stretching of the pictures is a most important point in this process. My manner of applying an enamelled surface, which has only been elaborated after many experiments, and which allows the operator to work speedily and with certainty, is easily explained. The principal thing to be observed, in order to ensue a good result, is to preserve the gelatine in a warm and fluid condition when applied to the picture stretched upon the glass plate; and this I ensure in a very certain manner.

I have had constructed, according to my design, a warming apparatus, which is, indeed, not much more than a hot water bottle having a flattened surface, upon which the glass plate coated with collodion can be laid. The apparatus is of white metal, and its height and breadth regulated by the size of the plates to be employed in the manipulations.

A number of well cleaned glass plates (patent plate)

* Helios.

† Licht.

are first coated with normal collodion (four per cent.) and allowed to dry for ten or twelve hours in not too warm a locality, free from dust. The gelatine is meanwhile dissolved in warm water over a spirit lamp, and made of the same consistence about as the collodion employed; the solution is filtered through linen in a porcelain dish, which latter is kept in a warm water bath, so as to be maintained in a fluid condition.

The warming apparatus is now filled with hot water, and a collodionized glass plate laid thereon, collodion film uppermost; a picture, which has been mounted upon cardboard is dipped into the gelatine, well drained, and laid (face downwards) upon the glass plate, the print being smoothed down by means of a paper folder, to chase out any air-bubbles, and to prevent creases or unevenness of any kind. As soon as this has been done, and the two surfaces are well in contact in all parts, the plate is put on one side, and the same operation repeated with other pictures.

When the whole series of plates has been treated in this wise, the pictures are next covered at the back with thin paper, and allowed to dry in a suitable locality. This process will take some ten or twelve hours, supposing the temperature is not a very high one. The application of a sheet of paper on the reverse of the prints has the twofold object of preventing the picture from leaving the glass, and of covering over the film of gelatine at the back, which imparts to the picture an uncleanly appearance. When perfectly dry, a knife is employed to cut round the outer margin of the picture, and the latter then will, most probably, leave the glass of its own accord. The prints are subsequently trimmed in the usual manner, and pressed in a suitable bomb or cameo press.

With a little practice, and some attention to the manner of conducting the manipulations as above described, any operator will be able to produce good results.

NOTE ON THE COLLODIO-BROMIDE DRY PROCESS.

BY DR. H. VOGEL.*

THE recent communication of Colonel Stuart Wortley has induced me to undertake a series of investigations upon dry processes in the laboratory of the Industrial College at Berlin. In these experiments the comparatively easy and reliable nature of the manipulations, as stated by Stuart Wortley, was evident. One of the principal points left in uncertainty, which ought to be pointed out, however, is the operation of acidifying with aqua regia, for this, of course, varies very much in strength, according to the specific gravity of the nitric and hydrochloric acids employed. The former generally possesses a gravity of 1.2, although there is one of a stronger description of 1.4, and it is the employment of this that Carey Lea recommends. Only the weaker acid, however, was at my disposal, and of the aqua regia prepared therewith I added three drops for every 31 grammes of the bromized collodion.

The drops, of course, vary again in size, according to the orifice of the dropping bottle and the temperature; and as the success of the process depends in the main upon the particular amount of acid contained in the collodion, it is necessary that we should possess more specific information in regard to weight and measure.

Another point of importance is the solution of the nitrate of silver in alcohol to be used for sensitizing the collodion. One gramme of nitrate is dissolved only with great difficulty in 11 grammes of alcohol, even when this is brought to a simmer; very fine pulverization of the nitrate, and the addition of a drop or two of water, assists materially in effecting a complete solution. I divide the measured quantity of alcohol into three portions, of which I pour the first into the test tube containing the weighed amount of silver, and bring it to a simmer; the clear liquid is poured

into the bromized collodion, and the process repeated until the whole of the silver salt has been dissolved.

It is remarkable that notwithstanding the strong dilution with ether, the collodion, nevertheless, holds a pretty large quantity of bromide of silver in suspension, and only after remaining for some days is there any precipitate formed.

The large proportion of ether in the collodion rendered it difficult to prevent the formation of wave lines upon the plate in hot weather, and these gave rise to dark lines upon development.

A comparatively large number of plates may be coated with a small quantity of this collodion. I prepared ten small and two large plates, presenting a surface of 530 square inches, and expended but $38\frac{3}{4}$ cubic centimetres of the sensitized liquid in the operation. I compared this to the employment of ordinary collodion prepared according to my recipe, but the expenditure, of course, very naturally varies according to the manner of applying the liquid adopted by the operator. My pupil, M. Gaede, who coats very sparingly, employed $9\frac{3}{4}$ cubic centimetres of ordinary alcoholic collodion per hundred square inches, while I employed, with more liberal handling, $14\frac{1}{2}$ cubic centimetres to cover the same surface; or, in the case of the bromide collodion, 7.8 cubic centimetres per hundred square inches. Of the last-named material three cubic centimetres suffice for coating a triple carte-de-visite negative, and it will thus be seen that this economical expenditure is of some importance from a commercial point of view.

The application of the gum is a simple operation, as is, likewise, that of development. Stuart Wortley says that with him the picture appears, on the application of the pyrogallie solution, without the aid of ammonia; but this did not happen with me, except in the case of very long exposures; on the addition, however, of a few drops of the bromide of potassium and ammonia solutions, the picture forthwith appeared. An exposure about four times that of wet plates proves to be sufficient for the purpose.

The negatives came out very clean, but required a little subsequent intensification. A peculiar defect was, however, to be remarked on development, viz., the creation of a marbled appearance. The whole plate became covered with numerous bubbles, and the film dissolved away. These defects are to be avoided, however, if the plate, while being prepared, is washed after immersion in the solution of gum; such plates, however, according to Carey Lea, are apt to fog.

By the employment of a gum solution of only a fourth the strength, the fault may be remedied. Wortley writes that it is well to cover the back of the plate with a black pigment of some kind; this plan, however, appeared to me somewhat complicated, and I overcame the difficulty by the simple plan of using black pigment tissue. This tissue is dipped into water, and laid in a moistened condition upon the reverse of the plate. It attaches itself very tightly to the glass, but is readily removed afterwards by subsequently wetting the plate, being then capable of further employment.

I made an experiment to ascertain whether the benefit accruing from the use of a black screen of this kind is really very important. A plate was covered half the way up with black paper, and then exposed in a stereoscopic apparatus. The result was, that behind the screened portion of the plate a more vigorous and detailed image was observable than where the glass had been left uncovered. The backing up of the plate in this manner is therefore to be recommended.

Finally, I was desirous of knowing more of the nature of the rôle played by the chlorine in the process. I prepared two collodions, the one with two grammes of bromide of cadmium in the 120 grammes of normal collodion, and the other with two grammes of the same salt, together with 0.8 gramme of crystallized chloride of calcium. Both collodions were sensitized in a bath free from iodide, and exposed in a wet state and developed with iron. There was no very perceptible difference in the sensitiveness of the films; the

* Photographische Mittheilungen.

pictures obtained upon wet plates were, however, much more intense than the Wortley dry plates exposed at the same time, although they did not exhibit any greater amount of detail.

From the above experience it does not appear, then, that the presence of chlorine has a peculiar influence upon the sensitiveness of the film, and that the effect of the aqua regia is to set free some of the bromine from the bromide of cadmium, which then resets upon the alcohol and ether of the collodion. Further research must teach us whether the same end cannot be more easily secured by the simple addition of free bromine instead of aqua regia.

NOTE ON DEFECTS OF LIGHTING IN STEREO-SCOPIC PICTURES.

BY DR. VOGEL.*

It not unfrequently happens that the two lenses of a stereoscopic camera are unequal in power; and the consequence is, that when an exposure is made, one picture appears always more fully exposed than the other. In an early camera of mine, the two Dallmeyer instruments were so different, that while five-and-twenty seconds sufficed for the full depiction of one image, as many as thirty seconds was necessary for the other. This is obviously a serious defect, especially when the apparatus is employed for instantaneous pictures or very short exposures. Stopping down of the more powerful lens may be resorted to, but at the cost of much light.

A very simple means is, nevertheless, at hand, consisting in the manner of putting the plate into the dark slide. It is known that the thinner side of a collodion plate—or, in other words, the side held in the hand during coating—is less sensitive than the thicker end, where the collodion has been drained off, and of this circumstance we may readily avail ourselves. The thicker portion of the film is placed in the slide, so that it comes opposite to the weaker lens, and in this way a much more evenly exposed picture will be obtained. As it is recommended always to keep the edge of the plate, where it has been held, downwards, it is necessary that the less powerful lens in the camera should be on the left side.

The remarkable difference in the sensitiveness of the thick and thin portion of a collodion plate has often induced the belief that the lenses of a good stereoscope are of uneven power. As a general rule it is the right side of the plate which appears the thinner and less exposed, and for this reason one is often led to believe that the right lens is the weaker of the two. A ready means of verifying this result is to change the plate round, so that the thick and thin ends of the films are transposed, and then the fallacy of the belief is at once apparent.

Recent Patents.

ANOTHER PHOTO-COLOGRAPHIC PROCESS.

BY J. R. SAWYER.

THE following provisional specification describes another method of obtaining printing surfaces for producing images in fatty ink, and is analogous to the Albert process. Messrs. Sawyer and Bird, of Norwich and Regent Street, are, we believe, prepared to work this process commercially:—

This invention is based upon the well-known property possessed by gelatinous and albuminous matters when mixed with bichromate salts of being sensitive to the action of light, of being rendered soluble or insoluble in water according to the degree of intensity of the light, and on the property possessed by such compounds of receiving or rejecting the ordinary commercial printing ink in accordance with such solubility or insolubility in water.

My invention relates to improved methods of obtaining printing surfaces, by which not only are the most delicate detail, light, and shade of an ordinary photograph preserved, but any writing, lettering, drawing, addition, or alteration may be made, and the surfaces so prepared printed from, either by hand or mechanical power, in the ordinary lithographic or copperplate printing press, and with extreme rapidity, using the ordinary lithographic inks in all colours and shades.

In carrying my invention into effect I proceed as follows:— Upon a surface of metal, stone, enamel, glass, porcelain, or other suitable material, I place a layer of gelatine dissolved in water, to which has been added a certain quantity of bichromates of ammonia or potassium, either separately or mixed together. This layer is dried by hot air, and kept perfectly level during such drying; it is then exposed under a negative to the action of light. When the image can be perfectly made out, and the high lights are on the point of turning brown, the plate is removed from the light, and placed for one hour in a dish of cold water, which is changed three or four times during that period; it is then removed, well washed under a tap, and allowed to dry and harden in a temperature of from 80° to 100° Fahr. The plate, after a lapse of forty-eight hours or more, is then placed upon the carriage of an ordinary lithographic press, the bed of which is fitted with a piece of soft wood of the size and thickness of the largest lithographic stone the press will take, the plate being kept in its place by wooden studs which drop into holes made in the wood, and which are a trifle lower than the plate itself. I then damp the plate with a soft sponge, allowing the gelatine to imbibe as much water as possible. I then surface dry it with a very fine soft cloth, and proceed to roll in, with an ordinary ink roller, re-transfer ink, such as is used in the ordinary transfers of plate to stone or stone to stone. When the ink appears to have properly permeated all the delicate lights and shades of the image, I place upon the plate a piece of transfer paper, coated or not coated, according to the ultimate effect desired. Upon this I place five or six sheets of fine soft paper, fold down the tympan, and after adjusting the pressure, carry it beneath the scraper of the press; the paper is then raised from the gelatine surface, and if the print is entirely perfect, is ready for the next operation, which is as follows:—

The picture, cut to the exact size and shape it is desired to be when finished, is damped by being placed between damp blotting-paper. In the next place, a polished lithographic stone, warmed to a temperature of about 100° Fahr., is placed upon the bed of an ordinary lithographic press accurately adjusted and levelled. The before-mentioned damp print is then placed in the required position on the stone, on which any writing, lettering, or design may have been previously added, either by writing or lettering on the stone, or by the ordinary mode of transfer. The print, being in its proper position, is then covered with soft paper, the pressure adjusted, and the stone is passed several times through the press. The back of the print, which now adheres to the stone, is next sponged with water, the stone turned and passed through the press in an opposite direction, after which the back of the print is softened with water, and gently rubbed with the fingers until the paper can be easily removed from the stone. The impression is then gummed and inked up like an ordinary lithographic transfer, and, if the design or writing has not been previously added to the stone, it may now be added. The image on stone may be strengthened, weakened, or modified by touching up or erasing, and when considered satisfactory, the whole may be printed in the usual way, either by hand labour or mechanical power.

The operation thus described is suitable for prints produced from hard surfaces, such as glass, porcelain, enamel, stone, or wood; but another method which I use is effected as follows:— I prepare paper with gelatine and lampblack, or obtain it ready prepared of the Patent Autotype Company, whose licence I hold. Such prepared paper or tissue I float on a solution of bichromate of potash, which renders it sensitive to the action of light, and when dry it is exposed under a negative for the necessary period. I then immerse this tissue, bearing the latent image, in cold water, and, when softened and rendered limp, I lay it face downwards in the proper position on a polished lithographed stone, or on plate glass which has been previously coated with a mixture of albumen, gelatine, and bichromate of potash, making it adhere firmly by means of an instrument called a "squeegee." I then immerse the stone or

* Photographische Mittheilungen.

glass, face downwards, in water of a temperature of about 120° Fahr.; this in a short space of time removes the paper and the surplus gelatine and carbon, leaving the picture in all its delicate lights or shades upon the stone or glass. I then proceed to add any writing, lettering, or design as before described, roll in with litho. printing ink, and work off in an ordinary press.

Sometimes I find it advisable not to transfer the prepared tissue after its exposure under the negative at once to the stone or glass; in such cases I coat the face of it with a solution of India-rubber in benzole, and place it face downwards on a piece of paper, also coated with the India-rubber solution, making the two adhere perfectly. On placing it in warm water the paper upon which the gelatine and carbon originally was soon floats off, and the picture begins to develop by the removal of the surplus gelatine and carbon. When the picture is complete and satisfactory I cut it to the proper shape and size, lay it upon a polished lithographic stone, or on plate glass previously coated with a mixture of albumen, gelatine, and bichromate of potash, press it into intimate contact, and, when dry, remove the adhering paper by means of benzole; the drawing so placed on the stone is then ready for inking and working, as before described.

It occasionally happens that it is necessary to print only a small number of copies, and in that case it is desirable to print them from the original gelatine film; the difficulty has heretofore been to render that film sufficiently hard and tough to enable any number of copies being obtained from it, and many ways have been suggested of meeting this difficulty. I find that a spirituous solution of hard gum or lac—by preference, white lac—answers the purpose exactly; other hard gums may, however, be used. I add ten grains of best white shellac dissolved in half an ounce of strong spirits of wine to each pint of gelatine mixed with the bichromate salts; the aqueous solution will at once precipitate the gum if the solution containing it is not added carefully a little at a time; but if this precaution is taken, and the mixture is vigorously stirred during the addition, sufficient of the gum will remain in the gelatine to render the resulting film exceedingly hard and tough, and perfectly capable of yielding several hundred copies.

Correspondence.

DEVELOPING COFFEE PLATES.

SIR,—For the information of coffee plate workers (not coffee and gum), I beg to state that I have been using carbonate of ammonia for developing for some time. I find that if you develop a little with plain pyro first, and then add to the ounce of developer about six drops saturated solution of ammonia, the picture will jump out instantly, without the slightest tendency to fog. After-intensification proceeds quite satisfactorily. M. De Constant objects to the use of ammonia in plain coffee plates, as tending to fog, which I find would be the case if you pour on the ammonia first. A CONSTANT READER.

GREEN TINT IN COLLODIO-BROMIDE PLATES.

DEAR SIR,—Your correspondent "W. G." has done me the honour to notice a letter of mine on the green tint in the collodio-bromide plates. I do not think he has treated me fairly in the matter, as I had had no experience in Col. S. Wortley's process then, though I since have. I meant to express the opinion that free nitrate of silver is *not* necessary to obtain a green negative, but that where there is excess of bromide, and a certain development used, the green tint can be obtained. And I hold to this yet; and you, sir, in those plates of mine you saw tried, can bear testimony to the truth of my assertion.*

I am glad Col. Wortley has adopted the gallic acid instead of the pyrogallic; and in his gum preservative my experience coincides with his, that plates prepared with the latter do not keep. Plates prepared with the gallic acid will keep indefinitely, so long as free nitrate of silver is not in direct contact with it.—Yours faithfully,
W. DE W. ABNEY, Lieut. R.E.

PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.

DEAR SIR,—I sent the enclosed letter to the *Daily Telegraph* as a correction to their statement, but as they denied me the justice

* We described the fact at the time.—Ed.

of inserting it, may I beg of you the privilege of a small space in the NEWS.

"To the Editor of the DAILY TELEGRAPH.

"SIR,—In your article on Photography at the International Exhibition you make the following quotation:—'It is owing to him [Mr. Mayall] that Mr. England's views of Switzerland, Savoy, and Italy—perfect specimens of their kind—enrich the gathering.' Now I cannot conceive in what way I am indebted to that gentleman for the privilege of being represented at the International Exhibition, or for any merits my work may contain. My experience of nearly twenty-three years dates back almost as far as Mr. Mayall's, being a fellow-worker in the field when Daguerre's beautiful process was in the height of its popularity. My intimate knowledge of Mr. Mayall convinces me he lays no such claim as that stated. I may also say that landscape photography has been my special study for many years past, a branch of our beautiful art that gentleman has, I believe, paid no particular attention to. Thanking you for your kind mention of my work—I remain, sir, yours obediently,
"W. ENGLAND."

PHOTOGRAPHIC ASSISTANTS.—YELLOW SPOTS AND BLISTERS.

DEAR SIR,—Complaints are repeatedly made by your correspondents as to the cause of yellow spots in the prints. I find that by the following plan they are avoided. Carefully filter the silver solution before sensitizing; keep the sensitizing room well ventilated, avoid a smoky room, burn no coke on the fire, and keep your paper at a good distance; dust your negative well before printing from it (especially if it is touched with a lead pencil); keep clean hands in putting the prints into the washing; keep toning solution perfectly clear by filtering before using, and give two or three good washings, to get rid of every trace of toning solution before commencing to fix; dip each picture (face downwards) into the fixing solution, the fixer rapidly placing his hands on each picture to push it under the hypo, and then off; fix not over many at a time, turn over continually, and as the air bubbles make their appearance on the picture, wipe off; if blistering, have a dish ready with (say) half a gallon of water, one pound of salt, and one drachm of ammonia; mix this, and take the prints from the hypo, place them directly (face downwards) into the solution, and keep in ten minutes. Yellow spots and blisters will be avoided.

Indisposition and press of business have prevented me from saying a few words in answer to some remarks made from the able pen of Mr. D. Welch. In his first letter caste is distinctly advocated, but in his second he as frankly recants, and is more explicit and open with his views, and how to procure lads suitable for training as assistants.

Granted that a boy such as he advocated is within reach of every photographer: what then? Are all who call themselves photographers able to train a boy for an assistant such as would suit Mr. Welch? Here you will have to come back to my first letter, and my assertion that good assistants may be had by enquiring into the ability of previous employers.

In one of his other letters Mr. Welch makes (as "Little Photo" justly and truthfully asserts) a sweeping assertion by libelling all assistants. I quite agree with "Little Photo," that plenty of good assistants may be had, in spite of the statements to the contrary of Mr. Welch and others. Sixteen years' experience in photography and manager in different houses have proved this to me.

Mr. D. W. next speaks of not having seen any work by assistants exhibited. Education, no doubt, has done much to raise one country above another, and some may even have had that sense of duty to their children that force by law was unnecessary to send them to school; yet, even in the highest advanced nation in education (such as my country is) I do not recollect having seen photographs labelled, "Done by my assistant," although thousands of photographs are exhibited which are the production of assistants. Education has not had such an influence over principals as to induce them to do justice to their workmen by acknowledgment that such and such a picture was the idea or production of their assistants. When such an influence prompts employers, Mr. D. Welch will change his mind respecting assistants. The request of "Little Photo" is but just, and I trust that Mr. Welch will give his definition of an assistant operator.

Apologising for the space in your valuable paper,—I remain, sir, yours truly,
J. SCHMIDT.

COL. STUART WORTLEY'S DRY PLATES.

SIR,—I have looked in vain from week to week, expecting to see in the PHOTOGRAPHIC NEWS some further notice from those who have tried Col. Stuart Wortley's dry plates. They are most excellent, and I think that every photographer must feel indebted to him for working out the details (if he has done no more) of this most interesting branch of the art, and for supplying a long felt want.

I send you some studies of trees, taken last week, for it is particularly in taking foliage that these plates so far exceed any others that I have tried. I shall be happy to give any of your correspondents the benefit of the little experience I may have in working them.—I am, yours faithfully, EDMUND J. WILSON.

[The examples are excellent.—ED.]

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE usual monthly meeting of this Association took place on Tuesday, the 26th inst., at the Free Public Library, William Brown Street, the Rev. T. B. Banner in the chair.

The minutes of the previous meeting were read and passed.

The SECRETARY announced that he had received an answer from Messrs. Robinson and Cherrill, and that they were willing to supply copies from the two subjects chosen for presentation prints.

The President then called upon the Secretary to read a paper by Mr. Joseph Guyton, "On Photography in the Great Exhibition of 1871" (see page 473), and the meeting passed a cordial vote of thanks to Mr. Guyton for his valuable contribution.

Mr. Brown exhibited several carbon prints by double transfer which were very successful.

Mr. Atkins exhibited a very simple and ingenious arrangement for a dropping bottle. It was a two-ounce bottle, with a piece of glass rod bent at the top end and placed in the mouth of the bottle, from which the drops came off with great regularity.

An animated discussion took place as to the merits of the different formulæ for the collodio-bromide process; and it was the opinion of all the members present that there has been nothing yet brought forward to surpass the simple formulæ of Messrs. Sayce and Bolton, published in 1865.

The meeting was shortly afterwards adjourned.

Talk in the Studio.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—Members of this Society should bear in mind that it will resume its meetings on October 12th at the City of London College, when Mr. Croughton will read a paper entitled "Carbon as a Base for Finished Work, with Examples on Ivory, Porcelain, Panel, Canvas, &c."

MESSRS. TUOHY AND CO.'S RETOUCHING OF NEGATIVES.—A singularly unfortunate error occurs in the paragraph in our last, referring to the retouching of Messrs. Tuohy and Co. Owing to a printer's error, which, in our absence from home, passed uncorrected, we are made to say that their work gives "a fine but stony texture" to the photograph. The sentence should have been "a fine but *not* stony texture." The especial charm of their work is that the delicate softness of the flesh is perfectly preserved, freedom from the hard effect sometimes produced in retouching being admirably secured.

SUBMARINE PHOTOGRAPHY.—A correspondent of the *Echo*, writing from Florence, says:—"The Ruballino Society have lent their steamer *Sardinia* to Mr. Josellis for his marine explorations. Mr. Josellis has invented a marine photographic apparatus connected with a diving bell, by which photographs of the 'world below the sea' can be taken. This diving-bell can be made use of in many ways, but one can understand how useful to natural science a series of negatives (to be afterwards enlarged) of the myriads of zoophytes found in the subaqueous world would be."

To Correspondents.

DR. LIESEGANG.—Very many thanks for your communication and interesting enclosure. In our next. We will write soon.

H. FIENFIELD.—Unless a very strong nitrate bath be employed, a slight washing of not exceeding five or ten minutes is sufficient prior to toning. 2. You may place 100 prints in the washing water at once, and then commence placing them one by one in the toning bath, to secure perfect and even immersion of each print. Keep them in motion, constantly turning them over whilst toning and removing each one rapidly, as soon as it is sufficiently toned, into another dish of water, in which to rinse prior to fixing. 3. The colour of the print you enclose is very good. 4. We prefer the printing bath neutral; it is less liable to dissolve the albumen if a little acid, but gives the richest results when neutral, or even alkaline. The addition of other nitrates is approved by first-class printers. The addition of alcohol is also undoubtedly valuable when a weak bath is used.

AN ANXIOUS PRINTER.—We have never seen prints assume the appearance of that enclosed after mounting. The mealy effect is similar to that produced by using an unripe toning bath, in which free chlorine bleaches the print in an irregular, granular manner. Possibly the use of acid paste or gum, or the use of some mounting preparation containing salt, may have caused the defect.

H. M.—Prints are better rolled before colouring. The ordinary camel's-hair or sable pencils are used. See the shilling Manual of Harmonious Colouring, issued by the firm whose colours you mention.

C. TREMBATH.—We have found that after the image was out, the plentiful addition of the ammonia solution readily gave density. If that fail, fix the negative; wash well, and intensify with pyro and silver. This will usually give great density. 2. Thanks; we shall have pleasure in receiving the description of your washing machine.

BAYNHAM JONES.—Although a roll of metal electro-plated with nickel remained in a solution of nitrate of silver for half an hour without showing any trace of action, we should hesitate in recommending the use of metal vessels coated with nickel for bath, &c. Even suppose the nickel withstood the action for months or years, as well as for minutes, the risk of scratches, &c., setting up action would be serious. The nickel coating will find many valuable uses, however, in which the risk is less imminent than in vessels for silver solutions, such as scale pans for chemicals where fragile glass has hitherto been used. With a careful experimentalist such vessels might be used for dishes, we apprehend, and for a variety of such purposes as a mechanical amateur may doubtless put them to. We regret that we can give no details of the mode employed, as the company publish no particulars, probably wishing to retain the matter in their own hands. Should we learn details we will let you know. The weather has been and is sadly unphotographic.

W. L.—We readily appreciate the value of any method of simplifying the trouble of recovering the metals from residues, and shall keep a careful eye on any communication relative to the process in question; but we should hesitate very seriously to recommend photographers to pay a consideration for any secret process without very perfect assurance of its value. "Buying a pig in a poke" is proverbially an unsafe thing. The process might turn out one of the old and known processes hitherto unknown to the vendor; it might turn out uncertain, or incomplete; it might be simple to an experienced chemical manipulator, and quite worthless to the less experienced photographer. If we hear more of an assuring nature we will bear in mind your proposal. 2. Your experience with the old collodion is very interesting. Have you any additional particulars? A description of the process, although it is not new, would be interesting for publication.

LEO.—You do not state any details of the process you have used, or the mode of transferring you have attempted, of which there are several, hence it is difficult to point out the source of your failure. If you have a perfectly clean piece of plate glass, and use the wet transferring process, leaving the plate to dry spontaneously, the paper and print will instantly peel off the glass, without even pulling. The use of wax or grease on the plate facilitates removal where difficulty exists. See an article in our last YEAR-BOOK, and various articles in preceding YEAR-BOOKS and volumes of the NEWS. When we know the method of toning you adopted, we can probably suggest the cause of the brown tint in the lights.

J. CALDWELL.—Thanks. We will publish all the information you obtain by experiment or communication.

A. SEELEY.—The letter has been forwarded.

T. SINGLETON.—Thanks.

D. DE CLERCY.—Your letter and enclosure have been handed to our publisher, and will, doubtless, receive attention.

J. C. S.—For obscuring glass, to prevent being overlooked, and, at the same time, obstruct as little actinic light as possible, a thin coating of starch applied hot answers well. Also the stippling mixture given in our YEAR-BOOK for 1870, by Mr. E. J. Edwards.

A. A. INGLIS.—We do not know, but will try to ascertain.

A PRACTICAL MAN and J. MARTIN.—Received.

Several Correspondents in our next.

Several articles in type are compelled to stand over.

THE PHOTOGRAPHIC NEWS.

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ACID CONDITIONS OF THE TONING BATH.

THERE can be little doubt that the introduction, a dozen years ago, by Mr. Waterhouse, of the alkaline gold bath, for conducting the toning process separately from that of fixation, in place of the mixed bath of hyposulphite of soda and gold for fixing and toning at the same time, was a great step in photography, as materially contributing to the permanency of prints. But considerable doubt has been felt by thoughtful experimentalists as to whether the term, implying the necessity of alkaline conditions, and the condition itself when present, ought not to rank amongst the category of popular errors. In our own practice, and in our teachings, we have generally insisted on neutrality, whilst Mr. Bovey has unhesitatingly pointed out the superiority of an acid bath. In the majority of the most popular and useful formulæ for toning baths, the aim is either to secure a neutral or an acid solution. In the lime bath, for instance, the solution is neutral; whilst in the acetate bath, one of the most extensively used of any, a slight trace of acid is present when the bath is ripe for use.

The real object of adding an alkali to a solution of chloride of gold to render it fit for toning purposes, is to get rid of free hydrochloric acid, the presence of which is mischievous in several ways. It tends to bleach the print and to produce mealiness, and it also retards the precipitation of the gold on the print. In many of the toning baths the salt added to the gold solution simply neutralizes the free hydrochloric acid, and if added in such proportion as to cause an alkaline condition, the toning bath will not keep. When a salt like acetate of soda is added to the solution, it is slowly decomposed by the free hydrochloric acid which is neutralized, acetic acid being liberated, which does not bleach the print, and facilitates the deposition of gold. In the platinum toning bath, which we recommended some time ago, the solution was neutralized, and then rendered acid with nitric acid, and was found to answer exceedingly well. We have just been favoured by Dr. Liesegang with some examples of a gold toning bath made on precisely similar principles, the details of which he gives on another page. The results are admirable, and the bath described seems to possess qualities which strongly recommend it to photographers for general use; it seems, therefore, well worthy the attention of our readers.

PRINTING THROUGH COLOURED GLASSES.

THE use of coloured glasses, or retarding media, through which the light is transmitted for printing from imperfect negatives, has received considerable attention of late in Germany and America. Old photographers are well aware of the increased brilliancy of the impressions

obtained from weak negatives by printing in a weak diffused light; but some members of the German Photographic Society in New York have carried the matter much further, and, as it is alleged, with considerable advantage. Our Philadelphia contemporary, reporting a recent meeting of the Society, says:—

“The committee for the best method of printing weak, undertimed negatives, laid numerous prints before the meeting. Mr. E. Krueger had tried glasses of different colours, of which the dark blue gave the best result; but it was inferior to ground glass, which, moreover, has the advantage that the prints made under it, either in sun or shade, won't show any bubbles or scratches which might be on the glass used for the negative.

“Mr. Kretschmer obtained a very strong and brilliant print under an iodized and silvered plate. He prepared the same by simply coating a glass plate with very weak iodized collodion, sensitized it in the silver bath, washed well, and let dry.

“Mr. Schoem covered the negative with a thin porcelain plate. The contrasts in the prints made without and with this plate were very remarkable; more so, indeed, than the contrasts of the first named dodges.

“The committee received a vote of thanks for their labours and exhibition of their interesting specimens, and Mr. Schoem's method was declared the most successful one.

“Mr. Youngman remarked, in relation to the committee report, that porcelain plates, especially of larger size, are very expensive, and consequently not practical, on account of being easily broken when used for printing purposes. He suggested, as a substitute, to mix some milk with gum arabic to a proper consistency, and to coat a glass plate with the mixture. By elevating one end a little, in letting it dry, it will get the superior advantage over porcelain plates of being thicker on one end than on the other, which will enable you to cover the weakest part of the negative more than the stronger one. A glass prepared in this manner can also be used as a focussing glass in the camera—a very desirable knowledge for a travelling photographer in case of an accident. Mr. Youngman stated further, that in short exposures he had lately tried, with pretty good results, to colour the negative by using a yellow or red aniline colour in the developer.”

WEAK V. STRONG PRINTING BATHS.

A COMMITTEE of the American Photographic Society appointed to investigate the relative value of strong and weak printing baths have recently presented their report to the Society, its general tenor being, as our readers will see, in

favour of weak baths. After one or two preliminary remarks, the committee—consisting of Messrs. H. J. Newton, O. G. Mason, and D. C. Chapman—remarks:—

"The subject of weak and strong sensitizing baths for paper has engaged the minds of photographers from the time photography was first introduced to the present time. It seemed, however, to have been settled decidedly in favour of a strong bath, and the correctness of this decision was rarely if ever called in question. The introduction of fuming with ammonia, however, although not materially changing the views previously entertained, did tend to considerably modify them. It was claimed that a weak bath with the fumes of ammonia would produce as good proofs as a strong one, and it produced no little excitement in the photographic community. Although the prejudices of some were strong enough to prevent them from trying either, most photographers gave the fuming a trial, and some the weak bath also. The fuming was generally adopted, but the weak bath rejected. The modification, however, of the views of the advocates of the strong bath showed itself in this way: previous to the introduction of ammonia fumes the strength of bath in general use ranged from 80 grains to 110, and after the introduction of ammonia from 40 to 80. It was, nevertheless, a settled conviction, and had become one of the cardinal tenets of the photographic creed, that a strong sensitizing bath, and that only, would produce good positive proofs on paper. The advocates of a weak bath were still in an insignificant minority, and generally looked upon as monomaniacs or photographic heretics.

"A photographer to advocate the use of a weak bath would not only jeopardize his success in business, but also his reputation as a critic, or ability to discriminate between the bad or indifferent and the superlative and good. The conviction of the photographic fraternity had become so deep-seated in favour of the strong bath, that it had assumed many of the disagreeable forms of the most unreasoning prejudices, and many, no doubt, of those who were induced to try it did so more with a view to try and find something in it to condemn, rather than something to admire. This, whether fortunately or unfortunately, time will determine, has been the position occupied by the advocates of the two baths. Many and varied experiments of compounding other salts with the silver have been tried from time to time without any very important results, or producing any very marked impression on the minds of the craft.

"In the latter part of last spring, or early part of summer, the attention of one of your committee was attracted to a statement made by Dr. Schnanss, and published in one of the European journals, that he had produced proofs of the first quality on a bath containing 7 grains of silver to the ounce of water, and 32 grains each of nitrate of potash and magnesia. The albumen with which the paper was prepared contained no salt, for he claimed that the albumen naturally contained sufficient chlorine to produce all the chloride of silver necessary. Accepting the statement to be true, as far as the judgment and honesty of Dr. Schnanss were concerned, the idea naturally suggested itself of compounding a bath on the main principles of Dr. Schuanss, adapted to the commercial albumen paper of this country, which usually contains from 5 to 10 grains of a soluble chlorine.

"It is a bath constructed on the above principles—containing 25 grains each of the nitrates of silver, potash, and magnesia, and 5 grains acetate of lead—and with the ordinary strong one, with which your committee have experimented. Believing that there is no subject of so much interest, at least in a pecuniary point of view, to every practical photographer, as the one under examination, we have proceeded with the greatest care, and taken all necessary precautions to prevent any possible error in the result. The strong bath first employed contained about 100 grains of silver to the ounce of water. The baths were each of them tested, not only by the hydrometer, but, to be doubly sure, also with Pile's test-tube, in which all the silver in a given quantity of solution was thrown down in the form of a chloride, and, by means of a graduated scale on the tube, the exact amount of silver contained in 1 ounce is indicated. Before using, a portion of each bath was set aside to be again tested and compared with the portion used. The paper was floated one minute on the strong bath and three minutes on the weak one. Four samples were used, procured from respectable stock dealers in the city, and we would state here that one sample of paper could not be used successfully

on the strong bath in consequence of its being prepared with albumen containing very little salt, probably not more than 4 or 5 grains to the ounce. The strong solution would run from the surface of this paper as if it had been oiled, and would dry in drops, while on the weak bath it worked in that respect as well as any of the samples employed.

"When such a phenomenon presents itself to a photographer there is no remedy but to weaken the bath, except, perhaps, the addition of a quantity of alcohol. The paper was sensitized in the evening, and the next morning the samples of paper which indicated weak salting, and were floated on the strong bath, were browned entirely through to the back surface, and all the samples of paper sensitized on this were more or less discoloured, while none of those floated on the weak bath showed any perceptible change.

"This difference in the keeping quality of the paper may have arisen wholly or in part from the fact (which was not discovered until afterward) that the strong bath was considerably more alkaline than the weaker one.

"The sensitiveness of the paper appeared to be the same from both baths, it requiring the same time to print proofs from the same negative. In the washing and toning the difference in the working of the two papers became very striking—the prints from the strong bath turned quite red, while those from the weak one remained without any change, and when placed in the toning bath toned in about one half the time: it did not, at the most, require more than two-thirds the time to complete the toning. This appeared to be pretty conclusive evidence that the same quantity of gold would tone from one-third to one-half more prints produced by the weak than by the strong bath. The prints when washed and dried were, in quality, equal in every respect. The samples which we exhibit with this report are a fair selection from a large number made, and we are quite confident that there is not a member of this Society present who can determine by examination of these prints upon which bath they were produced. The quantity of silver used in producing these proofs on the two baths was in figures as follows:—

First Bath.

32-oz. solution, containing 98 grs. of silver to the oz.	} 3,136 grs.
16 sheets paper sensitized, leaving of the solution 28 ozs. containing 92 grs. to the oz.	
Showing the use of	560 g s.

Second Bath.

32-oz solution, containing 25 grs. to the oz....	} 800 grs.
16 sheets paper sensitized, leaving of the solution 28 ozs. containing 21 grs. to the oz.	
Showing the use of	212 grs.

"By these figures you will perceive that one-half the quantity of silver was employed to produce the proofs on the weak bath that it did the same amount on the strong bath.

"We would state here, that the greatest possible care was taken in removing the paper from the baths, which accounts for so small a quantity of solution being taken up—only one-fourth of an ounce to the sheet—which is only about half the quantity usually taken up in ordinary photographic work; more will run over half an ounce to a sheet than under it, and figures based upon such facts would approximate nearer to what would be the result in ordinary gallery work than those we have given as the result of our experiments. It would show the use of 928 grains of silver from the strong bath, and 296 grains from the weak one. We also worked an 80 and a 60 grain bath, with the same comparative results, but we deemed it unnecessary, however, to make a definite report except upon the two extremes.

"Extraordinary as the figures may appear, we do not feel warranted in assuming that such would be the uniform results* in all cases when tried by different operators, for there is no phenomenon presented to the manufacturers of and dealers in

* We would not have the inference, however, drawn by these observations that we deem the chances of failure on this bath any greater than on any other, for we verily believe it exceedingly problematical whether an operator who could not produce good proofs on this bath could do so on any.

photographic chemicals so perplexing and extraordinary as that shown in the fact that no two operators will produce the same results with the same chemicals. It is an occurrence which happens almost every week with our large stock dealers, that chemicals are returned to them as entirely worthless, and accompanied with a long recital of the extraordinary antics performed by the said chemicals. As a general thing, no particular attention is paid to such communications, especially when the quality of the returned goods is known, which is usually the case in responsible houses.

"They are packed up and sent off to some one else in the first order, and are used with the most satisfactory results, and very often the order is duplicated for more of the kind, which by this party is extolled as much or more than condemned by the other, and the communication accompanied by a card or two to show what they can do with such pure chemicals. There are many reasons why these things are so, the examination of which would require more time and space than we can devote to it at present; besides, it does not properly come into connection with the particular subject under consideration. The fact that such things do occur is all we have to do with, and perhaps the best thing that can be said about it is, to put another fact in array against it, which is this: the same causes will always produce the same results under the same circumstances. Any one, therefore, who fails to produce good pictures on the new bath, when properly compounded, should not attribute his failure to the bath, but should examine in some other direction for the causes which have defeated him in his efforts to use successfully the 25-grain nitrate bath."

NOTES ON THE TAUPENOT PROCESS.

At the last meeting of the French Photographic Society, a fine print of the interior of Caen Cathedral was exhibited by M. Magny, produced by means of the collodio-albumen, or primitive Taupenot process. M. Magny affirms that notwithstanding the unmerited reproaches which have been made against the method, it really possesses some very important advantages, and he shows that it may be employed in ways which other preparations of collodion will not allow of.

In regard to development, M. Magny allows the process to work by itself, as it were, without the supervision of the operator, and in this way he obtains the best results, and with a minimum amount of trouble. He spares himself the fatigue of a busy evening or night in developing his plates after a hard day's work, and declares that he improves his results by so doing.

The developer is thus compounded:—

Water	...	...	...	1000	parts
Gallic acid	...	...	...	3	"
Pyrogallic acid	...	...	...	1	part
Acetic acid	...	...	...	5	parts

Into a bath of this liquid, to which a little silver has been added, he passes the exposed plates, leaving them immersed therein for some seconds, and then tilting them on end and allowing them to dry spontaneously.

In this way the negative is sufficiently developed to show if a successful result has been secured, and whether there is any stain or defect upon it; it is then put away for any indefinite period in a sheltered spot, and when there is sufficient time to finish the same, the further manipulations are proceeded with. The most curious circumstance connected with the matter is, that the development continues upon the dried plate, every day showing a change, the details becoming more vigorous, and the shadows and lights more decided. There is not sufficient nitrate of silver in the solution to injure the high lights. After the space of some weeks—or, it may be, months—an examination of the negatives will show that the work of development is all but completed, and they may then be treated with more developing solution, and manipulated until the desired vigour and detail have been obtained.

Some years ago, M. Magny suggested an easy method of preserving the sensitiveness of plates prepared by the Taupenot process. After sensitizing and washing, they

were covered with a saturated solution of gallic acid. The sensitiveness does not in this way notably diminish, and the preservative qualities, either before or after exposure, become almost indefinite; thus sensitive plates prepared in June, 1870, have yielded in July, 1871, negatives without spot or stain, the exposure necessary being only increased by a fifth.

The Taupenot negative allows of usage to which ordinary collodion plates are not easily susceptible. Thus a negative which had been varnished for two years, and which was of a weak and foggy nature, was capable of being freed from varnish, cleared, and revarnished. The varnish was composed of pure shellac (ten per cent. of lac dissolved in alcohol), and an immersion of the plate in a vessel of alcohol sufficed to remove the coating, the negative being subsequently rinsed with fresh alcohol, and allowed to dry. Afterwards the surface was moistened with water, and covered with a weak solution of iodine in iodide of potassium of following strength:—

Water	...	...	...	200	grammes
Iodide of potassium	...	...	...	2	"
Iodine	...	...	...	0.5	gramme

The iodine attacked the silver in an uniform manner, and formed a superficial film of iodide of silver; the application was, of course, made with some care, so as not to allow the action to proceed too far, and then hyposulphite solution was poured on, to dissolve away the iodide of silver formed. The negative was carefully washed, and then a fresh development was undertaken, the dose of acetic acid being doubled, in order not to injure the whites. The image improved rapidly, and after washing, the plate was fixed, and again washed in the ordinary way. When not sufficiently brought out, the image may be treated again *de novo*, taking care that the operations of washing are carefully performed, so that no spotting or staining takes place. The plate is finally dried and varnished in the usual manner.

It is rare that any but Taupenot plates would be found to resist these manipulations; with ordinary collodion plates there would be every probability of the collodion film tearing, and leaving the glass surface, in face of the repeated washings and applications of developer and intensifier; these operations may, however, be performed over and over again with negatives prepared by the Taupenot process.

VARNISH FOR GIVING A RETOUCHING SURFACE TO NEGATIVES.

ANOTHER method of rendering hard and glossy varnishes suitable for retouching with pencil is given by Mr. M. P. Simons, in *Anthony's Bulletin*. It consists in adding to a varnish drying with a hard surface a little oil of lavender. He says:—

"Some, I find, have trouble to get the pencil to take hold sufficiently to produce the required opacity, and I recommend them, as I do others, to use a varnish, not what is called 'hard drying,' but, on the contrary, that which is decidedly tacky, and to work on it as soon as it will bear the touch of the pencil without hurting the surface. This can easily be ascertained by trying on some unimportant part. Oil of lavender will give a brittle varnish this tacky quality. I use from ten to fifteen drops to the half pint.

"The pencil which I have found to answer best for this purpose is one of Faber's, marked thus, HHHHHH. Being hard it can easily be kept with a sharp point, which appears to be one of the secrets of success in this line. With a fine point one can see exactly what he is doing, and can better keep within the limits of the place to be touched, and thus avoid making opaque spots which must afterwards be stippled out of the print.

"These few simple suggestions, hurriedly given, I hop

may do some good. They will, I think, allow the negative to be beautified just about as much as it should be if the likeness is of any consideration; but if not, then other means may be resorted to. I would not, however, recommend using varnish containing much grit on negatives likely to be much used, unless you are anxious for another way of producing pinholes.

"It seems to me quite natural to suppose that the prominent points, caused by the coarser particles of grit, will in a little while wear through into innumerable holes, as dust settling on the negatives will do unless they are carefully brushed before using. Touching or working up negatives, when carried too far, as Mr. Ayres very properly complained of at one of the meetings, and which is so often done by the aid of grit, is a shameful abuse of a privilege we should appreciate as a convenient means of softening down freckles, &c., which the blunt camera never flatters.

"Another advantage, which I have long since known, is gained by using a tacky varnish. It is not so liable to blister and peel off the plate as one that immediately gets hard enough for printing. Any one may satisfy himself of this, if he will but look over his old negatives, when he will find that, as a general rule, those which are blistered and peeled have been varnished with what is termed a 'hard, glossy, drying varnish,' indicated by the smoothness of the surface; while those to which the varnish adheres firmly are more or less matted, proving plainly that they had been varnished with a non-brittle varnish, and had been imprudently printed from before dry.

"A negative should not be used under a hot sun immediately after it is varnished; for a varnish that will not stick to the paper under such circumstances as these will soon take a notion to not stick to the glass. This, however, has been my sad experience, having had spoiled, in this way, several valuable negatives, and I now never use a 'beautiful, hard drying varnish,' without giving it a small dose of oil, which I have always found to be a great specific, making it at once more useful, if less ornamental."

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

PHOTOGRAPHS AT THE LATE INTERNATIONAL EXHIBITION—
NEW COMMERCIAL ARRANGEMENTS FOR CARBON PRINTING
—THE LATE MR. BLAIR—CURIOUS BACKGROUNDS IN
OPEN AIR PORTRAITURE—SUGGESTIONS FOR LIGHTING—
STATUS OF PHOTOGRAPHERS.

THE first of the annual series of International Exhibitions was closed without ceremony at the end of last month, and with the first year's experiment terminated, it is to be hoped, the series of blunders which attended it. The errors which characterized other departments, and which have led some good judges very seriously to doubt the value of such exhibitions altogether, do not concern us here; but the treatment experienced by photography indicated such a contemptuous indifference on the part of the authorities, that I think it is very doubtful whether the majority of photographers will think it worth while to contribute again to the display. In the first place, the announcements as to the time of applying for space, and other preliminary matters, were so imperfectly published, that many photographers knew nothing of the matter until it was too late. Then such a very limited space was devoted to photographs, that even all the English photographs accepted could not be hung in it, and the "photography of all nations" was represented in the Albert Hall by a portion of the English contributions and a few continental pictures. To mend this matter, a separate place in the same gallery was given to more continental pictures, amongst which a few English contributions were hung. Other foreign contributions, amongst

which were some of the finest photographs in the Exhibition, were hung in a passage behind the refreshment rooms, at the furthest possible point in the Exhibition from the photographic department proper. Scattered about here and there all over the Exhibition were other photographic contributions, without order, arrangement, or system of any kind, or anything to lead the visitor to expect photographs so distributed. The catalogue scarcely mended the matter. Not always correct, it was at times absolutely misleading, as the varied contributions of a contributor, hung in places widely remote from each other, were placed under one number without indication that more than one frame was included under that number, much less that examples hung varied in different departments were so included. In at least one case, a coloured portrait sent in as a photograph was hung as a painting amongst paintings, without any hint of its photographic origin. The counts of the indictment might be extended if it were necessary; but surely these are sufficient to make photographers enquire, with all these mortifications, annoyances, and affronts, what is the balance of good they obtain by contributing? There are no medals, and little *kudos* of any kind; and there is much trouble, and some cost, besides these unsatisfactory issues. If the authorities really desire that photography should be fairly represented in the remainder of the series of exhibitions, they should, in their next announcements to photographers, offer some guarantee of better treatment, in order to secure their interest and effort in sending a good display in future.

One of several causes which have tended to retard the popularization of carbon printing has been the fact that it has not always been easy to obtain the requisite materials. The Autotype Company, although it has been constantly extending its resources, has been kept sufficiently engaged in the production of work for direct publication. I am glad to learn that specific arrangements are now nearly complete, by which a great change will be effected. The demand for tissue has induced the company to make very extensive arrangements for its manufacture to supply the public. Mr. J. R. Johnson, one of the directors, aided by Mr. Spencer, who has amalgamated his carbon arrangements with those of the company, will devote himself to this department, and, if I am rightly informed, carbon printing for the public will also be undertaken. The Autotype Company has also, I am told, opened a mechanical printing department under the direction of Messrs. Sawyer and Bird, who are executing some capital photo-collographic work.

The reference to carbon reminds me of the loss which the photographic community has sustained in the sad death of Mr. Blair. His probably is one of the fittest cases for recognition by some testimonial which has occurred in connection with photography. I hope a handsome sum for such a purpose will be obtained.

In my last month's "Echoes" I referred to some photographic operations I had witnessed on the sands. I see your humorous contemporary, *Fun*, has a capital sketch of a scene at Margate, in which caution as to the background in this *al fresco* portraiture is enjoined. Corydon and Phillis recline on the sands to form a graceful group of two: whilst the photographer is completing his arrangements, however, a third figure joins the group—a donkey just interposes his head to complete the trio.

Photography has of late, in divers manners, afforded argument, illustration, or incident to your contemporaries. The *Athenæum*, in a recent article on stage effects and arrangement, has a sentence which may be worth repeating, as it is suggestive in its allusion to lighting. Referring to the mode of lighting the stage, it says:—

"It has been suggested that we should abandon the principle of footlights for an edging of gas along the top

and sides of the proscenium line. The absurdity of this notion is shown by the results of second-class photography. The wrinkles in a face exposed to a top-light increase in width, the brilliant reflections on the hair deform the skull, the teeth become yellow, the whole visage becomes aged. Place the light below the face, and it will gain in youth as much as it had previously increased in years."

Contemporary allusions to photographers in this country are not always complimentary, but it seems that they scarcely fare better in Paris. Mons. Taine, in some sketches of England and English character in a French contemporary, referring to, and complaining of, the status of artists in England, as indicated by allusions in *Punch* and other journals, says:—

"Painters are bearded artisans, unkempt, shabbily-dressed, badly-educated, conceited, hardly one degree raised above photographers. The latter are workmen who cannot speak English, and who merely form food for ridicule. Thackeray frequently struggled against the common opinion with respect to artists; Clive Newcome, one of his personages, who is a painter and the son of a colonel, remarks with surprise that in Paris artists are on a par with the leaders of society, and that Delaroche and Horace Vernet are invited to dine at Court. A French moralist would never have occasion to demonstrate that the painter's art is as liberal a profession as that of medicine or law. Probably, in the eyes of the burly John Bull, whom I have just described, a painter cannot be a gentleman, seeing that he works with his hands. He is not 'respectable,' because he has no fixed income; besides, it is said that his studio is always in disorder. He is thus a journeyman who wants method; he ranks with his neighbour, the mechanic, who works at home, and is the oracle of the pot-house."

To be "unkempt, shabbily-dressed, badly-educated, conceited," is to be, in this smart Frenchman's estimate, nearly one degree higher than a photographer!

Your recent warnings as to the careless use or over-easy accessibility of poisons such as cyanide, ought to induce photographers to avail themselves of every aid to caution. I see announced a "poison bottle," intended as a safe-guard against the accidental use of poisons. The bottle, instead of having a smooth surface, is covered with conical projections, so that the moment it is grasped its unusual surface serves as a reminder that the contents are deadly. It ought to be universally used for containing all poisonous solutions.

The meetings of societies generally recommence, I presume, before I again address your readers. I hope we shall have an interesting session.

ELIMINATION OF HYPOSULPHITES.

BY T. L. PHIPSON, PH.D., F.C.S.

I NOTICE your article of October the 6th, on the elimination of hyposulphites from prints, in which you review the processes devised successively by Mr. Hart, Dr. A. Smith, and Mr. H. J. Newton. The latter gentleman proposes to allow the prints to soak, after washing in three or four waters, in a solution of acetate of lead of the strength of one grain to the ounce. It is supposed that by this means any hyposulphite remaining in the print will be converted into sulphate of lead, and acetate of soda formed at the same time. But I see no reason why hyposulphite of lead should not be formed in these circumstances; and, if so, it would be more easily got rid of than the sulphate in the subsequent washing in three waters. There would be danger for the whites of the image if either of these lead salts remained in the slightest quantity after the last washing, for these whites would turn yellow or yellowish brown under the influence of minute traces of sulphuretted hydrogen, always present in the air of towns. Indeed, it has never been proved that the yellow tone taken by faded

photographs may not be due in great measure to some traces of lead remaining in the paper. It would, perhaps, be worth while to try the effect of adding *one per cent.* of nitric acid to the last water used for washing finished prints, to obviate the fading alluded to.

WASHED ALBUMENIZED PAPER IN PRACTICE.

BY H. BADEN PRITCHARD,

Of the General Photographic Establishment of the War Department.

SOME little while ago there occurred (no matter why) a break in the supply of carbon tissue to the Photographic Department at Woolwich, and it was necessary to return once more to albumenized paper and silver printing. Although the interval was at the outset supposed to be of but short duration, some eight or nine weeks actually elapsed before we could recommence printing in pigments, a process which, I am glad to say, has been carried on at Woolwich for upwards of two years with some degree of success; and now that the Autotype Company have made more adequate arrangements for the manufacture of tissue for supply to working photographers, it is to be hoped that carbon printing may become popularized. That in some instances the carbon process, as at present practised, is incapable of yielding results equal in fineness and delicacy to silver prints, we must all frankly own, especially in the case of weak negatives; but while admitting this much, it is equally certain that there are cases in which the effect of a pigment picture is by far more harmonious and pleasant to the eye than an albumen photograph. Very large and bold pictures print exceedingly well in carbon, and dry plates of notable dimensions, which yield flat and faded impressions in silver, are not unfrequently much improved when developed upon pigment tissue.

During the temporary relapse from carbon printing I determined to put the employment of washed and fumed paper to a thoroughly practical test, and to give the method of printing a fair trial; for although much has been said and written about operating in this manner, no account has yet been published, I believe, in which it is stated that practical use of any importance had been made of the process. My previous experience had given me great confidence in the use of washed paper, and I was anxious to know if the manipulations could be carried out satisfactorily upon a large scale. The advantage of being able to dispense altogether with the tedious and monotonous operation of sensitizing paper daily, as also the inconvenience of having the dark room continually filled with paper in course of drying, are circumstances which induce one to look favourably upon printing by the aid of ammonia; for in this method sensitizing once a month, or, at most, once in ten days, is all that is needed, if a sufficiently large batch of paper can be floated and dried at one time; and, indeed, if the manipulations are carefully attended to, and the work accurately performed, there is no risk in keeping the washed paper for three or four months, supposing always it is stored up in a dry locality, well screened from the light.

The method pursued at Woolwich was in no way a novel one. It will be remembered, as I pointed out in the *1st YEAR-BOOK*, that there are two ways of sensitizing the paper, either in a strong or weak silver bath. If the latter is employed (say a thirty-five or forty-grain solution), the liquid is removed from the albumenized surface by pressing between sheets of blotting paper; but if a strong bath (seventy grains) is used, then the paper must be submitted to thorough and repeated washing. The strong bath is that prepared by my chief photographer, Serjeant-Major Shuckard, who has, indeed, employed it exclusively for producing the durable sensitive paper used in the establishment during a couple of months, the material thus prepared being capable of a more thorough washing, and therefore endowed with good preservative qualities. After floating in the

ordinary manner, the paper was washed in three or four successive waters, the first, and sometimes the second, of these being preserved on account of the silver they contained. Care must be taken that no air-bubbles are formed on the back of the paper while in the water, and to prevent this the surface should be rubbed by the hand, otherwise brown spots will certainly be formed during its preservation or printing. If, indeed, the operation of washing is not sufficiently carried out, or if the same water is used over and over again for the purpose, the free nitrate is not completely removed, and the paper is apt to discolour on keeping, and when placed in the printing frames browns upon the back by reason of the presence of an excess of silver. And this blackening of the reverse of the print penetrates, of course, through the paper, and degrades the high lights of the picture. After washing, the paper was hung up to dry, and not rolled up for storage until it had been desiccated in a most perfect manner.

The manner of employing the ammonia was at first in the form of fumed pads. A large box containing a perforated false bottom, under which were two saucers of strong liquid ammonia, received the pads, none of which were used in the first instance until they had remained four-and-twenty hours in the fuming box. As the latter, despite its close-fitting lid, generated its fumes somewhat freely about the printing room, it was found necessary to cover it with a waterproof sheet, in order more completely to confine the ammonia. The pads were only used for a single print at a time, and were then returned to the box for another sojourn in the ammoniacal atmosphere; but when once thoroughly fumed they did not require any lengthened treatment subsequently. Prior to printing, the paper must be kept carefully from the damp, as the brown tint invariably appears if the sensitive surface is not perfectly dry.

This plan answered very well on the whole, but there were two serious objections connected therewith. If the pads were not religiously returned to the fuming box after every printing, a large percentage of brown and inferior pictures was the result, a want of ammonia invariably giving rise to a lack of vigour in the prints. Again, the free ammonia about the premises was apt to prove injurious to any photographic operations conducted in the vicinity, and discoloured with some rapidity any sensitive paper that might happen to be lying about.

A much more reliable and simple plan of using the ammonia is that suggested by Dr. Vogel, and which I had the pleasure of seeing in operation at that gentleman's studio in Berlin, in the summer. This method is very much superior to that of fuming, and has worked in a most satisfactory manner at Woolwich. The plan is, to employ the ammonia in the form of carbonate, which is powdered somewhat finely, and introduced into thick cloth bags that serve as printing pads. The pads are, indeed, a kind of *sachet* filled with ammonia, the latter being introduced through an opening in the centre of the back of the pad; the cloth overlapping at the slit or opening prevents the falling out of the powdered ammonia. It is a good plan to fill the pads pretty full of powder the evening before use, and then to remove the superfluous quantity immediately before printing; in this way the cloth becomes thoroughly saturated with the ammonia, and at the same time the pad does not contain more powder than is actually necessary to generate a sufficient supply of ammonia. Indeed, if the pads are too full of powder, and the cloth is not of very thick consistence, the caking together of the carbonate in some parts of the bags prevents the exertion of an equal and uniform pressure in the printing-frame, and, consequently, want of contact in some portions of the photograph ensues.

In this way the use of washed paper becomes a very simple matter. A pad containing carbonate of ammonia may be employed for the production of a score of vigorous prints, and need not be tampered with in any way until that number of photographs have been printed off. The printing goes on quite as quickly as, if not more rapidly even than, with unwashed albumenized paper, and with some

negatives—as, for instance, those of a thin and weak description—the results are far more vigorous and satisfactory than when one resorts to the ordinary mode of procedure. There are no injurious fumes to be feared, and the bag of carbonate contains far less moisture than a felt pad fumed by means of liquid ammonia.

My experience, then, of washed paper printed with carbonate of ammonia bags induces me to recommend the process as a simple and practical one. There is scarcely a weak or feeble print to be seen in the batch of prints that were daily produced, and the presence of these failures in the printing room is invariably the result of carelessness. The ammonia in the bags should be renewed after every two or three days, according as the rate of printing progresses, and the time of renewal is, as a rule, indicated by the period of exposure in the pressure frame. When the operation of printing requires a long time it is a sure indication that the store of ammonia is getting low.

The process will be all the more useful when the wintry weather comes, and when one cannot tell the exact amount of paper that should be sensitized for the day's work. The saving of trouble effected in obviating the daily task of sensitizing, especially when but small quantities of paper are used, and the saving of material by the prevention of waste from discoloration, are advantages well worthy of the consideration of practical photographers. The tone of the pictures produced by ammonia printing is, as is well known, fully equal, if not superior, to that obtained with unwashed paper.

ACID TONING BATH FOR ALBUMEN PRINTS.

BY DR. LIESEGANG.

I LATELY prepared a gold toning bath for prints in the same way as the platinum bath proposed by Mr. Wharton Simpson in July last year, and I have got so satisfactory results with it that I am induced to publish it.

Make a solution of chloride of gold, say one grain to the ounce of water; add solution of carbonate of soda until the mixture is alkaline; then add a few drops of acetic or citric acid to make it acid. Care must be taken to agitate the bath well when adding the carbonate and the acid, and to add sufficient quantities to produce, in the first instance, a decidedly blue, and, in the second, a red colour, on the litmus paper.

In leaving the bath for an hour or two in the light it loses its colour, and is then, or for any time afterwards, in a good toning state. But before using it, it must be diluted by four to ten times its volume of water.

The prints tone quickly to any warm brown or purple tone, and are very brilliant, and much more delicate than those toned with one of the chloride of lime toning baths, so much in use on the Continent.

A professional photographer to whom I gave the formula has used the same bath for three weeks, adding from time to time some of the stock solution, and finds it tones now quite as well as in the beginning.

Elberfeld, September 30th, 1871.

PHOTOGRAPHY ECLIPSED.

BY W. T. BOVEY.

THE exceptional characteristics that have placed the nineteenth century an immense stride in advance of its apparently less active predecessors constitute a source of wonderment which, well shaken in connection with shallow drawn comparison, affords a composing mixture which soothes vanity and lulls judgment into a state of blind forgetfulness. True to their self-befauding instincts, men are wont to take a short-sighted glimpse at the debt of obligation due to the darkened past, when pioneer giants struck deep into virgin soil to lay a foundation for that grand pyramid of civilization and progress on which the human intellect

of ages has indefatigably laboured, adding invention to invention, discovery to discovery, effecting new combinations from old materials, shedding abroad the light of knowledge, and dispelling the delusions wrought by dark ignorance; never fainting, ever toiling, the watchword "onwards" has never been lost sight of. Empires have been raised, have revelled in beauty, riches, and architectural triumphs, have gradually sunk to nothingness, leaving no vestige of former greatness save scattered ruins, the abodes of bats, of owls, and of noisome creeping things. Human passions have spread death and desolation over the circle of their dire influence. Vaunting ambition has trampled on right—has made human woes stepping stones to its desires. Again and again has progress been hurled back; again and again the wail of wisdom has been raised, which seemed to say, "Go to, weave wreaths." Of laurels? No; of wormwood, of cypress, of every bitter herb, for progress is no more. The knowledge of wisdom is gasping, the torch fails of oil, and soon barbarism will reign supreme over the whole earth, and progress will be forgotten. Yet, despite the destruction of empires, the depths of human ambition and passions, the scourges of disease and war, progress has lived, and must continue until the end of time. Like a bay tree, it is ever green; like a sturdy oak, it bears the storms of years uninjured; and like the thistle, it scatters seeds far beyond the ground in which it is planted. Progress grows, and will continue ever.

To a reflecting mind, the chain which links the extended stages of civilization to a beginning is sometimes perceptible, though enveloped in shadows dim; but there are comparatively few who care to view the departed past. To-day—to-morrow—if need be, the day after, or even a week, a month, a year hence—but yesterday, it is as if it had never been; its memories might be impressed on the minds of pleasure or of suffering, but its active traces are all lost amid the business of to-day; amid the rumbling, screeching, snorting, and groaning of machinery; the anxious planning, hard thinking, the calculation of schemes which ask a future for development; the grasping, cheating, tear-em, worrying struggles after lucre; the eager toiling and scrambling for a share of the world's loaf; in a word, in these busy times, but scant attention can be devoted to objects behind; we must onward, for we have enough to do to elbow our way through the crowd which makes up that mystery, life.

Turning reluctantly from abstract thought to matters practical, our memory has to traverse over many yesterdays; yet it seems but yesterday when science registered a new triumph over which the world gaped astonished. Could it be possible that Sol had turned artist? Where his brushes—his pigments? There; a box with a glass eye. Where the work? Here. And the world acknowledged the beauty of the delicate tracing, and, in admiration enthusiastic, it rushed to have itself drawn. The inexhaustible supply induced familiarity, and familiarity bred contempt; the world wearied, and science, tired of its toy, grew indifferent, and turned aside to pursue some new and more exciting object; for a jaded palate must needs have highly seasoned meats to tickle its sense of liking. It matters not whether men incline to gross pleasures, or devote their minds to science and so-called reason. To each there is a charm in novelty. Science has cold-shouldered photography. When an infant, photography was a wondrous growth; in youth it is no less curious; but how its wonders dim before the marvel that asks from science an interpretation! Listen. O'er acres of tiled roofs and countless stacks of chimney pots, a certain Mrs. Guppy, torn from home by spirit grasp, is borne. Like an inflated balloon, the portly dame gravitates upwards, downwards; *finale*, came through slates, through ceiling—noiseless—no damage-doing. As a ray of light unimpeded passes through glass, so penetrated matter the marvel riding Mrs. Guppy, until gravitation resumed its natural sway, and she alighted thump on a mahogany table, where the carrier spirit left her. Here is a

sensationalism for investigation. Humanity stolen from home and occupation by ethereal essences, and shabbily sent back to it again in the charge of pipe smoking, dram loving, pimple-nosed "cabby." Science cries "Pooh!" but thinks the matter worthy of attention, notwithstanding. "The possible has no bounds." Hark! What sounds are these which, like spirit whispers, issue from beneath the table? 'Tis home influence, which, strange to say, prefers darkness rather than the light of day. Science views, listens, and explains. 'Tis "psychic" force, which seems to pull as strong as any horse. See how the table gravitates downwards! "Sweet home!" Well, many besides philosophers have felt the gravitating influence of home.

Questions sensational grow on every side. Men allied with gods; men tacked with ancestral string to grinning chattering monkeys. Query—A Jacquard's loom from simple forces is constructed: have its wondrous powers been continued by the man whose name the machine bears, or is it an accidental union of handspikes, smokejacks, and crowbars? The question is at the service of any eminent seeker after novelty, who will cherish it as a fitting one to be addressed to the British Association, who, in its eagerness for something new, has turned its hack on the art science it once so lavishly petted. From hot to warm, from warm to cold. Another year, and our art will, doubtless, be shunted from the programme. Spirits, monkeys, mad philosophy; but photography at 1s. 6d. a dozen is a stale matter, unworthy of an august notice.

What matter? Can we not "paddle our own canoe?" Beneath its surface photography has beauties yet unseen. A large and wide field for investigation is but partially broken. We have plodded through the alphabet, we have mastered "easy words," we now require to know something of the art's grammar. We know something about colloids, developers, preservatives, &c.; it is desirable that we proceed further. There is the nature of the latent image to be rationally explained; actinism to be accounted for; discrepancies of experiences to be reconciled; and, apart from these, we have a social branch to devote a portion of our non-scientific attention to. There is a deal of work to do. But where the workers? Wanted, volunteers. Abstract matters are not to be despised. The greatest works of our time, mechanical, chemical, and political, are based on abstract considerations which, when under examination, never contemplated nor measured the scope of practical application. And there can be no doubt that photography would receive benefit from a little digging beneath the surface of its mechanical and blind mode of producing. Therefore, to set the ball rolling, a rational glance at the latent image will follow shortly the appearance of this introductory chapter.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.*

LANDSCAPE PHOTOGRAPHY—CAMEO MEDALLION PICTURES— NEW PRINCIPLE OF VENTILATION OF STUDIOS.

THE full and interesting report of the meeting of the National Photographic Association, which is now before me, induces me to make a few further remarks from a German standpoint, and which may serve, perhaps, to harmonize some differences of opinion. To begin with landscape photography. Mr. Brown states, in his very instructive speech on photography in America, that in Europe landscape photography is of as much importance as portraiture. This is, at least in Germany, by no means the case. Landscape photography represents only a very small fraction of our photographic activity, and I feel inclined to doubt that it is any better in England or France. England has many able landscape photographers. I will only mention Messrs. Mudd, Bedford, England, Wilson, which names just recur to my memory; but the number of those who devote them-

* Philadelphia Photographer.

selves to landscapes is very small when compared with the number engaged in portraiture. For landscapes which are artistically executed—such, for instance, as Bedford's—there is, I believe, a ready sale in England. Simple motives, a few peasants' huts, a grove, a forest path, will find there not only admirers, but also purchasers. In Germany this is, unfortunately, different. The fine artistic effects are admired as much as in England, but they are not bought. The majority of those who understand something about art consider photography as a mere mechanical calling, and the pictures as a production of the same; and persons who will spend hundreds of dollars for oil paintings or copper-plate engravings, will not spend a dime for a photograph; it is below their level. Pictures which are bought solely on account of their artistic and effective execution, no matter what object is represented, are, therefore, very rare in Germany, and the few landscape photographers whom we have confine themselves to making views, *i. e.*, pictures of the resorts of people travelling for pleasure, and places of renown in the large cities; generally a small sized picture is preferred. For stereos there is here much less demand than in America, and the quality is not as good. From what I have seen of American landscape photographs, I feel free to confess that they are in no way inferior to our German pictures. I have expressed this same view elsewhere.

While speaking of landscape photography, I will give a few practical hints to the travelling photographer. These gentlemen frequently take some articles too many, or of others insufficient quantities, on their wanderings; and on long excursions, in little civilized countries, this may give rise to great annoyances. From my own experience, I give the following rules:—For every square foot of plate about half an ounce of collodion is necessary; a square foot of plate will consume also very nearly half an ounce of bath solution, and when we use a developer of a strength of five per cent., with two and a half per cent. glacial acetic acid, we shall require for every square foot of plate nearly half an ounce of sulphate of iron and a quarter of an ounce of glacial acetic acid. Of varnish about three-quarters as much as collodion is necessary. The consistency of the collodions and the varnishes differs, of course; but we can hardly go amiss if we provide ourselves with one and a half times to double the above-mentioned quantities for each square foot of plate.

Landscape photographers run very frequently short of filtering paper. Cotton—or, still better, gun-cotton—forms an excellent substitute: a piece of gun-cotton placed into the neck of the funnel will last for a long time, and does not exercise any deleterious influence on the nitrate bath. Instead of pasting the labels on the negatives, bottles, &c., with gum arabic, I take strips of albumen paper, which stick just as well.

I myself am just at present engaged in landscape photography in a country which has been very little travelled over, the central part of the Carpathian Mountains, on the border of Hungary and Galicia. It is an interesting mountain, not unlike your White Mountain, where last year I spent such happy days with our friend Kilburn. The general character is, however, wilder, and the summits are higher, reaching 8,300 feet, with steep and rugged sides, making the ascent very difficult. As a peculiarity, I must mention the lakes, which are high up in the mountains, and which, with the wild surroundings, the pointed rocks with the white masses of snow in the clefts, make a solemn and sinister impression. Still more peculiar are the mountain waters; they are almost absolutely pure; not a trace of chlorine can be found in them, and nitrate of silver dissolves in it without producing a trace of cloudiness; in short, it is the water which the photographer wants. And yet these mountains have never before been treated to the smell of collodion. Photographers have been and are in China and Japan, in the Himalayas, the Yosemite Valley, the Mammoth Cave, and Greenland; but it seems that

am the first one who photographed the Carpathian Mountains, and I have the delightful certainty that my pictures, poor as they may be, are certainly the only ones of their kind, at least for the present.

A kind of picture which at present is much in vogue in Germany seems, from what I have heard, little known in America; they are called cameo-medallion cards. The style cannot be called exactly new, for six years ago similar pictures made their appearance. The principal peculiarities are that a card, Victoria or cabinet, is printed with front mark in such a manner that the margin only remains white. Otherwise the picture is treated in the ordinary manner. When the print has been mounted and becomes dry, the central part of it is pressed out with an oval press in such a manner that it stands out in relief, like an oval medallion. The margin may also be coloured gray or black, a practice much in use in America with all kinds of pictures. I cannot say that these pictures look better than others; and they have the disadvantage that they are easily broken, and can only be well preserved in an album. The public, however, wants from time to time something new, and the new is not always beautiful. The press with which these pictures are pressed is an ordinary wood press containing a mould of hard beech wood. The mould consists of two pieces; the lower one has a raised oval which fits exactly into the upper oval depression.

The question how to ventilate our ateliers in hot summer weather is still, unfortunately, unsolved. For a time we tried to reduce the temperature by pouring water over the skylight. The effect was very satisfactory, but it was soon discovered that the glass was injured thereby, becoming dull, and losing partially its transparency. Bad water may have been the cause. A better way is the direct introduction of cool air. A very interesting machine has been invented for this purpose; it is the Windhausen Air Ice Machine.

The principle of the new invention is as follows:—When air is strongly compressed it becomes very much heated—so much so, in fact, that it will ignite a piece of tinder, as is shown with the little instrument called the pneumatic fire apparatus; compressed air readily parts with this heat, communicating it to surrounding bodies—for instance, water. If the compressed air, after it has been cooled, expands again, it will take up the heat which it lost in cooling, and causes an enormous degree of cold. If, for instance, the air, by compression, was heated to 212° Fahr., and cooled down to 68° Fahr., then the air has lost 212 less 68, or 144 degrees of heat; when the air, which has now a temperature of 68 degrees, suddenly expands again, it will lose 144 degrees more, and become reduced to 68 less 144, or 76 degrees below zero; when this air is forced amongst metal vessels containing water, the latter will congeal in a few minutes. The Berlin machine furnishes ice by the hundredweight. The air is compressed by a steam engine.

The matter has caused here a good deal of excitement. Several prominent builders have proposed to use this apparatus in a simpler form for cooling and ventilating public buildings, halls, and theatres, in which the heat becomes sometimes unbearable. Perhaps it might be employed also for the ventilation of photographic ateliers.

Our summers are not as hot as yours; still, the temperature has in my studio frequently risen to 100° Fahr. How, under these circumstances, can any one be expected to look pleasant during exposure?

INFLUENCE OF GUM AND OTHER PRESERVATIVES ON THE SENSITIVE FILM.

BY M. CAREY LEA.*

THE influence of gum on the sensitive film is quite remarkable, and in some respects differs from that of any other substance. If it be used alone, it imparts a very high degree of sensitiveness, but gives thin, foggy, indistinct images,

* Philadelphia Photographer.

difficult to intensify. The character of these images depends also to some extent on the nature of the pyroxyline used. If this be of an intense character, and the collodion have been long sensitized, the images are rather better.

In my own work I have, however, never been able to get satisfactory results with gum alone. There seems a need for some other substance, giving more intensity, even if (perhaps consequently) less sensitiveness. When gum is used with such a substance (as, for example, pyrogallie acid, tannin, &c.), we get a more useful result. We do not, however, combine the qualities of the two; we only average them. We cannot add the sensibility of the gum to the intensity of the pyrogallie acid, but in adding this latter we lose just as much in sensitiveness as we gain in strength.

The interaction of chemicals in the dry processes is often very curious. A collodion that is not suitable, if added to one that is, may not simply dilute the latter, but may greatly injure it, although salted in exactly the same manner. I found this once with Dr. Liesegang's papyroxyline. I prepared some collodion with it, salting precisely in the same manner as usual, and tried mixing it with some other collodion known to work well in the chloro-bromide process. The result was very bad. Had the good collodion been diluted with as much alcohol and ether as corresponded in quantity with the other collodion added, all would have gone right.

The influence of gum in softening the image and bringing out detail in the shadows is perfectly invaluable. A dry plate made with tannin only, compared with one made with tannin and gum, is altogether inferior. The relative proportion best to employ will always depend upon the character of the collodion. The best plan is to use gum and sugar, each ten grains to the ounce, and to add just enough tannin to afford the necessary intensity. The trial should be commenced with two grains of tannin to the ounce; if this does not enable the operator to obtain intensity without difficulty, the proportion should be increased just sufficiently to attain this result. Tannin, however, as a preservative is greatly inferior to pyrogallie acid.

The result of the trial of a vast number of substances as preservatives was the finding of two better than any other—pyrogallie acid and a preparation of cochineal, each best in certain particular cases. As to the proper proportion of pyrogallie acid, I have tried both half a drachm and also one drachm of sixty-grain solution to eight ounces of bath, that is, approximately half a grain and one grain to the ounce. Quite recently I have carefully compared these two proportions against each other, and could not find any difference whatever in the result. As it is never desirable to use an excess of material, I therefore recommend the half drachm, or about half grain to the preservative.

As pyrogallie acid is far from being a permanent substance, I thought it interesting to test some alcoholic solution, which has stood aside for about eight months, with some freshly prepared. The older solution looked a little darker than the fresh; it had, therefore, certainly undergone some change, but it proved to give equally good dry plates.

I have again, since I last spoke of the tea-dry process, carefully compared its results with those afforded by pyrogallie acid, and am confirmed in my opinion that pyrogallie acid is decidedly the better of the two.

THE EMPLOYMENT OF ALBUMEN AS A SUBSTRATUM FOR COLLODION PLATES.

BY DR. P. LIESEGANG.*

SOME years ago a statement was made by Mr. C. W. Hull, in the photographic section of the American Institute, that a substratum of albumen applied to negatives decreased by about one half the sensitiveness of the film. The statement was at the time emphatically denied, but no one seems to

have taken the trouble to obtain experimental proof of the matter, either one way or the other.

In the last number of the *Philadelphia Photographer* Mr. Hull returns to the subject once more, and supports his affirmation by such striking examples that there would seem no longer any reason for doubting his statement. The experiments he quotes are, moreover, so easy of repetition that any one may soon convince himself in the matter.

Mr. Hull says that he had recently to prepare a few tannin plates in a hurry, and employed for the purpose some albumenized glass which was destined for use with wet collodion. Of the half dozen which were prepared, three were exposed the next day for the usual period (viz., from sixty to ninety seconds), but, to his astonishment, they were, on development, found to be much under-exposed. The albumen substratum was at once blauded, and the remainder of the plates were exposed respectively one, two, and three minutes each. The last-named pose yielded a good picture in every respect.

To settle the matter beyond dispute, Mr. Hull prepared the next evening six plates in the following manner: two with an albumen substratum, and four with an albumen margin only, on two of the latter being written, with a piece of wood dipped in albumen, his name in large bold characters. The following day the plates were exposed one after another in the camera, without the latter being in any way tampered with, and the result was that the albumen-coated plates required exactly double the amount of exposure that was necessary for the proper production of an image on the others. Those upon which Mr. Hull had written his name were vigorous and detailed enough, excepting in those portions where the albumen characters were written, the image being here exceedingly thin and weak. For tannin plates, therefore, no albumen substratum should be employed. The behaviour of the albumen in wet plates is very singular: by increasing the exposure half as long again as usual, much more vigour was obtained, and where the name was written in albumen the image was much more intense than elsewhere. The result, therefore, of the employment of albumen with wet plates, says Mr. Hull, is exactly the reverse of that observed with dry plates.

As I have myself for some time employed albumen as a preliminary coating for collodion plates, I at once repeated Mr. Hull's experiment with the wet process. Upon a few well cleaned plates was marked some characters by means of a stick dipped in a clear albumen solution, such as is generally employed as a substratum, and, when dry, the glass was coated with collodion. The marks in albumen remained in a much more transparent condition than the remaining portion of the iodide of silver film, whether regarded by reflected or transmitted light, and were visible after the exposure of the plate; the image upon these markings did not develop nearly so far as upon the rest of the film. Repetition of the experiment gave like results, and, therefore, it seems to me to be beyond dispute that wet plates sacrifice much of their sensitiveness to the albumen film. How are we to explain, however, the fact that this unfavourable influence of the albumen has so long escaped the attention of portrait photographers?

My experiments lead me to the belief that the decrease of sensitiveness progresses with the increase in thickness of the albumen film; those, therefore, who, on account of its otherwise beneficial qualities, resolve to keep on the use of albumen will do well to employ a very dilute solution thereof.

The importance of solving one question arising out of this matter strikes me forcibly. Is the decrease of sensitiveness simply due to the greater transparency of the iodide film, or is the effect to be attributed to the known retarding influence of the organic matter when the picture comes to be developed? Why does the collodion film, when supported by albumen, become more transparent when sensitized, and may not, perhaps, an improvement in the matter be secured by iodizing the albumen film?

* *Archiv.*

WHICH SIDE OF THE GLASS SHOULD BE COATED?

BY M. CAREY LEA.*

WHEN plate glass is used, the finest and most perfect side should, of course, be selected. But in the case of blown glass, most of which is perceptibly bowed, the question arises: Should the convex or the concave side be coated? Some careless operators do not pay any attention to the point at all, but coat the best looking side, whether it be convex or concave. Generally, however, the concave side is selected, and for the reason that then the pressure of the spring in the frame tends to correct the curvature, whereas if the convex surface be collodionized, the pressure tends to exaggerate the curvature.

This method of proceeding is quite correct for portrait work, and for taking the fronts of buildings; in a word, for all cases where the centre of the object is nearer to the lens than are the sides of the object; but in landscapes it most commonly happens that the central objects are more distant than those at the side. When this is the case, it is evident that if the plate has been coated on the concave side, then its curvature greatly increases the difficulty of getting the whole of the picture into focus together; whereas if the plate be coated on the convex side, then its centre is brought nearer to the lens, and the shorter focus of the distant objects is favoured by the form of the film. Consequently, no general rule can be given as to which side of a bowed plate should receive the collodion; the concave side being best for one class of objects, the convex for another.

THEN AND NOW IN PHOTOGRAPHY.

BY DR. J. SCHNAUSS.†

As a practical photographer and teacher of the art since the date of the first experiments with collodion, I may naturally be deemed one of the veterans of our calling, and capable of giving some account of the many and varied changes that have taken place in the photographic studio during the last twenty years. My training as a chemist very early imbued me with a desire to study photography, an art which appeared to me in some degree to resemble a section of chemical analysis. The later discoveries of Bunsen and Kirchhoff, which laid the foundation to spectrum analysis, showed very decidedly, in fact, how nearly the reactions of light are allied to chemical reaction. And it was not I alone who recognized and pointed out the close relation existing between photography and chemistry, for there was in truth scarcely a single intelligent and persevering photographer who did not consider that some knowledge of practical chemistry was indispensable to the pursuit of the photographic art.

The sources of good and reliable iodized collodion were at the commencement of collodion work so few, that many photographers had to rely upon themselves alone to prepare their own material, and this it was that constituted the chief problem to be solved. With albumenized paper it was nearly the same thing when this kind of printing first came into vogue, for even the material manufactured in Paris was often inferior to the home-made paper, as I myself can bear witness. The smell alone was sufficient to proclaim the inferior character of the paper in many instances, and to prove that it had been prepared with decomposed or bad (perhaps even blood) albumen.

At the time of which I speak there was almost invariably a small chemical laboratory attached to the studio of the photographer. Some knowledge of optics was also incumbent upon him, if only to be able to understand, and prevent confusion from arising as regards, the optical and chemical focus of a lens; for, be it remembered, there was a time when by some this difference was deemed a necessity,

and even regarded as a virtue, a subject, by-the-bye, which led the way to many controversies.

Upon the brass setting of the lenses were occasionally to be found scales for the correction of the focal difference at various distances, especially upon the so-called quick-acting instruments; such a plan was, as may be imagined, a constant worry to photographers, whose attention was already quite sufficiently engrossed by other matters.

How different are matters at the present time! The manufacturers of chemical and optical photographic necessities have, in truth, spent their time well, for how conveniently and perfectly arranged are the operator's paraphernalia now-a-days! There are just now so many good and reliable sources at his disposition, that no anxiety need be felt in regard to the supply of pure chemicals and of good iodized collodion, and albumenized paper—two of the most important articles, which in earlier times were a source of ceaseless care and trouble. It is the same with the optical instruments which are now furnished by celebrated opticians, and may be straightway employed without further correction.

A photographer's duties are at present more subdivided, and this division of labour enables those employed in special branches to become proficient in their particular kind of work. It but rarely happens that a photographer of the present day is called upon to make his own preparations, and in this way the necessity for a knowledge of chemistry has been reduced to a minimum. The frequent complaint one was so wont to hear, that the negative bath was out of order, is now of very rare occurrence, from the fact that the iodized collodion and nitrate of silver are more skilfully prepared, and baths may be frequently improved or renovated, when exhausted, by the addition of fresh solution. It is only through very great carelessness that it at present happens that a negative bath becomes all at once unserviceable, an event which can scarcely ever take place by a strict attention to cleanliness and to the maintenance of a proper and uniform temperature.

In the same way the artistic branch of a photographer's duties has become a most important one, presenting also several divisions of labour. Some studios occupy themselves specially with retouching paper positives, as also the negatives themselves, and others, again, devote themselves to the elaboration of enlargements. The slight delay occasioned by sending a work from one place to another to be completed is compensated for by the saving effected in special apparatus and labour.

The photographer has at present much more time to bestow upon other matters, and may give his whole attention to the artistic lighting of his model, to the pose, and to the accurate printing and toning of the copies. In the preparation of these an important simplification of the old method has taken place. At the commencement of the era of albumenized paper and alkaline gold toning, very strong silver baths were prepared, and considerable expenditure of gold lavished to obtain the wished-for bluish-black tones. How different now, and how much more congenial to the photographer's purse! In olden times a bath of the strength of one to six, or even one to five, was necessary; and now we employ a proportion only of one to twelve, or water even in larger quantities than that. The gold toning solution has also become much weaker—or, in other words, one is able to tone a much larger number of prints in the same amount of solution. It is true the public are content with a browner tone than previously, but, any way, the albumenized paper as now manufactured is more readily toned, and requires weaker baths than was previously the case.

Very soon another section of photographic work will spring up; or has it done so already? We mean mechanical printing as represented by the Lichtdruck process. If the vulgarisation of any photograph is needed, the printing off of a thousand copies, it will be necessary merely to forward the negative to a firm occupied specially with description of work, and the pictures will be delivered without delay. It

* Philadelphia Photographer.
† Photographisches Archiv.

is already some time since that enamel and porcelain photographs became a practical branch of photography.

It is, indeed, surprising to observe the extensive range of photographic labour, and the varied applications that have been made of it in all directions.

Proceedings of Societies.

THE FRENCH PHOTOGRAPHIC SOCIETY.

A MEETING of the Society was held on the 11th August, M. BALARD, president, in the chair.

MM. FERRIER and LECARDE presented the Society with a collection of prints representing several of the Paris monuments and buildings destroyed on the occasion of the Communist insurrection. Many of the photographs had been produced by combination printing.

M. DAVANNE, on behalf of M. Magny, exhibited a print taken by the Taupenet process, and read a paper detailing some improvements recently made in the manipulation of the plates by M. Magny (see p. 483).

M. DESPAQUIS showed a number of glass plates upon which photographs had been etched by means of hydrofluoric acid. The preparation of the plates is conducted with bitumen of a certain kind, the nature of which he was not yet in a position to divulge, as it had not been patented. The intensifying of the picture is subsequently brought about by the application, by roller, of an ink composed of caoutchouc, bitumen, and tallow. M. Niepce de St. Victor and M. Bittelin made a number of experiments with photo-engraving upon glass, but, unfortunately, without result, the reason being, according to M. Bittelin, that the bitumen of itself was unable to resist the action of the hydrofluoric acid. The film leaves the glass in parts, and the engraving is, therefore, defective. This is, however, obviated if the bitumen is strengthened with some such material as caoutchouc.

M. DAVANNE, in the name of M. Dagron, exhibited a microphotographic film representing a reduction as minute, probably, as it is possible to produce the same. The print occupied the space of half a millimetre square, and contained the matter of sixteen folio pages, the same being composed of 130,400 letters; all of these were distinctly legible in a microscope of sufficient power.

M. DE CONSTANT-DELESSERT presented the Society with a copy of his pamphlet on the gum-coffee process, which appeared in the PHOTOGRAPHIC NEWS.

The proceedings were then adjourned until November 3rd.

Talk in the Studio.

STUDIES OF CHIAROSCURO.—A project is announced in the *Athenæum* which may prove interesting to photographers:—"A scheme of very promising character has been recently set on foot, for an Exhibition of Works in Black and White, which will comprise ancient and modern engravings, etchings, and drawings in pen-and-ink, sepia, crayons, pencil, charcoal, &c. We believe the collection will be exhibited in the Dudley Gallery, Egyptian Hall. If this plan has no more obvious advantage than that of forcing the attention of our artists to chiaroscuro, the phase of design least cultivated in this country, it will be more than welcome, and highly beneficial. So absurdly deficient is English art-teaching in this respect, that, not many years since, an eminent engraver, one of the very few masters of his art in England that are still alive, one who earned the warm applause of Turner, when he urged on a venerable Royal Academician the importance of affording instruction in chiaroscuro to the students of the Royal Academy, got for reply, 'Ah, indeed, very true; but who is to teach it?'"

PHOTOGRAPHY IN NEW SOUTH WALES.—We have been favoured by Mr. David Scott, of Pitt Street, Sydney, with some examples of photographic portraiture as examples of the work done in the Southern Continent. They are in all respects admirable specimens, and will compare favourably with the best work done in this country, both in photographic and art qualities. We notice that Mr. Scott is successor to Mr. Bradley, a gentleman who called upon us some time ago on his return from Sydney to settle in this country. The work he then

showed us was of exceedingly fine artistic character, and it is gratifying to find that in the productions of his successor there is no falling off in excellence. The charming faces of some pretty girls are pleasantly suggestive of the fact that the English type of beauty is perpetuated perfectly in our colonies.

MODIFYING THE FOCUS OF LENSES.—A correspondent of *Anthony's Bulletin* says:—"Having two one-half size lenses, I wished to make a stereo pair of them, but found on trial there was nearly half an inch difference in the 'back focus,' that is, the distance from rear lens to ground glass. Here was trouble; but by unscrewing the rear lenses of each tube, and exchanging one for the other, I found the pair exactly matched. I had shortened the back focus of one, and lengthened it of the other; Tubes being the same, the screw threads exactly fit."

NEW LIGHT FOR THE USE OF PHOTOGRAPHERS.—Photographers have long been seeking for an artificial light so readily available that the success of their manipulations may not be wholly dependent on the sun, and subject to the caprice of the clouds. The last attempt to find the much needed substitute is by digesting zinc in the iodide of ethyl, a process which yields a liquid substance, inflammable by the mere contact of the oxygen in the air. By passing pure hydrogen—or, perhaps, ordinary illuminating gas—through the fluid, the compound of zinc and ethyl will volatilize into the gas, and will yield, on combustion, a flame of extraordinary brilliancy and vivid whiteness of colour. It is said that the actinic effects of this light are inferior to those of combusted magnesium; but the steadiness of a flame from a gas will so far surpass any that can be obtained from a burning metal, even when the latter is of the highest purity chemically obtainable, that most photographers will, doubtless, give it the preference.—*Scientific American*.

CONCENTRATED IRON DEVELOPER.—An American photographer, writing to the *Scientific American*, in which the mode of developing adopted by Mr. B. J. Edwards appeared, says:—"I see by your issue of July 22 that Mr. Edwards finds considerable benefit by using sulphate of copper in his iron developer. It is now five years since I experimented with copper, and with favourable results, although labouring under the disadvantage of winter lights in England. I did not find it hasten the action of the developer, but it enabled me to keep the solution on the plate long enough to bring out the finest detail in the shadows, without destroying the delicate half-tones of the parts that were fully exposed to the light, being especially useful in the case of white or fancy dresses. I used a larger proportion of copper than is given in Mr. Edwards's formula. From a stock bottle of a saturated solution of protosulphate of iron I took sufficient to reduce to a 15-grain solution, adding 1 ounce of alcohol and 1 ounce of acetic acid (glacial) to every 18 ounces. In another bottle I kept a 15-grain solution of sulphate of copper, with the same amount of alcohol and acid, which I added to the iron (just before using) in quantities varying from 25 per cent. to an equal amount, according to circumstances."

STAINS ON ALBUMENIZED PAPER.—Mr. Heimburg suggests in the *Bulletin* the addition of a very small quantity of glycerine to the silver solution, to prevent the liquid standing in tears or drops upon the paper when drying.

ECLIPSE PHOTOGRAPHY AND THE SPECTROSCOPE.—Mr. H. Davis, writing to *Nature*, says:—"The endeavour of the Eclipse Committee to secure some uniformity in the photographs from different stations next December does not appear to be duly appreciated, it being contended that immense 'personality' shown in various photographers' manipulation must frustrate the good intention. I submit that in this case the personality is greatly over-estimated; that a number of competent photographers taking the same subject would probably produce, under any ordinary circumstances, pictures bearing considerable resemblance; while by using like apparatus and giving exposure of the same duration, we might safely predict a similarity of result amply sufficient for comparative purposes, and for the identification of structural peculiarity, should it exist. Among others there is a possible advantage to accrue from uniform work by the philosophers, which I have not seen or heard noticed. Supposing the outer corona, rays, streamers, or any portion of the apparently luminous matter, be terrestrial, it is unreasonable to expect that photographs, taken at stations more or less widely separated, will, when properly combined in

the stereoscope, give clear ocular proof of the sublunary situation of such luminous matter?"

ELIMINATING HYPO.—Our Philadelphia contemporary says:—"The committee for testing Mr. Newton's acetate of lead process reported progress. Several prints treated after his formula, and exposed daily for some weeks to the sun, showed, so far, no difference from prints kept inside the rooms; but to pronounce about the merits of the process a longer time for observation is necessary. One thing is sure: the hypo is entirely removed, as the most delicate tests failed to show a single trace of it, even in the first water after the treatment with the acetate of lead. Another rule, already fully established, is not to use the lead solution too strong, as otherwise the tones will be materially affected. One grain to the ounce of water is the maximum."

AN UGLY TRICK.—A Paris paper says that a photographer in that city has been arrested upon a charge of a somewhat unusual character. A gentleman purchasing a number of photographs, purporting to be likenesses of some of the female Communists now in custody, was surprised to find among them the portrait of his own mother-in-law. Having discovered the name of the photographer, the gentleman, accompanied by two police agents, called upon him, and extracted from him an avowal that he had availed himself of the negatives of some of his former clients least remarkable for personal attractions in order to form a collection of portraits representing the inmates of the Versailles prisons and the Brest hulks, the sale of which had been extremely large.

NITRATE OF SILVER.—A correspondent of a contemporary gives the following hints on preparing this salt:—"Standard silver contains 111 parts pure silver alloyed with 9 parts of copper, therefore 480 grains of silver coin contains 444 grains of pure silver. To form nitrate of silver—

One equivalent of silver	...	=	...	108
Combines with one equivalent of oxygen	...		...	8
And one of nitric acid	...		...	54

To produce one equivalent of nitric silver .. 170

Therefore 444 grains of silver would yield nearly 69 grains of nitrate, supposing the process to be conducted without waste. To get rid of the copper, various plans may be adopted, of which I describe two. *First.* Dissolve the standard silver in nitric acid, evaporate the solution to dryness in a porcelain capsule over a spirit-lamp or gas flame, continuing the heat until the mixed nitrates of copper and silver are fused, and the nitrate of copper all converted into oxide of copper, which may be ascertained by taking a small portion of the fused salt from the upper edge of the liquid mass on a glass rod, dissolving it in distilled water, and filtering to separate the oxide of copper. Into the filtered liquid drop liquid ammonia until the precipitate first formed is entirely re-dissolved; if the resulting liquid shows the slightest tinge of blue, copper is still present, and the heating must be continued until this test produces a colourless solution. If the heat be too great, or too long continued, the nitrate of silver will also be entirely or partially decomposed, and even with great care some portion of it will be converted into oxide. When the process is complete, remove the lamp, allow the fused mass to cool, dissolve in water (distilled), and filter. This will give a solution of pure nitrate of silver, which may either be evaporated to dryness, or crystallized; in the latter case, some of the nitrate will remain in the liquid which drains from the crystals. To recover the silver left with the undissolved black oxide of copper on the filter, dissolve the oxide in dilute nitric acid, and drop into the solution either hydrochloric acid or common salt dissolved in water, taking care to discontinue the addition of the salt as soon as no further white precipitate is formed, as an excess of salt would redissolve some of the white precipitate (chloride of silver). *Second.* By converting the silver into an insoluble chloride, either by hydrochloric acid or solution of common salt, as above; the former is preferable, as an excess of it does no harm. Add it to the solution of standard silver, stir well, and as soon as the heavy white chloride of silver has subsided, so as to leave a portion of the liquid clear, add a little more hydrochloric acid until further additions cause no further white precipitate. This white chloride of silver must be carefully and repeatedly washed with water until every trace of copper is removed, and may then be reduced to metallic silver by fusing it at a full red heat in a crucible with an equal weight of carbonate of soda or carbonate of potash, first drying the chloride. The pure silver will remain as a button at the the bottom of the crucible, and, if dis-

solved in nitric acid and evaporated to dryness to get rid of the excess of acid, will give pure nitrate. In this process, if the heat be too high, the crucible may be corroded and the silver escape into the fire, whilst if it be not high enough, it will not run into a button; but with care it is very manageable. If the querists have not had much experience in chemical manipulation, they would do better to buy the nitrate of silver ready made, because, although the above processes are easy enough to any one accustomed to such operations, they might fail in the hands of a beginner, and thus entail both trouble and loss of material. Silver salts are too costly to be wasted."

To Correspondents.

* * * **THE BLAIR FUND.**—*Further Contributions.*—Walter B. Woodbury, £1 1s.; Francis Bodford, £1 1s.

LEO.—The stain on the lights of the transferred print you sent was doubtless due to a trace of foggy deposit on the plate, which, although scarcely perceptible when examined as a transparency, would become very apparent when laid on white paper. The process of toning, which made the portions of the image having a thick deposit black, would make the thin foggy deposit appear brown. Whether the foggy deposit was due to the condition of bath, collodion, or developer, it is impossible for us, with certainty, to say. Iron development is more apt to give fog than pyro; but if everything is in good condition, fog may be easily avoided. Let the collodion be ripe, the bath in good condition, and use plenty of acid in the developer. Pyro development, as a rule, requires a longer exposure than iron; but it gives a richer, warmer, finer tone. We prefer gold toning with either. If you carefully follow the instructions given on page 373 of our Thirteenth Volume, you will have no difficulty in transferring the film to paper. But the collodion must be tough, and the glass clean. Let us know if you have any further difficulty.

JOHN STONE.—The cause of the thin and somewhat fogged effect in the collodio-bromide negatives appears to be considerable over-exposure. Try giving very considerably less exposure, reducing the time with each plate until the development is slow and clean, and no image appears until the ammonia is added to the pyro. Let us know the result.

S. B.—The addition of carbonate of soda to a bath containing citric acid would cause the formation of citrate of silver, which would render the solution turbid. This would clear away after a time, throwing down citrate of silver, weakening the bath in proportion to the amount of precipitate. The print you enclose is good, and the tone very rich and satisfactory. 2. Take the Daguerreotype out of the case, dust it gently with a camel's-hair brush, place it on an easel, or something else which will answer, in a good light, draw out the body of your camera to about twice the length of the focus of your lens, and place it in front of the Daguerreotype at a distance from the lens equal to the distance of the ground glass from the lens. Obtain a sharp image on the ground glass, and then proceed as in taking a negative in the usual way.

J. JEROME.—The prints you enclose are a very good average. They do not justify the opprobrious terms you mention, and are certainly much better than might be anticipated for such small remuneration.

EDMUND J. WILSON.—Will you please forward us your address? **M. L. F.**—There is no especial builder of whom we know who has devoted his attention especially to the erection of studios. As a rule, a local builder will answer best. It will be wise to obtain estimates from two or three, as there is at times great difference between different estimates so given. If you examine the advertisements in some of the horticultural journals, you will find those of various greenhouse builders, and possibly they may be of some service to you.

T.—Your dimensions and plan are good. We should think that sixteen ounce sheet glass would serve.

D. S.—The markings on your sensitive paper are due to irregular drying; drops or tears of the solution have remained on the surface. This may proceed from the paper having been kept very dry before sensitizing, or from the use of too strong a bath. Blotting of the solution before hanging it up is, in any case, a remedy. 2. Your toning bath becoming inert is due to the use of carbonate of soda. Such a bath never keeps.

Several Correspondents in our next.

PHOTOGRAPHS REGISTERED.

Mr. E. M. DRAYSON, Canterbury,
Photograph of M. Blondin.
Photograph of M. Blondin and Mr. Gammon.
Mr. BARRATT, Torquay,
Four Photographs of Prince Imperial of France.
Two Photographs of Ex-Emperor of the French.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 685.—October 20, 1871.

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CARBON PRINTS FOR COLOURING.

ON another page will be found an admirable article by Mr. Croughton on the use of carbon prints as bases for portraits finished in oil or water colours. The importance of absolute and unquestionable permanency in photographs intended to serve as foundation for the work of the skilled painter, whether water or oil, cannot be overestimated, and anything which facilitates the easy production of such permanent work is of necessity interesting to the professional portraitist. Mr. Croughton, in his paper, describes in detail the method now employed by Mr. Johnson for transferring a completed carbon print to that of ivory, canvas, panel, or other substance, so that the basis of the finished print has never come into contact with any of the chemical agents employed in the printing; and he moreover exhibited to the meeting a large number of very charming specimens, coloured and uncoloured, which he had himself produced without difficulty by simply carrying out the instructions received from the Autotype Company.

About a couple of years ago we gave considerable attention to the production of photographs on ivory, describing the various methods we had tried, in our thirteenth volume. In our own experiments we met with some success with carbon printing on ivory, and it may be interesting to those who contemplate carrying out Mr. Croughton's instructions if we briefly detail our own operations for comparison. We first tried Mr. Johnson's single transfer method, which, with one or two drawbacks, answered well. It consisted in transferring the exposed tissue to a piece of prepared ivory precisely as it is usually transferred to glass or a metal plate, and developing it upon the ivory. The first drawback consisted in the tendency of the ivory to turn yellow in consequence of its absorption of the bichromate washed out of the print during development. By the use of a little ammonia in the developing water this defect was to a considerable extent obviated; but the second drawback remained. This consisted in the fact that unless a reversed negative were employed, the image in all single transfer prints was necessarily reversed, a fatal defect in relation to a portrait intended to receive a costly finish.

The second method we devised did not possess either of the drawbacks just named, being a double transfer process, in which the print was developed and washed before being placed on its final resting place, the ivory being, as in Mr. Johnson's present method, preserved from all contact with either bichromate or other chemicals, whilst the image was, by the double operation, placed in its proper non-reversed position on the prepared surface. In this case we practically adopted Swan's process. A piece of tissue was sensitized in the ordinary way by

floating on a bichromate solution, and exposed; it was then mounted upon paper by means of the india-rubber varnish, developed, washed, and dried. It was then coated with a warm, thin solution of gelatine, containing from ten to twenty grains of gelatine and four or five drops of glycerine in an ounce of water, carefully cleared and strained. This coating was allowed to dry. A perfectly clean surface, over which water will flow freely without any trace of grease, having been secured in the prepared ivory, the ivory was dipped into a solution of alum, and the print was immersed at the same time, and quickly, without allowing time for the latter to soak; the two surfaces were brought into contact, drained, and the print rubbed down well with the "squeegee" or the palm of the hand. If the india-rubber varnished paper upon which the image was developed were thin and pliant, adhesion could be secured by rubbing down in this way alone; but we preferred to place the ivory with the transferred print between two pieces of elastic felt, and pass them through a rolling press, which makes the adhesion perfect. It only remained, after the gelatine—by which the mounting or transfer was effected—was perfectly desiccated, to treat the india-rubber varnished paper at the back with india-rubber, and remove the paper. The print was then complete.

In many respects Mr. Johnson's method is analogous to our own, but in some points it is better: the troublesome use of india-rubber in transferring for development is avoided, and a simpler and more efficient method substituted. We treated the finished print with Newman's "Preparation," which is, we believe, an aqueous solution of a resin. Mr. Johnson uses a solution of white lac in ammonia, which hardens the surfaces very perfectly, and permits the use of water colour or oil print without the slightest risk of injury, or of cracking, or exfoliating of any portion of the image. In relation to the latter possibility, we pointed out in our former articles the importance of using a thin tissue, in which the proportion of gelatine was as small as possible in relation to the amount of colour, so that no appreciable thickness or ridges of colour should be perceptible in the shadows. This is one of the essential features of Mr. Johnson's tissue, and in the examples shown by Mr. Croughton the amount of relief was much less than that present in a fine copper-plate engraving.

There are a few general hints in relation to carbon prints on ivory which may be worth repeating. It is scarcely necessary to say that since the photograph is always intended as the basis of a delicate and brilliant water-colour miniature, especial care must be taken against over-printing. A delicate, light, soft impression, with sufficiently well-marked detail to indicate the drawing, is required; blackness in the shadows and muddiness in the lights must

be carefully avoided. Different artists prefer different tints for working upon; but none like pure black. A tender warm grey, or a delicate sepia tint, will generally suit the purpose of the colourist.

THE FORTHCOMING EXHIBITION.

ABOUT this time last year a strong impression prevailed with many that the then approaching exhibition of photographs at Conduit Street would lose much of its prestige and importance by reason of the opening of the International Exhibition. Photographers, it was said, would choose between the annual exhibition of the Society and the grand display at South Kensington, and obviously the latter would offer by far the more tempting allurements. The International Exhibition was to do great things for photographers, to give full recognition of their works, to rank the latter as art productions, and to devote a spacious portion of the building to the sole display of sun pictures; and these were not to be the production of Great Britain alone, but of Europe, and of all civilized nations. Such brilliant promises were quite sufficient to give rise to grave doubts on the part of well-wishers of the Society's exhibition, regarding the welfare of the latter; but fortunately, to the delight of all, and, perhaps, to the astonishment of some of us, last year's November meeting turned out not only a *bona fide* success, but in many ways superior to any of the previous exhibitions held in Conduit Street. Indeed, the pictures forwarded were so numerous that the gentlemen who discharged the arduous duties of hanging committee were unable to find place for all of them, and at least a hundred of the contributions sent could not be exhibited at all. To the excellent quality of the photographs themselves we need not allude, for our readers are well aware that in this respect last year's collection was certainly in advance of any previous one, and that both in landscape and portrait photography, specimens of surpassing beauty were shown.

The reason why photographers give their support to the Photographic Society's exhibition is, however, a very clear one, when we come to give the matter our attention. The collection is, after all, the most complete and comprehensive display of photographs that exists in this country, an exhibition *per se*, and one which, having now taken place for several years, is on a firm and substantial footing. Its existence is so well known that a section of the public now look forward to the period of its opening, and regard it in the same way as other art exhibitions, and the Press, from the mighty daily organs to the more humble local journals, recognise and review the works quite as a matter of course. More recognition of their labours, whether from a public or private point of view, is, in truth, obtained by photographers by sending works to Conduit Street than in any other manner, and as regards the commercial aspect of affairs, we know for a fact that one eminent landscape artist, at least, has had good reason to congratulate himself upon being an exhibitor at the Society's Exhibition.

Does the International Exhibition confer more benefits upon the exhibitor? We think not. In the first place, it should be remembered that although it is a good thing to have your works exhibited to a large public, it is of far more importance that the public should be one that is interested and appreciative of the work. Every visitor to the Conduit Gallery, whether he enters by favour or by payment, is interested in the pictures before him, and this cannot be said of one in a hundred or a thousand even of those who stroll about the International Exhibition. In fact, at South Kensington, one must not only be interested in photography, but an actual devotee of the art, to take the trouble necessary to discover some of the best pictures hidden away—we beg pardon, exhibited—in the lobbies and roughly-planked passages in the neighbourhood of the main building, which have been especially

set apart for photographic productions. Ask any exhibitor of photographs at South Kensington and Conduit Street whether more publicity and *kudos* have not accrued to him by exhibiting at the latter place than at the more pretentious establishment, and we cannot but think his answer will be in the affirmative. The photographic collection at the International Exhibition was not actually noticed in many of the public prints, and those in which mention of the pictures was made, gave, in some cases, a most general and imperfect account, contributed, doubtless, by a correspondent quite ignorant of the subject he was discussing; and seeing the deplorable state of the catalogue, full of blunders and omissions—as far as photography went, at any rate—such an event is by no means surprising.

If, then, the exhibition at Conduit Street was a success last year in face of the numberless allurements that were held out to photographers by the International Exhibition, how much more promise there is this year of the display being a good one, now we have discovered the full value of the good intentions of the authorities at South Kensington! A photograph is of itself so modest and unpretending in its nature as to be easily injured by the neighbourhood of more striking objects, and for this reason alone photographic productions require to be judiciously isolated and carefully hung. Some of the foreign photographs at the International—the charming studies of Fritz Luckhardt, to wit—were so badly treated in this respect as to call forth universal sympathy on behalf of the unfortunate exhibitor.

Some rumours we have heard respecting forthcoming pictures have been very gratifying, and so confident are the officers of the Society of receiving a numerous collection of pictures this year, that a somewhat earlier date has been fixed upon for the reception of exhibits. The hanging committee will have doubtless to exercise more rigidly than usual their prerogative of refusing contributions, by reason of the limitation of space, and for this reason exhibitors must not feel hurt if, of a large collection of prints forwarded, a proportion should not be hung. The gentlemen to whom the difficult task of selecting and hanging has been delegated will, we feel sure, do their utmost to afford justice to all who send pictures, provided, of course, the latter are sent in at the proper time.

One reason more remains to be stated why, on the present occasion, photographers should come forward with their unqualified support: a goodly display of foreign photographs are confidently expected, and these will be for the most part forwarded from studios of world-wide celebrity. From Paris, Berlin, Vienna, New York, and probably from St. Petersburg, specimens are likely to be forthcoming, the names of Loescher and Petsch, Grasshoff, Levy, Bergamasco, Milster, Fritz Luckhardt, being among those likely to contribute. Some specimens of war photography, taken both by the French and German authorities, will be shown, and M. Dagron, whose "Story of the Pigeon Post" was told in the PHOTOGRAPHIC NEWS a few weeks ago, has promised some of the veritable microscopic pellicles which were sent to Paris per pigeon post during the siege.

Altogether, there is good reason to believe in the establishment of a most interesting exhibition this year at Conduit Street, and we conclude these remarks with the sincere hope that each one will use his utmost endeavour in bringing about a successful issue on this as on previous occasions.

RULES FOR EXHIBITORS.

We have received, just previous to going to press, the following details of the forthcoming exhibition, which we commend to our readers:—

Sir,—I have the honour to inform you that the forthcoming Exhibition of the Photographic Society of London will be inaugurated by a *Conversazione*, open to members and their friends, to be held at

the Architectural Gallery, No. 9, Conduit Street, on Tuesday evening, 14th November, at 7 o'clock.

The Exhibition will remain open until 9th December, from 9 a.m. till dusk daily, and for the last three evenings admission being granted by tickets issued by the members, or to friends introduced by them on signing the visitor's book. On Saturdays an admission fee of one shilling will be charged to all who are not provided with member's tickets.

In order to afford time for properly classifying and hanging the pictures and preparing a detailed catalogue, it is requested that intending exhibitors will send in their works *not later than the 7th November* (carriage paid), accompanied by a letter of advice, addressed to the Secretary at the Gallery. This letter should contain the title and description of the pictures, and such other particulars of process, &c., as may with advantage appear in the catalogue; the prices also may be stated if the pictures are for sale.

As a matter of convenience, each frame should have the artist's name and subject written on the front, and the use of Oxford frames should be avoided.

I am, sir, your obedient servant,

JOHN SPILLER, F. C. S., Hon. Sec.

FACILITIES FOR CARBON PRINTING AND PHOTO-COLOGRAPHIC PRINTING.

AMONGST the causes which have tended to retard the adoption of carbon printing amongst photographers generally, there have been two to which we have more than once referred as having, we believed, a repressive effect, much more potent than at first sight might seem adequate to their apparent importance. One has arisen from a fear of the chance of being in some indefinite way mixed up with possible litigation, which at one time seemed imminent, between the Autotype Company and a large manufacturer of albumenized paper, who, it was alleged, disregarded the patent claims of the Company in his manufacture of tissue. Another cause was the inadequate supply of tissue and other materials for carbon printing, and the occasional difficulty of procuring them. The latter cause sprang, we believe, chiefly from the circumstance that the Autotype Company have been as fully employed as their facilities would permit in the production of works for their own publication department. We have pleasure in congratulating the public on the removal of both these retarding causes, and on the accession of several fresh facilities which will tend to promote the convenience of all photographers wishing to try carbon printing. Mr. J. A. Spencer has recently joined the Autotype Company, and will bring to bear on the manufacture of carbon tissue the vast experience of many years as a preparer of albumenized paper, and the experience which he has for some years past, with a perfect prevision of the future of photography, been acquiring in the preparation of carbon tissue. The Company have been extending their premises and manufacturing facilities, and will now, we understand, be able to supply all the materials for carbon printing without delay or limit; and also to undertake printing for amateurs and the trade from negatives which may be forwarded to them. It has been to us a constant source of regret, when the enquiry has reached us as to where negatives could be sent to obtain carbon prints from them, that we have been compelled to state we knew of no establishment undertaking such work. This difficulty will no longer exist. We have reason to believe, moreover, that instructions in the details of practice will shortly be given daily to photographers, instead of weekly as heretofore. We believe that the amalgamation to which we have referred will tend in every way to the advantage of photographers and the credit of photography by the promotion of permanent printing.

Of importance rather to those engaged in photographic publication—or where, for any purpose, large numbers are required—than to photographers generally, is the fact that the Autotype Company will now be prepared to undertake work in photo-mechanical printing for the public, having arranged for an amalgamation with Messrs. Sawyer and Bird, who are working the photo-colographic process of Messrs. Ohm and Grossman with great success. A number of examples of their work before us are very admirable

indeed in quality. Already six presses are in operation on the Company's premises at Ealing, and arrangements for further extension are in preparati. It may be interesting to photographers to know that in the operations of Messrs. Sawyer and Bird the ordinary lithographic press with scraping pressure is used, the hardness of their collographic printing surface, and the small relief it presents, rendering this form of pressure permissible. The same circumstance enables them to use the ordinary lithographic roller of leather instead of the elastic india-rubber roller which a surface with too much relief renders necessary. When requisite, they also use the double inking process to increase effect. A fine example of their work appeared in the *Portfolio* for September, the article accompanying which we reprint on another page.

Critical Notices.

SOME PRIZE PICTURES.

WE have been favoured by Mr. Crawshay, of Cyfarthfa Castle, with examples of some of the photographs which took prizes at the late exhibition of the Royal Cornwall Polytechnic Society. First, we have "The Bridesmaid," for which Mr. Robinson, under the *nom de guerre* of Ralph Ludlow, received a first silver medal. The picture is, as we have before stated, a portrait of a young lady in the costume in which she recently officiated as bridesmaid at the wedding of one of Mr. Crawshay's daughters, and hence the negative remains in his possession. The print, as mounted, is nineteen inches by fifteen inches, and contains the head and bust of a very charming girl, with the white veil of a bridesmaid surrounding her head and floating round her shoulders, every fold and crease of its gauzy texture being most admirably rendered. The picture is distinguished throughout by the utmost tenderness in half lights and half shadows, singular depth and transparency in the shadows, and an unusually solid effect of modelling. The pose, expression, arrangement of light and shadow, and art qualities are very fine.

We have next two pictures of a similar size, both portraits of another young lady, by Mr. Crawshay. One is entitled "The Black Diamond," the veil and drapery throughout hanging in massive dark folds, harmonizing with a gentle, thoughtful expression on well chiselled features. The picture is singularly rich and perfect, rivalling, in this large size even in technical excellence, the most perfectly finished cartes-de-visite. "Aurora" is a portrait of heroic size, the head measuring ten inches. It is the largest, and out of all proportion the most perfect, head of the kind we have ever seen taken direct; a note on the margin informing us that it was so taken with a new lens by Dallmeyer, made for large—but, probably, not so large—direct portraiture. It is, as the name suggests, full of light and brightness, is admirably modelled, and exceedingly perfect. Except as a photographic *tour de force*—in which respect this is a triumph—we scarcely commend such gigantic proportions for photographic portraiture, the lack of life colour to accompany life-size, or more than life-size, being always very manifest. This consideration apart, the perfectness of definition, the admirably delicate rendering of texture, the combination of softness and brilliancy, are all marvellous.

We have next two photographs fourteen inches by eleven inches, both by Mr. Crawshay; the first is another admirable portrait of the lady whom we have seen as the "Black Diamond" and "Aurora." Here she is depicted in *propria persona* as the bridesmaid of her sister. We have rarely seen a more perfect photograph: every minute detail of the light lace, light blossoms, floating white gauzy veil, is rendered with delicate softness. The shadows are rich, deep, and tender, the modelling and texture of the flesh admirable, the perfect repose and winning naturalness of the expression exceedingly satisfactory. The next pic-

ture of the same size, entitled "In thought," obtained for Mr. Crawshaw a first silver medal at the exhibition to which we have referred. Never was medal more worthily won. A sweet faced girl, with deep thoughtful eyes, head slightly inclined, and general air of contemplation, fittingly gives the title to the picture. The treatment, although of the character commonly designated by photographers Rembrandtesque or Salomonesque, is somewhat unusual and daring. The face is kept throughout in a somewhat low mezzotint, with no approach to a high light anywhere. The fine eyes gain by the surrounding shadows being very deep, but perfectly transparent; the flesh, although low in tone, is admirably modelled, the texture is singularly tender, and although exceedingly fine and delicate, it is still the texture of flesh. The pose and expression, composition and chiaroscuro, are all good, and the portrait is throughout, both as a photograph and a picture, one of the finest we have seen. Photography owes very much of its progress in every way to wealthy amateurs, and in no manner can they do better service to the art than in thus showing its higher possibilities as an art, in addition to what so many of them have effected in developing its capabilities as a science.

GUIDE TO QUANTITATIVE ANALYSIS, ESPECIALLY OF MINERALS AND FURNACE PRODUCTS. By DR. C. F. RAMMELSBURG, translated by J. TOWLER, M.D., Professor of Civil Engineering, Chemistry, Toxicology, &c., Hobart College and Geneva Medical College. (Geneva, New York: J. Towler, Home Press.)

THE translation of Dr. Rammelsberg's manual of analysis will be welcomed as a valuable addition to the library of the young chemist, as a guide of especial value in relation to the examination of metallic substances and minerals generally. A very interesting circumstance in connection with the volume is the fact that the type of Dr. Towler's capital translation was "set up" by his wife and children, and the work printed at what he terms the "home press." The volume is, with much propriety, inscribed by our good friend the translator, to his family, with a reference to their labours in its production.

FRENCH CORRESPONDENCE.

SOME days ago there appeared in most of the Paris journals an article pointing out the advantages to be derived from the aid of photography in criminal matters. The note ran thus:—

"One can scarcely believe how much photography aids every day in matters of justice. In the prosecution instituted against the Commune, photography plays an important role, for by its aid it has been possible to recognise a large number of the leaders of the insurrection. On the entry of the Government troops into Paris, all photographs representing the fall of the Veudome column were at once seized, as also those depicting the Communists upon the barricades, &c., and such prints, enlarged by skilful operators, yielded portraits of those who were conspicuous in these undertakings. How was it possible for any of the chief rebels to deny their presence at these Communist gatherings, when their portraits were plainly depicted and easy of recognition, without even the aid of a magnifier. As many as forty plates containing portraits of accused were prepared, sufficient, indeed, to convict the offenders, without further evidence from the Council of War.

If I understand aright, in England also, you are occupied at this moment with a project for photographing criminals, the portrait of the convict being appended to a description of the crime for which the prisoner is under sentence. This fact has recalled to my mind a proposition made some time ago by an Inspector-General of Prisons, M. Moreau Christophe, who had given

the subject his serious attention, and who, in 1854, published in *La Lumière*, of which I then was editor, a communication in which the matter was critically discussed. In this remarkable article upon criminal photography M. Moreau Christophe pointed out the necessity of utilizing the valuable assistance with which photography is capable of furnishing the law, by affording a means of preserving records of a prisoner's guilt. He proposed to append to each record a portrait of the prisoner of the dimensions similar to those subsequently introduced for half-length carte portraits. A printed description underneath furnished any other information of an important nature. But not only would these documents have been of great value for judicial investigations, but they would also afford precious elements for psychological studies by the physician and philosopher.

At about the same period another journal, *La Presse*, published a proposition in regard to passports, of which the following is an extract:—

"There exists among us a belief in the utility of passports, and as long as the employment of these instruments is preserved, it is well to render them as reliable as possible. Now, it has been a question for some time whether it would not be well to introduce an important improvement in the present system. A man of letters (M. Vermeuil) has suggested the addition to the printed description of the possessor, a copy of his portrait. The portrait would be in the form of a medallion, in size and shape similar to a postage head, and would be placed at the side of the signature; and in this way a ready means of identification, so difficult now-a-days on account of the generality of the terms of description employed,* would be at once afforded. The proposition of M. Vermeuil, submitted to the Government authorities, received very serious consideration. A photographer offered his assistance, proposing to produce the portraits at a sufficiently low price, so as not to augment to any notable degree the cost of the passport, and a chemist came forward with a process (?) to render the photographic print indelible, so that when once the passport is delivered to any one person, it becomes impossible to make the document serve for any one else without the fraud being apparent at the very first inspection. Such a method of verification would be invaluable in preventing criminals from falsifying passports, or employing others than their own."

The system was not, however, adopted, any more than the proposition made by M. Moreau Christophe; but inasmuch as passports, at one time abandoned, have been again taken up, and the utility of photography for identification has been abundantly proved in the case of the Communist prisoners, it may not, perhaps, be out of place to recall public attention to the facts here mentioned.

In looking over the back numbers of the *Lumière*, these propositions appear endowed with a kind of historic importance. Another circumstance worthy of attention I also discovered. In 1855 photographers occupied themselves a great deal in France and in England with the important question of fixing photographic prints. Photography in carbon had not then been invented, and one was still occupied in studying the causes of alteration and decay in pictures. Some years previously, however, M. Blanquart Errard had published his process of printing by development, and had, indeed, organized at Lille a photographic printing establishment in which large numbers of prints were produced. In the month of July of that year, 1855, during a visit which I paid to Lille, M. Blanquart Errard offered to illustrate an issue of *La Lumière* with one of his pictures, produced by the developing process, and which would remain in the Journal to confirm or deny the permanent character of this method of printing. This proposition I gladly acceded to, and in the issue of the 22nd July, 1855, there was included one of those

* A French passport, be it remembered, contains a detailed description of the features, &c., of the possessor thereof.—ED. P. N.

landscape prints—a landscape view—which, after the lapse of sixteen years, I have found bound up in the volume. The print has, I find, together with the paper upon which the picture was mounted, become a little grey with age, but, this excepted, it has undergone no alteration whatever. Under the picture was printed these lines:—“It is evident that the specimen submitted herewith to the appreciation of all proves the confidence that the learned Editor possesses in the value of the process. He is certain, so he says, that the finest details in the landscape will be perfectly preserved.”

The confidence which M. Blanquart Evrard then expressed has been fully justified by time, and it is with much pleasure that I seize the occasion of making known the result of this lengthy experiment, and of bearing witness to the good faith of a man who has from the commencement contributed so much towards the progress of photography.

ERNEST LACAN.

CARBON AS A BASIS FOR FINISHED WORK. BY GEORGE CROUGHTON.*

Among the many improvements that have lately occupied the attention of photographers there is none so interesting or of more importance than printing in permanent pigments; and I have been much surprised that photographers generally have paid so little attention to carbon printing, for it certainly seems to me the one thing needed for the perfection of photography. One of its greatest failings has been the instability of its productions, and one would have thought that as soon as a permanent process was made known photographers would have at once taken it up and practised it; yet the fact is that very few indeed have even tried it. There seems no way of accounting for this except upon the assumption that photographers (in spite of a liberal government) are all conservatives, and still cling to the old process, despite its faults, because it is old. It is certainly not from any difficulty in carbon printing itself; for with the short experience I have had with it I can safely say that nothing could be more simple, while, at the same time, nothing could be more effective. As an artist I, in common with many others, have often had to deplore the spoiling of expensive coloured work by the fading of the silver print upon which the work has been executed, and from the first have been impressed with the value of carbon as a permanent base for such work. When there was no other process than silver printing there was some excuse for photographers putting coloured work upon such an unstable base; but now that we have such a simple and really beautiful process that is thoroughly permanent, it is, to say the least of it, a little less than honest to charge a high price for highly-finished work upon a base that must, sooner or later, fade and spoil all the work upon it. If the customer put the question to the photographer before paying twenty or thirty guineas for a painted picture, and he answered him truly, he would certainly not pay such a price for a picture that the photographer could not guarantee would last.

It is, I am aware, no new idea to use carbon for coloured work, one eminent firm having, three years ago, exhibited some splendidly finished work upon carbon at the exhibition of the Photographic Society; but, unfortunately, the pictures after a short time cracked up in the deepest shadows. This was the difficulty I encountered when I first tried colouring carbon photographs. When a wash of colour was put on the carbon swelled, and the layer of colour dried before the carbon, so that when the carbon dried and contracted the colour was cracked in every direction; so I had to give it up in despair, and resort to the old expedient of tracing from the photograph on to the ivory, porcelain, or other surface that the picture was required to be taken upon. It is needless to say that this involved double the time to work up than if I had been working upon a photograph.

Happening to mention to Mr. Johnson (on the occasion

of his exhibiting at the last exhibition meeting here some fine carbon pictures) the difficulty I had encountered, he said he thought he could overcome it, and kindly printed a small miniature upon ivory (which I have here for your inspection), which, he said, he thought would meet every requirement, and I certainly found that it left nothing to be desired. Nothing could possibly be better for the purpose of painting on. The film of gelatine and pigment is so thin that it is almost imperceptible, and the lights are pure ivory, while the texture and tooth are unaltered, so that I find it exactly the same in working as if I was working upon the ivory itself without anything placed upon it, with the advantage of saving half the time and of securing a more accurate likeness.

I have tested this and others in many ways, putting thick colour upon it and drying it by the fire to make it crack up, if possible, but it has not done so; in fact, it appears to have become part of the ivory itself. With the porcelain pictures it is so hard to get off after it is dry that there is no other way than to regularly grind it off with pumice powder. You will see by the examples I have brought that the carbon takes the texture of the material it is on. “What,” you will ask, “has made the difference between these and the first carbon prints you tried to colour?” Nothing more than the final immersion of the carbon prints in an aqueous solution of shellac. This solution was, I believe, introduced by Mr. Johnson, and is supplied by the Autotype Company. It is certainly a most valuable addition in many ways, which I will endeavour to explain hereafter, to the carbon process. It has the property of hardening the carbon film in such a way that after it is dry it will not swell even by soaking in water; therefore, it may be washed with water colour to any extent without cracking up.

At the invitation of Mr. Johnson I went to Rathbone Place, and saw the process worked, and was so impressed with its simplicity that I brought away with me what was requisite, and set about doing it for myself; and, as the greater number of those exhibited this evening have been executed by myself, the members will be able to judge with what success I have worked. You must take into consideration that my time has been very limited, and I have done it in the roughest possible manner, the only appliances I have being two flat porcelain dishes and a squeegee. The various methods of working are all to be found in the Autotype Manual; but I think that, perhaps, a few remarks upon my experiences with them may be interesting.

In the first place, then, for the pictures upon panel or canvas, if the negative be reversed (and for an enlargement nothing is easier than to get non-reversed negatives by putting the transparency in the enlarging camera with the glass side to the lens), it is the simplest thing possible. The panel or canvas, after being washed with soap and water, and well rinsed, is dried with a clean linen rag, then floated with the shellac solution, the proportion being one ounce of the shellac solution to fifteen ounces of water. Then place on end to dry, and when dry it is ready for the exposed tissue.

The trouble of hitting the right exposure is greatly exaggerated. I have made all my exposures by timing them with my watch. After getting used to the time it takes in printing, which is about one-fourth that of silver, any photographer can judge from his negative the time of exposure with much more certainty than the exposure of the prepared plate in the camera.

The exposed tissue being taken from the printing-frame, it is put into a dish of cold water, and here occurred failure the first. I had heard that all the free bichromate should be washed out in this water, so I left the exposed tissue in the water till it was thoroughly soaked; the consequence was that it would not adhere to the support, but came away while developing in the hot water. I learned that the time the tissue should be in the cold water was very short, the principle being that the tissue should not be allowed to

* Read at a meeting of the South London Photographic Society, Oct. 12.

take up all the water it is capable of absorbing, but, being placed upon the support, it should suck up all the water between the exposed surface and the support, and so acting like a boy's sucker. The carbon film adheres perfectly and permanently to the support. I will not follow out all the details of the process, this being done in a much abler manner than I could do it in the Manual published by the Autotype Company. I only touch upon those parts of the process to illustrate my failures, so that others may avoid them.

My next failure was in the developing. That arose from having the water too hot. There is a tendency to hister if the water is too hot. I have found a safe temperature for a rigid support to be 100° Fahr.; for the paper support, 90°. After development the print, on its support of canvas or panel, is passed through the alum, and left to dry; when dry it is coated with the shellac, and it is ready for painting. The pictures now exhibited have been done in that way, and are now ready for the artist.

I must call your attention to the exquisite rendering of the delicate half-tones in the white dresses. That rendering of delicate shades is one of the characteristics of carbon. In that respect it is far superior to silver printing.

For non-reversed pictures from ordinary negatives the temporary support must be used. This is paper prepared with the shellac solution. It is sold ready for use. The exposed tissue is placed upon this after it has received a coating of the wax and resin mixture in the ordinary way with the squeegee, and the picture is developed upon it. After development it is passed through the alum solution and hung up to dry.

You have, now, your picture ready for transfer to any material—ivory, porcelain, paper, canvas, panel, &c. The material to which you wish to transfer the picture is coated with chrome alum and gelatine, and the two surfaces are brought together under water, and are pressed together by the squeegee and left to dry; after which the paper comes away, you have a non-reversed picture upon any material you may wish to use. It is then coated with the final wash of shellac, and is ready for painting on.

Now it will at once become apparent that, by having paper as a temporary support, the picture can be modified to suit the artist. For instance: suppose we want a picture upon drawing-paper to look, when finished, like a water-colour drawing. The artist wishes to do away with the photographic background. He has only to cut out the figure—or, perhaps, only the face—and put it in any part of the paper he pleases, and he can work upon it with water-colour in the same manner as he would if no photograph were there, as the shellac acts only as a sizing to the paper. Of the pictures I exhibit, an ivory and two porcelain pictures have been done by double transfer for the paper support, and the others are single transfers developed direct upon the porcelain, panel, or canvas.

I have in this paper only treated of the advantage of carbon as a base for coloured work, but may I ask the question why it does not come into use for ordinary work? Why do photographers shirk it as they do? Is permanency so small an advantage that it is not worth some trouble to secure it? If photographers think so, I am glad to learn that the public do not. There is a small, but steadily increasing, demand on the part of the public, who, enlightened by the carbon pictures in the late International Exhibition and elsewhere, are now asking photographers if they use the carbon process. If the public demand it, photographers must supply that demand; and, I suppose, we must trust to that demand to waken photographers from their infatuation for their fickle mistress, silver, and make them march with the times.

ON SOME NEW METHODS OF PRINTING.

[The *Portfolio*, in a recent number, has the following.]

In the present number we place before our readers, in the view of the Church of St. Riguier, near Abbeville, an

example of a new system of printing possessing some singularly ingenious and interesting features. "Photocollography" is the name by which it is proposed to designate the process in question, the term indicating the colloid or gelatinous nature of the printing surface, and the photogenic agency employed in its production. Some such term is necessary to distinguish this process or class of processes—for there are several of a strictly cognate character—from lithography or zincography, to which they bear considerable analogy.

Notwithstanding our intimate familiarity with the results of stone and zinc printing, the majority of persons entertain but a vague notion of their nature; and in order to make the principles upon which the new methods are based more easily apprehended, it may be desirable briefly to advert to some common misapprehensions as to the nature of lithographic printing. The printing surface is very generally supposed to be raised upon the stone or metal substratum by coating the lines with a fatty ink, and etching away the intermediate spaces not so treated. This is entirely erroneous: for the most part there is no inequality of surface, the inking being effected not by the design being in relief, but by its greasy nature, which enables it to retain the ink imparted by the roller charged with fatty ink, while the non-greased space of the stone or zinc, having been previously sponged, retains sufficient moisture to repel that ink. The process is, therefore, entirely chemical, and not mechanical, and depends upon the affinity of grease for grease, and its repulsion by water.

The colloid surface is of a strictly analogous character: the drawing or design is produced in a substance which attracts ink and repels water. The character of the design differs, however, very widely from that on the surface of zinc or stone in two respects:—First, the colloid surface is not a plane surface—as we have just shown the printing surfaces of lithography and zincography respectively to be—but one possessed of considerable relief, somewhat like a carving in very low relief, the dark or engraved copper-plate or printing parts of the design being in intaglio. It must, however, be clearly understood that these hollows do not in any way retain the ink, as in copper-plate printing, neither do they contribute to that end, their presence being rather inimical than favourable to the success of the operation; hence it is one of the aims of the operator to reduce the relief to a minimum. The inking, and consequently the impression, are exactly analogous to the lithographic process, and depends upon the amount of water present in the relievo film, the high parts, having in swelling taken up much water, refuse the ink, and the depressed parts, being nearly impervious, take up the ink, and so in proportion. And second, the colloid surface differs from its predecessors—those of stone and zinc—in that the design has been produced entirely by the action of light and chemical forces instead of by the hand of the artist. The result is essentially autotypic—that is, it is produced directly from the artist's own work by the mere forces of nature, and without the intervention of another's greater or less artistic skill, producing a translation, good or bad, rather than a facsimile of the original work.

Let us now see how this surface is produced, and let us trace the various steps by which the process employed in producing our illustration has passed from its origin to the high degree of excellence to which it has at present attained. While experimenting upon the method discovered by our countryman Mungo Ponton, of producing images on paper by the joint action of light and the bichromates, the elder Becquerel made the observation that the sizing of the paper by gelatine appeared to be essential to the obtaining of vigorous images. By verifying it and ascertaining the conditions under which it was produced, Poitevin was enabled to originate not only photocollography and the photo-lithographic processes based thereon, but made the first step in pigment printing.

It was not, however, until Fargier, Swan, and Johnson had completely changed the method of operating suggested by Poitevin, that pigment printing became a well-recognized and extensively-practised system of solar printing. His discovery that a fatty ink would adhere to the gelatinous or aluminous surface where acted upon by light, was not so prolific, but it bore fruit. Contrary to what has been understood upon this subject, we have reason to believe that a practical process of collographic printing sprang into operation on Poitevin obtaining a patent for his invention, and has continued to be worked ever since with some degree of success under the name of "Photo-lithography," by the house of Lemerrier and Co., of Paris, who at once recognized the merits of Poitevin's discovery, and purchased his patent. M. Lemerrier is himself an ardent investigator, and has, doubtless, greatly improved the manipulations of Poitevin's invention, but in principle the process remains the same. The process employed, although described as photo-lithography, is not properly a photo-lithographic process, as it has been called, but a collographic process. It is not the preparation of the mere surface of the stone which is acted on by the operations observed, the intermediate agents disappearing in the process, but the stone is merely a substratum for the colloid body which constitutes the true printing surface, although of minute thickness.

The next step in colloid printing was made by those two enthusiastic workmen in physical science, MM. Tessié du Motay and Maréchal. These gentlemen had found that the ordinary aluminous surface was easily injured, and, in fact, destroyed, unless rendered tough, and, to some extent, non-absorbent, without, however, ceasing to absorb sufficient moisture to resist the fatty ink. We have reason to believe that this fact had been recognized by Lemerrier at an early date, and that in the preparation of his surfaces some method of effecting this was used. The most casual observer could not fail to observe the deficiency, and time itself would supply the remedy; in fact, it is only necessary to keep the prepared sensitive surface for some time unexposed to light to find that it has undergone an important modification. It is no longer soluble in water—it has slightly changed in colour—instead of possessing the ordinary tenacity of dry albumen or gelatine, it has become highly elastic and tough or leathery. The change which is produced by light has already been partially effected, not only here without destroying the sensitiveness of the compound to light, but of enhancing it in an extreme degree.

MM. Tessié de Motay and Maréchal found that this condition could be obtained at will, and without long keeping, by two different systems of chemical action. In one system they use a chrome salt in which the acid is in greater proportion to the base than in the bichromates—viz., the trichromates, salts which, even if they exist in an isolated state, are certainly not found in commerce, but which are easily produced by the addition of a few drops of acid to the usual sensitive compound formed of the bichromate and gelatine. This acidified compound becomes insoluble in the mere act of drying; so that we get at once the leathery film with its increased tenacity and resistance to the printing operations. The other system depends upon the use of a reducing agent when either the trichromates or the bichromates are employed. This has the effect of reducing the chromic acid of the compound to the state of oxide, or to a compound of the acid and oxide (chromate of chromium), an action identical with that of light; and this combining with the gelatine forms in more or less quantity, according to the amount of the reducing agent used, a true leather, diffused and combined with the remainder of the gelatine unacted on.

The process of MM. Tessié and Co. has, we understand, been in full operation since the date of their patent, having been worked commercially by M. Arozn with a considerable degree of success.

(To be continued.)

THE USE OF POTASH FOR CLEANING PLATES.

REFERRING to an article by Mr. A. S. Southworth on cleaning glass, which we published in a recent issue, Mr. O. G. Mason writes to our Philadelphia contemporary to caution photographers. The former writer has, he remarks, "recommended the use of strong boiling potash. My own experience with this substance has been such that I should not recommend it, except in extreme cases, and then only with great care. Of the many objections to its use, I will now name but two.

"First, its solvent property, which acts very powerfully upon some of the constituents used in the manufacture of glass, especially some of the best brands for photographic use. So great is this action that practical chemists find it necessary to keep potash solutions in bottles constructed of peculiar glass, to avoid having the glass stoppers sealed in by it, the stopper and inside of the neck becoming, as it were, fused together, even with cold solutions, which we can readily understand would act much more energetically when heated to a temperature of 212°.

"Some years ago I had occasion to experiment considerably in the preparation of glass for use in mounting microscopic objects. It was necessary that the glass should be absolutely free from all extraneous matter, and one of the methods which I adopted for the end in view was immersion of the glass for a few moments in a boiling solution of potash, or rather placing the glass in a cold solution and raising the temperature to the boiling point. The result was, not only the removal of foreign matter, but also the removal of the polished surface of the glass. The solution which I used may have been stronger than Mr. Southworth would recommend, though he gives no standard, save 'a very strong solution.'

"The other objection which I would now bring forward is to the use of any boiling solutions in the preparation of glass for photographic use. Every one accustomed to the handling of glass has observed the defects generally known as 'blisters' or 'air-bubbles,' but perhaps all have not observed the number or extent of these defects as seen under even a comparatively low power of the microscope. Many of these, invisible to the naked eye, prove 'weak vessels' when raised to the high temperature necessary to cause exhibition in so dense a fluid as strong solution of potash. Whether this results from the imprisoned air or gas which they contain being expanded by heat, so as to exert a pressure greater than the surrounding mass can withstand, or from a lack of material which they occasion in the body of the glass, may be a question, though I believe it due to the first named of these two possible causes; in proof of which I enclose a slip of microscopic glass which was treated in the manner stated. By examination under the microscope you will observe that many of the 'blisters' are merely fractured sufficiently to allow the escape of the imprisoned contents, while others appear as though there had been a violent explosion, entirely removing one side of the cavity; and some are yet covered by the shattered wall, which may be lifted off by the careful use of a sharp-pointed instrument.

"The most expeditious, and, at the same time, satisfactory method which I have yet found for removing the sharp or cutting edge of all ordinary sizes of photographic glass, is to hold a plate in each hand, and quickly draw the lower angle of the edge of one plate against the upper angle of the edge of the other as they are held nearly flat before the operator. Then the plate which was drawn across the upper angle of the other is in the same manner drawn along its lower angle, without turning either plate. We thus remove the edges from one side of each plate at each motion. This repeated, and we have the four edges or eight angles, each of two plates (sixteen in all), done in eight motions."

NOTE ON THE BLISTERING OF ALBUMENIZED PRINTS.

BY DR. P. LIESEGANG.*

UPON this subject Mr. Carey Lea writes in his "Manual" that a good preventive of blisters is to allow the pictures to remain for a short time in a weak solution of hyposulphite of soda between the operation of fixing and their immersion in the first washing water. During a recent washing of some of my prints I remarked that portions of the albumen coating were raised in blisters or bladders from the surface of the paper, and so, following Mr. Lea's advice, I quickly diluted a portion of the fixing bath with an equal amount of water, and laid the defective pictures therein, and after a few minutes I found that all the bubbles had entirely vanished. By subsequent washing they again appeared, it is true, but they nevertheless did not become larger, and, on drying, disappeared again, without leaving behind them any trace of their whereabouts.

In order, however, to be convinced whether the tendency of forming blisters was influenced by the employment of strong or weak sensitizing baths, or by longer or shorter floating upon the nitrate of silver solution, I decided to make experiment in the matter, and forthwith prepared two sensitizing baths, one of which contained an eight per cent. solution of nitrate of silver, and the other one of sixteen per cent. Some samples of highly albumenized paper were obtained, and floated for different periods on the two baths; two, five, ten, and fifteen minutes were the different intervals fixed upon. The result of the experiment appeared very conclusive, for I found that the samples of paper which had been floated upon the baths for the longest period—fifteen minutes—were free from blisters, while those which had remained in contact with the liquid for a shorter interval were all marked with the defects in question. These satisfactory results were obtained, be it remembered, indifferently with the weak and the strong bath. For this reason I would recommend floating for some considerable period on the sensitizing bath to prevent the formation of blisters upon highly glazed albumenized paper.

NOTES ON LANDSCAPE PHOTOGRAPHY.

BY DR. H. VOGEL.†

MY recent sojourn in the Carpathians has afforded me a further opportunity of obtaining some experience of landscape photography, and the notes I have made I here proceed to write down.

It frequently happens that the landscape photographer, in fitting himself out, supplies himself with a plentiful stock of some chemicals and necessaries, while of other he possesses but an insufficient provision, and thus he finds himself in a serious dilemma at, perhaps, some considerable distance from a source of supplies. For this reason it is very desirable to know what particular amount of necessaries are practically requisite for the production of a certain fixed number of negatives, and this is a point which I have striven to set clear. Of course the expenditure of material must always, in some measure, depend upon the manner of working pursued by the operator, as a more or less liberal coating of the plate, expenditure of the developer, and employment of the intensifying solutions, will naturally influence very much the exhaustion of the stores.

Thus, in coating plates, I myself employ about one half ounce of iodized collodion for coating twelve inches square of glass, whereas several of my pupils, who coat very sparingly, employ only two-thirds of that quantity. Of the developer I use, per square foot, 300 cubic centimetres, some portion of the same being subsequently employed for intensifying (I intensify with iron). Of the silver inten-

sifying solution I employ in landscape work, for a brilliant collodion, 45 cubic centimetres, and for a matter film, 40 cub. cents. To the silver intensifying solution I add as much alcohol as the developer contains of acetic acid; it then flows more readily over the film. Of cyanide solution (1 to 25 strength) I use, per square foot of collodion film, 200 cubic cents, but for smaller plates the expenditure is comparatively larger.

In manipulating with small plates, more liquid is spilt and more easily lost than with larger ones. The above quantities, however, are calculated for plates measuring one-third of a square foot, and the consistence of the collodion may be gathered from my formula, viz. :—

Gun-cotton	1½ grammes
Salts of cadmium	13½ "
Ether	37½ "
Alcohol	62½ "

With these data, therefore, it is possible for any one to calculate the quantity of chemicals necessary for the production of a given number of negatives.

As regards the manipulation of plates, I have a few remarks to make. It is always a precarious matter to take nitric acid with one on a journey. Even with the best stoppered bottles drops of the liquid are apt to leak out and to exert their corrosive action upon surrounding objects. For acidifying plates prior to their being cleaned, as used in the studio, nitric acid is not likely to be required when engaged upon excursions of this kind. My method of preparing plates for coating is to pour a few drops of acid upon the surface, to rub over well with a piece of filter paper, and then to wash and albumenize.

Albumenizing the plates is much better than polishing them, and has already been recommended in the photographic journals; a very practical method is the one recently suggested by Grasshoff, who employs a small quantity of carbolic acid in his solution.*

The point in connection with the subject is worthy of attention; it is important that the white of egg should be kept perfectly free from the yolk, and if, in mixing the solution, even the smallest quantity of yolk should enter, it is by far better to reject the solution, and take another egg. The cost is, after all, not a very alarming one.

My photographic baggage I reduced on the present occasion to a considerable degree, having regard for the difficult character of the mountainous country among the Carpathians. Instead of my former tent, which weighed some thirty pounds, I employed one weighing not more than eighteen, such an one as any man could conveniently carry upon his shoulders, and which could be set up in a couple of minutes. More precise details of the same I will leave till another time. My stock of chemicals I left at home at my quarters, and in my mountain excursions took with me but half-a-dozen plates for a day's work, the requisite solutions being packed into the plate box, or in a courier bag. A second porter carried the camera and a small can of water. Varnish was left at home, and the plates were brought out ready albumenized, as I find the film will remain upon the glass for many days without springing off.

I would recommend that every landscape photographer should provide himself with a small bottle of permanganate of potash solution. In Egypt I should have been unable to have worked at all without such reagent, and here in the Carpathians I again learnt to appreciate its value. A small piece of pinewood fell into my silver bath while I was operating with the camera, and remained therein for some fifteen minutes before I discovered it. This was, of course, quite sufficient to injure the solution, and the plates sensitized afterwards were not only extremely insensitve, but, likewise, became fogged on development. I at once added the permanganate solution, drop by drop, to the bath, until the rosy tint imparted to the bath did not disappear after an agitation of some five minutes. There was no time to

* Archiv.

† Photographische Notizen.

* See PHOTOGRAPHIC NEWS, 22nd September last.

filter the liquid, for it was then shortly before sundown, and therefore I went to work forthwith, and obtained a good clear negative. Without I had possessed this permanganate I should have been compelled to return home without securing a picture.

As regards actual working in the Carpathians, I may mention that many advantages are enjoyed by reason of the extreme purity of the water, which is even free from chlorides. On the other hand, however, in the northern portion of the district especially, there are many difficulties to be overcome in regard to the question of lighting; nearly all the principal valleys run from north to south, and the background of the valleys, therefore, are for the most part of the day in the shade, the evening and morning being the only favourable periods for photography. Another difficulty is the extreme narrowness of the defiles, so that a comprehensive picture of mountain, lakes, &c., is difficult to obtain. Busch's Pantoscope lens is here useful, as it embraces an angle of 90°. For smaller angles of view I employed Steinheil's aplanatic lens.

Till now photographers do not seem to have penetrated into the higher portions of the Carpathians, but the time will, no doubt, come when the varied beauties of this district will be better appreciated.

OUT OF A FIX.

BY O. G. MASON.*

Most photograph printers are acquainted with the peculiar action of hyposulphite of soda in producing stains whenever brought in contact with untoned silver prints, the slightest trace being quite sufficient to produce the well-known yellow stains so annoying to careful manipulators. One of the most curious features of these stains is the very small amount of hyposulphite required to produce them. I have found it quite impossible to tone prints by any of the ordinary methods after allowing them (before washing) to remain a few moments in water to one gallon of which only five grains of hyposulphite had been added.

I distinctly remember a circumstance which occurred in my own practice some years ago. I had worked all day in making full sheet prints from my large negatives of the moon, and was congratulating myself on the fine results when my attention was called to a dull metallic-like fog which had settled over the prints, soon after their immersion in the water used for removing excess of silver before toning. I had incautiously used a tray which had on the previous day contained a weak solution of hyposulphite, the last traces of which had not been removed by the two or three waters with which it had been washed out. My day's labour was lost—the prints were spoiled.

I have quite recently had a case somewhat similar, but with quite a different result. During a few days' absence from my laboratory, some one had changed the relative positions of my toning and fixing solutions—both being kept in large glass bottles of like size and form. I did not notice this change until I had begun to pour the hyposulphite solution into my toning dish containing washed prints. On the instant I discovered my mistake, the old toning, both of hyposulphite and gold came to my mind, and seizing the bottle of gold solution standing by my side, I immediately added a strong dose to the hyposulphite already on the prints, thus forming a compound bath of hypo and gold. My prints were saved.

In the first instance which I have named, the small trace of hypo came in contact with unwashed prints, while in the more recent instance the greater part of the unreddened chloride had been removed by the several washings to which the prints had been subjected. To this may be attributed the great difference in results. In the first case the surface of the chloride had been converted into hyposulphite of silver, completely preventing any action of the toning solu-

tion, while in the last instance the removal of the free chloride had left that part which had been reduced by light in such condition that the immediate action of a much larger amount of hyposulphite failed to prevent the toning effect of the gold.

Correspondence.

APPRENTICES AND ASSISTANTS.

DEAR SIR,—It is said that "too much of anything is good for nothing," and fearing lost some of your readers might think that they were getting too much of the assistant controversy, I hesitated to trouble you again on the subject. As, however, Mr. Schmidt has joined a "Little Photo" in requesting my definition of an assistant operator, I shall comply, and be as brief as possible.

It will be necessary, first, to define the duties of an operator, and my idea of a person calling himself an operator is that he shall be able to undertake the whole routine of a photographic business: dark room, posing, and printing. An assistant operator should, in my opinion, be able to clean and prepare plates, develop ordinary negatives, take a negative if the operator or principal is engaged or from home, print, or tone; in fact, he should be able to assist the operator in every department. But I would never expect an assistant operator to be able to take entire charge of dark room, posing, or printing. He should be able to do the work, but under the guidance and direction of the operator or principal.

"A Little Photo" says, "Not to manage the business." Certainly not. A man may be a first-class operator and a good printer; he may be even an artistic operator as well, and yet be quite unable to manage a business. To manage a business requires business tact as well. Photography is a science—an art—but it also partakes a good deal of the business, and it is hard indeed to get a person possessing all the properties, and hence the necessity of careful training so as to develop to the utmost any property that may be weak.

The fact that there are many photographers quite incapable of training assistants renders it the more necessary for those who are capable to bestir themselves. The difficulty to be overcome at present, in many places, is that respectable people will not send their children as apprentices to photographers, and it will take time to overcome that repugnance.

Mr. Schmidt makes quite a mistake if he imagines that I ever advocated caste; but if a person sends his son to a photographer, having given him a good education, and either pays a fee, or allows some time for nothing, then the photographer can afford to devote some time to training him—to explaining to him the reason why as he goes along; but if he simply engages a boy with little education, and pays him what he is worth from the beginning, he cannot afford to train him up. If he did, the boy would reap all the benefit, and expect to be paid to the utmost farthing that he was worth. At the end of four years I am certain that neither "A Little Photo," Mr. Schmidt, or any other person would take the one boy if they could get the other.

I cannot but feel amused at the pertinacity with which "A Little Photo" and Mr. Schmidt will still assert that there are plenty of good assistant operators to be had. If so, where is the use of talking of a conference of photographers to remedy an evil that does not exist? As I said before, there may be plenty if we only knew where to find them.

I would say to both employers and assistants, in the language of Vousden's song—

"Let each man learn to know himself;
To gain that knowledge let him labour."

Let each employer know what he requires and advertises for—such as "An Assistant Operator," "An Operator," or "An Artistic Operator"—and let each assistant study to know what he really can do, and reply only to such advertisements as will really suit him.

Permit me just to reply to one more remark in Mr. Schmidt's last letter. I would ask that gentleman to refer to the reason why I made the remark I did regarding the pictures at the Exhibition; and my observation has led me to conclude that assistants are just as forward to claim more merit than they deserve as employers are backward in according it to them; and that propensity in operators has in no small degree tended

* *Photographic Times.*

to the reduction of prices in many cases. I do not now write from theory, but from what I have seen. Men of position in business, possessed of capital, a liberal education, and refined taste, have added to another business photography as a branch; have got a studio erected according to the best recognized principles of lighting, and everything else in keeping; have engaged a first-class operator, and all has gone on well for a time. After a little, however, the operator takes it into his head that all the success of the business—or, at least, a large proportion of it—is due to his ability, and his employer failing to see as he does, the operator leaves, and commences in opposition. Finding that a much smaller proportion of the customers follow him than he expected, or that he over-estimated his own ability, and that he was much more indebted to the refined taste of his employer than he was willing to acknowledge, he reduces his prices to force a business. I do not now write of photography as an art, or of those who work for love of it, and who would rather live upon a crust of bread and a drink of water than turn out those wretched, soulless-looking caricatures to be seen in so many albums, but of those who work photography to make it pay.

I would only further say to "A Little Photo" and Mr. Schmidt that I have been an apprentice, an assistant, and employer (though not in photography), and hesitate not to say that I would do as much as any man in the profession for an apprentice that I saw deserving of it, or an assistant, but I cannot and will not pay to any person one-third or one-half more than they are worth, or than they ever had before.—I am, yours truly,

D. WELCH.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE annual meeting of this Society was held in the Memorial Hall on Thursday last, the 12th inst., the Rev. CANON BEECHY, M.A., President, in the chair. After the routine business the Secretary read the

Annual Report.

Your Council, in their sixteenth annual report, regret their inability to congratulate the members on the usefulness of the Society during the past session. Although the meetings have been fairly attended, there has been an absence of interesting matter for discussion.

Novelty in the art is very scarce, and the old processes are either well understood, or members do not care to discuss their merits.

Notwithstanding the great push the collodio-bromide process has received, and the improvement in it, our old favourite, collodio-albumen, holds its position, and the productions of our best workers of it stand the test of comparison with those of any of the other known dry processes. Indeed, the conviction is almost general in Manchester that none of the other dry processes can equal the collodio-albumen in beauty of detail, good printing colour, force, or certainty, its only disadvantage being the necessity for long exposure; and your Council invite the attention of members to systematic experiment in this process, with the object of obtaining greater sensitiveness or quicker development.

The Treasurer's accounts will be submitted for your consideration.

The members on the books are seventy-six, against eighty-four at the last annual meeting.

The attendance at the meetings shows a small decrease on that of the previous year, the average being thirty one-half against thirty-two one-third.

Four papers have been read during the year:—One "On Glass Transparencies," by Mr. Coventry; "On a Half-Plate and Stereo-Mountain Camera," by the Rev. Canon Beechey, M.A.; "The Albumen Process on Glass," by Mr. Noton; and "On a Semi-Swing Back Applied to a Stereoscopic or Rectangular Camera," by Mr. Noton.

On two occasions the members have had the pleasure and advantage of witnessing a lantern exhibition for mutual instruction and improvement in the production of transparencies, and your Council desire to recommend the practice of this branch of photography to the members.

Your Council also desire to impress on the members the desirability of bringing their productions, whether negatives or prints, to the monthly meetings, with the object of comparing

the characteristics which belong to the different varieties of dry plates or other processes, and otherwise attesting the progress of the art in the Society generally.

On the whole, the Council do not regard the condition of the Society as at all unpromising, considering the want of novelty necessarily attendant on an established science; but sincerely trust that, by united effort on the part of members to bring forward every instructive matter which may come under their notice, the interest of their meetings may be not only sustained, but greatly enhanced.

The omission of the *soiree* last year may have tended to the small decrease in the number of members, and the Council desire the consideration of the general meeting as to whether a *soiree* may not be held this year without the heavy loss which caused its cessation in the year past.

The CHAIRMAN (referring to the Report) said he could not regard a Society whose monthly meetings numbered upwards of thirty members as being in an unhealthy condition. The report of the Council was honest, but not flattering; and, without wishing to expunge the first paragraph, he must say the meetings had been both social and useful; but, perhaps, not as useful as they might have been.

The Annual Report was then accepted, and the Treasurer's accounts considered and passed.

Messrs. J. H. Abbott, Alfred Buxton, and Thos. Parkinson, were elected members of the Society.

The election of officers for the year then took place, and resulted as follows:—

President: The Rev. Canon Beechey, M.A.—*Vice-Presidents*: Messrs. Thos. Haywood, W. T. Mabley, G. T. Lund, M. Noton, and F. C. Tobler.—*Council*: Messrs. R. Atherton, J. Chadwick, A. Coventry, C. Hebert, W. Hooper, J. J. Kershaw, A. Patterson, J. Warburton, I. Wade, and N. Wright.—*Treasurer*: J. H. Young.—*Honorary Secretary*: C. Adin.

A discussion followed on the practicability of holding a *soiree*, and the following resolutions were passed:—"That it is desirable to hold a *soiree* in connection with the Society." "That the following gentlemen be appointed a sub-committee to consider and report to the next meeting on the advisability of holding a *soiree*, and of what character:—Messrs. Haywood, Lund, Coventry, Sanderson, and Coote."

Mr. NOTON exhibited a few negatives which he had subjected to the action of Schlippe's salt. They were of a beautiful red colour, and were interesting to the members.

Mr. COVENTRY showed some six or eight negatives taken on Colonel Stuart Wortley's own plates; and, in reply to an observation by a member, said if these plates were over-exposed it was very difficult to get them up to a proper density. About one half of the plates had blistered very badly.

A vote of thanks was passed to the officers for their services during the past year, and the meeting was adjourned.

THE SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE first meeting of the winter session of this Society was held on the evening of Thursday, October 12th, 1871, in the City of London College, Mr. SEBASTIAN DAVIS in the chair.

The minutes of a previous meeting having been read and confirmed, Mr. F. A. Bridge and Mr. J. A. Spencer were duly elected members of the Society.

Mr. TESCH showed some plates coated with a varnish which furnished a fine tooth for pencil retouching.

Mr. G. CROUGHTON read a paper upon carbon printing as a basis for finished work (see p. 497). He exhibited some fine specimens on ivory, panel, opal glass, &c., some plain and some coloured, all of which admirably illustrated the efficiency of the process employed.

After some conversation on the excellency of the work and the easiness with which it was accomplished.

Mr. CROUGHTON, in reply to a question, said he found no tendency whatever in the image to leave the ivory or split. The difficulty, indeed, was to get it off if required. Once on the ivory it was permanent, and could only be scraped or ground off.

Mr. FOXLEE had seen some coloured carbon prints on ivory, where the shadows to which gum had been applied had cracked.

Mr. CROUGHTON said that this was doubtless some time ago, before the present method was adopted, when the gelatine and carbon was too thick in the shadows, and the protective coating devised by Mr. Johnson was unknown.

Mr. SPENCER said this was so. Messrs. Lock and Whitfield,

who had worked the old process before Mr. Johnson's improvements were introduced, had some examples crack as described.

After some further conversation,

Mr. CROUGHTON said that he had coloured ordinary carbon prints before, but the work was not successful. He had tried Newman's preparation, which answered, but did not leave the whites so pure as the solution provided by Mr. Johnson, which, whilst it protected the film, gave richness to the shadows, leaving the lights unsullied.

Mr. FOXLEE thought that if the perfect adhesion of the image to the substance upon which it rested were assured, there could be no doubt about the permanency of carbon prints.

Mr. CROUGHTON thought that was now secured. He had wished to remove some from opal glass in order to use the plate again, and found it could only be ground off with pumice stone.

Mr. FOXLEE suggested that changes of temperature would be most trying.

Mr. SPENCER believed no danger whatever of that kind was to be apprehended.

Mr. CROUGHTON, in answer to a question, said the sizing or protective solution was applied cold. It consisted, he understood, of a solution of lac.

In course of further conversation, it was stated that the preparation consisted of white lac dissolved in ammonia.

Mr. BLANCHARD, in answer to a question, said he hoped shortly to give his attention to carbon printing. He had been waiting, at the suggestion of Mr. Johnson, until certain improvements in course of completion were ready.

A conversation followed as to the class of negatives best suited for carbon printing, Mr. Croughton stating that the specimens on the table, which were so much admired, were from negatives of ordinary good quality taken for silver printing, and that firmer detail was obtained in the carbon prints than he had ever seen from the same negatives in silver prints. Several members had found that thinner negatives might be used in carbon printing than in silver printing, a fact which

Mr. SPENCER confirmed, stating that if the negatives only contained the proper detail and relation of light and shade, they would yield good carbon prints, no matter how thin they were.

Mr. WHARTON SIMPSON said that one of the especial beauties of the carbon process was here involved. The tissue could be prepared to meet the requirements of every kind of negative. If it were thin and soft, then a tissue with a large proportion of colouring matter would give as much brilliancy as could be desired; if the negative were very hard and dense, then a small proportion of colouring matter to gelatine would give softness and detail.

After some further conversation,

Mr. SPENCER said he found the best strength of the bichromate solution was from three to four per cent.

Mr. CROUGHTON had found half an ounce of the salt to ten ounces of water give capital results. He subsequently found that what he believed to be a saturated solution gave great sensitiveness and good pictures.

Mr. SIMPSON said that a saturated solution, which consisted of about one ounce in ten of water, was dangerous if the tissue were immersed, as it was apt to crystallize on the surface in drying.

Mr. FOXLEE had had similar experience.

Mr. CROUGHTON floated his tissue, as immersion was apt to melt the gelatine.

Mr. SPENCER said floating was generally the best plan.

After some further conversation,

The CHAIRMAN, in very eulogistic terms, proposed the thanks of the meeting to Mr. Croughton and to Mr. Johnson for their respective shares in popularizing such an important improvement in the art.

After an acknowledgment from Mr. Croughton, the proceedings terminated.

Talk in the Studio.

FIELD-MARSHAL SIR J. BURGOYNE, G.C.B., ETC.—It is interesting to know that this gallant veteran, who served during the whole of the Peninsular war, not as a subaltern, but already as a distinguished Engineer officer on the Staff, was quite alive to the value to which photography may be put in the field. The soldier who commanded the corps of Royal Engineers at

the siege of St. Sebastian, and who was with us but the other day, long after the victories at which he assisted had become matters of history, thus wrote to one of our personal acquaintances:—"There cannot be a doubt as to the use of photography in the army, and any effort for its progressive extension, of which it is clearly very capable, is of much value.—Doar sir, faithfully yours, J. F. BURGOYNE, 5, Pembroke Square, Bayswater, London, 25th November, 1869."

STRONG VEGETABLE GLUE.—A. Selle describes, in a contemporary, a new adhesive material. It is a mixture of nitrate of lime, water, and pulverized gum, in the proportion of 2, 25, and 20; the solution of nitrate of lime contains 33.3 per cent. of that salt. This glue may be used for glass, porcelain, wood, cardboard, marmor, &c.

PHOTOGRAPHING A LEG.—The Paris correspondent of the *Pall Mall Gazette* writes:—"Unless M. Gambetta recovers soon, his leg will become as celebrated as that of the late Lord Aldborough or Miss Kilmansegge's. The ex-dictator is said to be suffering from phlebitis considered so dangerous as to have necessitated a consultation, at which Dr. Nelaton, the celebrated surgeon, was present. A photographer afterwards attended in order to take the patient's leg for some friends at Bristol."

PHOTOGRAPHY AND THE GREAT CHICAGO FIRE.—At a meeting convened by the Corporation of Liverpool, held in the Town Hall, to consider what steps should be taken to alleviate the great distress occasioned by the above disastrous fire, a number of photographs were exhibited, showing the ruined remains of the late flourishing city of Chicago, which excited much sympathy; and the sum of £1,000 was at once voted by the Corporation.

THE COLLODIO-BROMIDE PROCESS.—In answer to several enquiries addressed to him, a correspondent writes:—"For the information of those gentlemen who have wished me to give them my experience in working Col. Stuart Wortley's dry plates, I may state that I have strictly adhered to the formulas he gives, except for the intensifier. I use the following, previously pouring over the plate a 5-grain solution of citric acid:—

Pyrogallic acid	...	...	...	25 grains
Citric acid	...	...	...	12 "
Water	...	...	...	2 ounces
Nitrate of silver	10 grains to 1 ounce of water			

Mix in the proportion of 2 drachms of the former to 1 of the latter. The lens I use is a 6 by 5 rapid rectilinear. In bright sunlight I expose fifty to sixty seconds, using No. 3 stop; without sunlight, double the time.

EDMUND J. WILSON."

TELL-TALE PHOTOGRAPHIC ALBUMS.—The *Daily News* says:—"Nobody should look a gift-horse or a gift-book in the mouth. Amongst the most interesting of these volumes to numbers of ladies and gentlemen are those of which each one can illustrate or furnish the inside according to individual taste and fancy. The photographic albums are becoming annually more numerous and resplendent. We all get our portraits done, and it is only civil to ask for those of our acquaintances when our own are requested. On the album the cabinet-maker or the upholsterer appears to have as much work as the legitimate bookbinder. Some of these extraordinary portfolios are made with musical boxes on the cover, with looking-glasses, with recesses for perfume. Whether this autumn and winter will bring us any fresh or original designs for albums, it is yet too soon to decide. We may be sure the shops supported by the sale of goods of the sort will not be backward in trying to tempt customers with novelties. In one respect every photographic album possessed by a lady—not the family gallery, but the private view cabinet—could be converted into an emphatic index of character by observing the little partialities of position in which, quite unconscious to herself, a young lady often indulges in the regulation of the portraits of her friends and others. Album makers ought to invent an ornamental padlock for these tell-tale assortments."

A NEW LIGHT.—A French chemist has discovered a light as superior to gas as gas was superior to its predecessor, oil. An opportunity will soon be afforded of beholding this beautiful, clear, and healthy light, as the officials of the Crystal Palace Company have laid pipes, placed gasometers in position, and in the course of a few days will illuminate their crystal fountains and rare works of art with the new oxyhydric light; and in order that the public may have ocular demonstration of its vast superiority over gas, the lights will alternate, and then the

dull yellow haze of the flickering gas lamp will become doubly so in the steady, bright light emanating from the other, which is so intense that it causes the flame of gas to cast a shadow itself on the wall it is intended to illuminate. This new light can be obtained at a much lower rate than gas; and it is not only brilliant and clear, but healthy. Above the issue aperture in the ordinary gas lamp, when lighted, there is a dark space, surrounded by the flame, with sparkling atoms floating upwards, many of which escape unconsumed, and pollute the surrounding air, much to the injury of eyes and lungs, while others that enter the flame in passing through it are only partially consumed, and in the shape of smoke or dust escape into the surrounding atmosphere, to the detriment of pictures, ceilings, or gilt frames, &c. Nothing of all this occurs with the new light.—*Mechanic's Magazine*.

THE AUSTRALIANS AND THE DECEMBER ECLIPSE.—The Royal Society of Victoria (says the *Melbourne Argus* of August 12th) has issued a circular respecting the proposed expedition in connection with the total eclipse of the sun in December next. The eclipse will be visible as a total eclipse over a zone about eighty miles wide, passing across the peninsula of Cape York, the Gulf of Carpentaria, and Arnhem's Land, to the south of Port Darwin, and the Royal Society proposes to charter a commodious and powerful steamer to carry a party to Cape Sidmouth, or such other point within the limits of totality as may be found most suitable. It is not proposed that the party should be limited to members of the Royal Society, but that it shall be open to the public generally in this and the other colonies. The expedition must start not later than the last week in November, and it will occupy about three weeks.

To Correspondents.

* * **THE BLAIR FUND.**—*Further Contributions.*—A Lady, £5; John M. Garlstone, £1 1s.

DORSET.—For the purpose you mention, we should prefer No. 2 in your list. It is possible that a rapid rectilinear by the same maker would answer your purpose better still. If you write to the manufacturer, stating the purpose, he will give you accurate information as to which will suit you best. If you select No. 2 you need not fear that the objects will be too large, as the focus is short, and the objects will be quite small enough at any reasonable distance.

G. MANCER.—We should make up a small acetate bath, but, instead of throwing it away, keep strengthening it from day to day with a concentrated solution so long as it continued to work well, not throwing the old bath away until it became discoloured or inert. Then precipitate the gold with iron and reconvert it into chloride. The concentrated solution should be made with chloride of gold and acetate of soda in the proper proportion; but the proportion of water may be very much less, say one-fourth.

BELGIAN SUBSCRIBER.—We should think the proportion of gum in the formula you quote very much too great; but we have not tried it. 2. Fuming is not an essential part of the operations when the bath you mention is used, but it may often be employed with advantage. 3. The addition of a few drops of a concentrated solution of common salt, and agitating the bath, will generally remove the colour. Your communication respecting the advertisement should have been sent to our Publisher, but you have no doubt received full attention by this time.

W. W. W.—Which other journal? There are several at home and abroad.

A PHOTOGRAPHER.—By a law passed in the time of Charles the Second, which, although rarely put in operation, is still on the statute book, it is rendered illegal for any one to pursue his ordinary avocation on Sunday. If you pursue your business as a photographer on Sunday, and the police charge you before a magistrate, you will be liable to a fine. Until the law is altered, you have no remedy. In any case, we should advise you to cease such practice. You ought to be able to make a living by six days' labour, and your case is a sad one if you feel that it is necessary to add the labour of the seventh.

C. M.—The really effect of the print you sent was not due to organic matter in your printing bath, which is rarely injurious. If you are satisfied that it was not due to the toning bath, but to the printing bath, it is possible the latter may contain nitric acid, and such a result might be due to that cause. Test the bath for acidity, and if acid add a few drops of ammonia to neutralize it. The addition of a little permanganate of potash to your bath will remove organic matter if you wish to get rid of it.

R. DAY.—Thanks. We shall have much pleasure in receiving the communication and examples you kindly promise, and report thereon.

CORNUBIA.—We do not like collodion transfers varnished; but if you wish to varnish them, the ordinary benzole crystal varnish will answer. 2. We cannot give you the design in question. The press itself is not costly.

R. W. R.—If you send details we will give you our opinion of the matter and its probable value.

S. PARRY.—The examples sent by Dr. Liesegang were excellent. It is possible that your citric acid was not pure, or that you added excess of it, in which case a tendency to precipitate the gold would be the result. The occurrence of two opposite tendencies of meanness and slow toning as the result of the bath with acetic acid is curious. We shall take occasion to try the matter ourselves, and state the result.

VULPES.—We have published many articles on photo-lithography and photo-zineography. The most complete consist in a series by Lieut. Waterhouse in our Twelfth Volume, occurring in the Nos. June 12th to July 24th, 1868.

W. R. C.—Thanks. The method of producing "doubles," of which you send us a good example, was published in the *News*, with various modifications and applications, in our Ninth Volume. A complete article on the subject, by Mr. Robinson, appeared March 31, 1865. We are obliged by your courtesy.

A SUBSCRIBER TO THE NEWS.—Intensity in negatives depends upon many things besides the developer, but such a developer as you describe, if you describe it accurately, is not suitable for any purpose. Equal parts of iron solution and of gelatine, sulphuric acid, and water cannot give a good developer. Intensity depends on good collodion, bath of proper strength in good condition, and on good lighting, as much as on the developer. With the first conditions right, an ordinary developer with a very slight trace of glycerine, or even of gelatine, will give sufficient intensity.

J. S.—The addition of turpentine or benzole will thin Bates' black varnish.

M. N.—Much depends on the size and character of work you wish to undertake. For ordinary work—say cabinets and whole-plate pictures, in addition to cards—a good whole-plate lens would answer well. But it is worth remembering that the half-plate portrait lens of one of the good English makers—O, for instance—will cover a whole-plate as well as most of the French whole-plates, and one of the half-plates of O will be a very useful lens, and serve your purpose for the present. The name of this maker on a second-hand lens will generally be a guarantee of its excellence, but not of being of the most modern construction. The maker will undertake the examination of his lenses at any time to verify their genuineness. The cards enclosed are very good.

T. B.—There is no objection to keeping hyposulphite of soda in solution either of the required strength, or in a concentrated form, to be diluted as required. We should prefer keeping it of the strength ready for use, and making it ready about once a week. 2. An ounce of water will dissolve about an ounce and a-half of the salt; water to make up your strength of fixing bath would be required when taken for use. 3. We do not know that any especial maker's starch is superior to others for making paste.

ENQUIRER.—There will be an exhibition of photographs this year as usual. It will open in Conduit Street on the evening of the second Tuesday in the month. See article on another page. We shall give a description of a washing trough, with diagrams, in a week or two. You will find one described in the *News* of November 16th, 1866.

ARTHUR THOMPSON.—It is probable that your printing bath contains free nitric acid: test it with litmus paper.

C. R.—The letter was posted.

DAVID SCOTT.—Thanks. The portraits are admirable. We shall have pleasure in hearing from you.

E. B. SIMON.—Thanks.

E. TREMBATH.—Thanks. We shall use the communication shortly.

ABROTONUM.—The print you enclose is a good example of the result of the well-known matt silver stains on the negative. They may arise from one of many causes, or a combination of some of them. Our best advice is to refer you to what we have already written on the subject. Perfectly clean inner frames, and clean blotting-paper for the plate to rest upon, are the best preventives when the conditions exist. Horny, repellent collodion, nitrate bath with organic matter, long exposures, and doubtful cleanliness of inner frames, are the chief active causes.

W. DE W. ABNEY.—Received. In our next.

J. MARTIN.—In our next.

W. T. BOVEY.—In our next.

Several articles are compelled to stand over.

Several Correspondents in our next.

PHOTOGRAPHS REGISTERED.

Mr. J. H. SIMPSON, Kilmecna,
Portrait of Rev. J. Simpson, D.D.
Mr. F. SMITH, Chesterfield,
Photograph of Mr. H. Charlwood.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 686. — October 27, 1871.

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ALBUMEN AS A PRELIMINARY COATING.

THE use of dilute albumen as a preliminary coating for collodion plates has become so prevalent, and the advantages attending its use have been so generally acknowledged, that any challenge as to the genuineness of these advantages naturally startles many experienced photographers. For many years past the use of preliminary coatings has been a subject of much interest amongst photographers; but it is only within the last two or three years that the practice of applying such coatings has become common amongst wet collodion operators, and the use of dilute albumen has been almost universally recognized as a happy protective from all the failures and anxieties arising from the use of imperfectly cleaned plates. General experience, so far as published, seems to indicate that the plan has no drawbacks, whilst not a few photographers declare that they obtain much finer negatives on plates so prepared.

In a recent number we published the details of some experiments by Dr. Liesegang, from which he concluded that the use of the substratum of albumen in wet plates caused a decided loss of sensitiveness and vigour, and that the loss was in the direct ratio of the thickness of the film of albumen. Mr. C. Wager Hull had a short time previously published some similar experiences with the use of the albumen substratum in dry tannin plates; and it was this experience which suggested to Dr. Liesegang some further investigation. Mr. Hull's results with tannin plates are in keeping with those obtained by others in working that process; but we do not remember any other record of experience in which albumen was found inimical to sensitiveness and vigour in a simple collodion film. Dr. Liesegang is so well known as a capable and trustworthy experimentalist that his dicta at once demands and obtains the most respectful consideration. In this matter it is probable that some other conditions will be found to demand attention: probably the condition of the collodion. About ten years ago we devoted considerable time to research and experiment in connection with preliminary coatings, more especially to the use of albumen, and the conclusions at which we then arrived have been confirmed by repeated experiment at intervals since. Without exception, we have found that a preliminary couche of albumen on a wet plate promoted vigour, and only in one case have we found it interfere with sensitiveness. In this case a somewhat old and not very sensitive collodion was employed, which gave a good vigorous image with a full exposure; but employed on the albumen coating it gave with the same exposure an imperfect image with very intense high lights and no detail. With a comparatively new collodion, one half of the plate treated with albumen, and the other without treatment,

the effect of the preliminary coating was very marked: both portions appeared equally well exposed, but the albumenized side presenting a much richer and more vigorous image. The question will naturally arise, How was it, then, that such a beneficial practice did not become common very much earlier? The answer is very simple: there was an unfortunate drawback sufficient at that time to deter the majority of photographers, although some did continue its use in spite of the drawback. It injured the bath and caused fog. It was the custom at that time to use the albumen in a comparatively undilute condition, and to the thick coating so applied the injurious effect was doubtless due.

We remember that our attention was first called to the use of albumen as substratum in the wet process by Mr. Jabez Hughes, who showed us some exceedingly rich and perfect negatives taken by its aid. On our inquiring, in surprise, why he did not continue the use of such a valuable adjunct to vigour, he gave us a practical exposition of his reasons by showing a series of plates illustrating the gradual accession of fog arising from the action of the albumen upon the bath, which had compelled him very unwillingly to relinquish its use. In his experience this was the only drawback, a slightly increased sensitiveness, rather than the contrary, attending its use. Mr. Hughes, however, used undilute albumen, and encountered fog. Mr. MacNab, at that time one of the most successful portraitists in Scotland, used albumen diluted with four parts of water; but he also took the extra trouble of coagulating the albumen film on each plate before coating it with collodion. He never found fog, or drawback of any kind, arise from it, and always continued its use. It was not, however, until its employment in the most attenuated proportions, sufficient to interpose a film between the collodion and a doubtfully cleaned plate, but insufficient to act in an appreciable degree upon the bath, that its full advantages became generally recognized, and its use amongst portraitists prevalent. Its advantages in affording immunity from all the risks and annoyances attending dirty plates are so palpable, that photographers will not readily surrender them, unless it be incontestably shown that these advantages are more than counterbalanced by other drawbacks. In our experiments we have not found the loss of sensitiveness and vigour which have been present in those of Dr. Liesegang. Probably, continued practice is of more value in determining a question of this kind than limited experimental operations, and we shall be glad to learn the results of general experience amongst operators who have worked with this coating. We publish such a statement of the results of practice on another page, in which the advantages of albumen are emphatically stated. Those of our readers willing to experiment in the matter will do well to test the coating under different conditions,

and with several kinds of collodion. The simplest and most satisfactory plan of arriving at a fair conclusion consists in the use of glasses one half of which have been coated with the albumen substratum, and the other half left clean and bare. The subject is one of too much interest and importance to be neglected or insufficiently examined.

THE LATE NIEPCE DE ST. VICTOR.

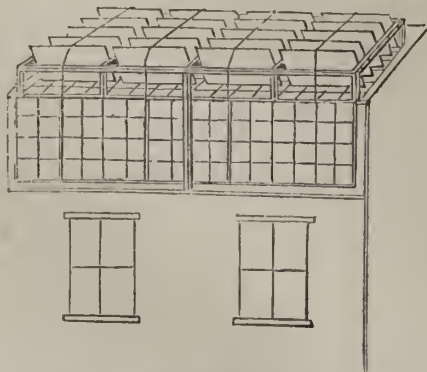
THE lamented death of Mons. Niepce de St. Victor last year, and the project for honouring his memory and recognizing his services, will be fresh in the memory of our readers. The unhappy war which desolated France swept away every plan and project but those immediately connected with the preservation of the country, and placed the Niepce de St. Victor testimonial in abeyance. We have recently received a communication from the committee, asking us to recall the subject to the attention of our readers. The life-long services rendered to our art by the deceased *savant* are well-known to our readers, and need not be repeated here. We simply urge the appeal of the committee upon our readers, and shall have pleasure in transmitting contributions to the treasurer of the fund.

LIGHTING THE STUDIO.

A COMMITTEE appointed by the Ferrotypers' Society of Philadelphia, to examine the lighting of the various studios in that city, for the edification of the members, report to the Society as follows:—

“From our investigations we feel justified in saying that the subject of constructing lights for photographic portraits, and of lighting the model so as to obtain the finest results of light and shade, has been sadly neglected. The importance of a good light, and the knowledge of the principles of lighting the model and fully controlling the light, should receive more attention. One would be more fully convinced of these facts if he would but visit all the galleries in any large city, and see the difference in the construction of their lights, and the manner in which each artist manages his own. Such visits have proven sufficient to convince us, if we had no other proof, that this very important subject is not fully understood by us all. We will not here attempt to give or describe the difference in the construction of all the lights we have examined, or how each artist manages them; but we will give the conclusions of our investigation, and describe what we claim to be a model light, and the best manner of working it.

“This model light should be constructed in the following manner:—It should have a north side and top-light



combined: the length of the top light 35 feet, running east and west; the width, from north to south, 18 feet; lowest point north, 10 feet; highest point south, 15 feet. The side-light should be the same length east and west as the top-light, and come down within a foot of the floor. The rays of the sun should not fall directly upon the glass.

To prevent this, we recommend that wooden blinds be erected on the outside over the skylight, and so arranged that they can be worked from the inside. A light of this size would require five sections of blinds, and each section will require eight blinds, about 30 inches wide and 7 feet long, to cover the light properly.

“The blinds must be hung at the top far enough, so that when the blinds are raised to operate, the top blind will shade the top pane of glass; therefore, when the blinds are shut down they will be wider than your skylight. The frame to receive the blinds must be made very strong, and well fastened. If it is not, a heavy wind will blow them down through the glass. The blinds should be turned down every night, then the wind will not affect them, and they will protect the glass from hail-stones, which, in this city, are of annual occurrence at least. Necessity compels you to have the blinds made short, on account of the sagging and warping caused by the heat of the sun. Another advantage gained by having them short is, you can shut out a little light at any point by shutting down one section, or let in a little by raising one section, in any part of your skylight at your pleasure.

“In addition to the blinds, you will require narrow screens inside—say three feet wide—made of light blue or light drab muslin, hung on spring rollers at the top of the light, so that they will roll down. On some side-lights we have seen frames, or blinds, about 12 or 15 inches wide, hung so that they will turn either way, covered with light blue tissue-paper. In case of reflection from brick walls the blue paper has a fine effect, as it will admit all actinic rays, and exclude all that are not. Another great advantage gained by having blinds over your light is, that they keep the room cool in warm weather. We are informed by one artist that erected blinds over his light, that the highest point reached by his thermometer during the last summer under his skylight was 98°, which is low for a skylight, when it was often that out of doors; and that the same thermometer, hanging in the same place under the skylight, reached 120° with the same ventilation, but no blinds over his light. You will see at once a great advantage to be gained in comfort, both for the artist and for his customers.

“With this combination of blinds and screens, arranged to work in perfect order on a light of this model and dimensions, a good artist can produce any effect of light he wishes on his model. The finest photographs we have examined were made under a light of this kind, and of nearly the same dimensions.

“When the artist is ready to operate, he will raise the blinds until the sun will show between them, and he will have a good soft light all from the north, and equally as good as though the light was shaded by a tall building. In case you want the light stronger, turn the blinds up further, and it will be nearly as strong as though there were none over your light.

“The next important point we wish to call your attention to is a new sash for skylights, which will keep out the rain entirely, and not a drop of water can get into your room. It is made simply by plowing a gutter in the sash, so that the glass will lay over it and rest on the shoulder made for the glass, which raises the glass one-eighth of an inch from the inside edge of the gutter. In case any water gets inside your glass, it will run down till it comes to the top of the next light, then it will run each way until it comes to the sash; there it is received in the gutter, and is carried outside. We have here a piece of this sash for



your examination, which will give you a better idea than

we can by our explanation. (See cut, which is an end view of a section of the sash.)

"In conclusion, we will say we are satisfied that there are two other styles of light which are next preferred, and under them very fine effects can be secured—an entire side-light, or an entire top-light, made of the following dimensions:—

"1st. A north side-light 35 feet long, east and west, commencing 12 inches above the floor, height 15 feet, and pitch into the room 4 or 6 feet at the top.

"2nd. A north top-light entire 35 feet east and west, width of light north and south 18 feet, lowest point north 4 feet, highest point south 15 feet.

"In many cases a light like either of these could be made where you could not have a side and top combined; and we feel confident they will make, when properly screened, good work."

DR. VAN MONCKHOVEN'S DRY PLATES.

At a recent meeting of the Vienna Photographic Society, Dr. Van Monckhoven described a new dry process which he has recently worked out. He claims for it simplicity in manipulation, as well as certainty and excellence of result. Its chief drawback is the admitted lack of sensitiveness in the plates, which require twelve times the exposure of wet plates. Some novelty is found in the mode of preparing the plates; or, perhaps, it would be more correct to say, that Dr. Monckhoven has applied to the preparation of dry collodion plates the principle first used by Talbot in working the calotype process. Fox Talbot first floated his paper on a solution of nitrate of silver, and afterwards on one of iodide of potassium; iodide of silver was formed, which, in consequence of an excess of iodide of potassium, was insensitive to light. To sensitize the paper, it was floated on a solution of gallo-nitrate of silver.

When this principle is adopted in the collodion dry plate process, we obtain, according to Dr. Monckhoven, material advantages as to the simplicity of the mode of preparation. He employs, therefore, collodion to which nitrate of silver has been added, the film is bathed in a bath of iodide or bromide of potassium, and then an insensitive layer is secured. In order to sensitize, the plate, after a short washing, is immersed in a bath of tannin, instead of nitrate of silver.

After some remarks on the collodio-bromide processes, Dr. Monckhoven proceeds:—"I prepare a collodion by dissolving in half a litre of alcohol of 88° (about 840 sp. gr.) ten grammes of very finely powdered nitrate of silver. It is necessary to take a weak alcohol, as otherwise the solution will not take place. The solution may be accomplished still easier by placing the ten grammes of silver with ten grammes of water in a test tube, and heating it over an alcohol lamp. The solution will take place very readily, and the contents of the test tube are poured into one-half litre of alcohol. The whole is now well shaken, and a clear and bright liquid will be the result. I take now ten grammes of gun-cotton, place this also into the one-half litre alcohol, and add gradually one-half of a litre of ether, of a density of 0.730. The bottle is frequently shaken, to facilitate the solution of the pyroxyline; finally, five drops of nitric acid are added, the mixture is once more well shaken, and left for from eight to ten days to settle. The preparation is hence in a condensed form, as follows:—

Alcohol of 88° (Gay Lussac),	500 cub. cent.
Nitrate of silver	10 grammes
Pyroxyline	10 "
Ether (density 0.750),	500 cub. cent.
Nitric acid	5 drops

I have always obtained good results in taking gun-cotton which yields a thin film, *i. e.*, which has been prepared at a high temperature. The collodion remains perfectly clear

and colourless. If the presence of some nitro-glucose should cause a brownish tint, this does not affect the quality of the collodion, for I have obtained as good results with the one as with the other. I possess collodion which I have kept for a year, which gives as good if not better results than those which were prepared a few days ago.

"I also prepare a gelatine solution:—

Gelatine	10 grammes
Water	1,000 cub. cent.
Alcohol	10 "

This solution, after having been filtered several times, may be kept in well stoppered bottles.

"Finally, I prepare the following solutions:—

No. 1.—Bromide of potassium ...	40 gram.
Distilled water	1 litre
No. 2.—Pyrogallic acid	6 gram.
Distilled water	1 litre
No. 3.—Carbonate of ammonia ...	6 gram.
Distilled water	100 cub. cent.
No. 4.—Pyrogallic acid	6 gram.
Citric acid	18 "
Distilled water	1 litre
No. 5.—Nitrate of silver	10 gram.
Distilled water	½ litre

"The plates are cleaned as usual, provided that no coating with gelatine is intended; in the latter case less care is necessary. With a coating of gelatine there was less risk that the film would leave the glass. I, for my part, prefer the coating with gelatine, although I do not consider it absolutely necessary. When the plates have been superficially cleaned, they are coated, at not too low a temperature, with gelatine, in the same manner as plates are coated with collodion; the stock bottle should have a temperature of about 50° Celsr (122° Fahrenheit). The coating requires very little time, provided the gelatine be not too hot; in the latter case it becomes too limpid, and runs off the plate like water. The dried plates may now be kept for several days in metal boxes.

"I coat them next with silver collodion, and place them in the bath No. 1, in which they remain without moving them. With a bath of sufficient capacity it is best to immerse two plates at once, as it saves much time. I remove the two plates, and place in their stead two others. The two first ones are laid horizontally upon a table until the second set has remained from five to six minutes in the bath; this is important, as the change of the nitrate of silver into the bromide progresses slowly, and the picture would appear cloudy if this change had been incomplete. I might let the plate remain in the bath for a longer time, but I save in this way time and space. When I place the fifth plate into the bath, the first one has been already, for a few seconds, under the tap of a can filled with ordinary water. I continue, in like manner, until the first plate has been washed for ten minutes, when I place it in the following tannin solution:—

Water	1 litre
Tannin	20 grammes
Alcohol	50 "

After five minutes I remove the plate, and let it become dry. This, as well as all the previous operations, have to be carried on in the dark room.

"The film which has been prepared in the above manner is as fine as that obtained by the wet collodion process. No silver bath is, however, required, and the washing and preparing of the plates progresses very rapidly. I do not exaggerate when I state that I can prepare in an hour twenty plates 6 by 8 inches each.

"Within the last few days I was enabled to try some experiments to exemplify the process. It consists in mixing the tannin and bromide of potassium bath, and to place the plate which has been coated with silver collodion in the bath, and to wash it afterwards.

"The prepared plates keep very well, and as they contain a small excess of bromide of potassium, there can hardly be raised a doubt against their retaining their usefulness for a considerable space of time.

"The exposure in the camera is about twelve times as long as with wet plates. I do not wish to deceive you in this respect, for I must confess to you that most of the authors of dry plate processes exaggerate the sensitiveness of their plates. In all my numerous travels, I have not met with a dry plate process which did not require eight times as long an exposure as a wet plate—the other conditions being equal."

"The development is as follows:—The margin of the plate is coated, by means of a brush, with a little varnish; the plate is next washed once or twice with a mixture of equal parts, by volume, of alcohol and water (this mixture may be used over and over again). I next wash the plate with ordinary water until the plate shows an even wet surface. The plate is now flooded with the pyrogallic acid solution No. 2; the excess is collected into a graduated glass, and when the mixture has been poured on and off two or three times, seven or eight drops of the liquid which has been collected in the graduated glass is added. After a minute a fine picture appears. I now take 50 cubic centimetres of fresh pyrogallic acid solution, add one cubic centimetres of solution No. 3, and develop for another minute, when the image will be plainly visible. I wash well with water, intensify the picture with pyrogallic acid solution No. 4, which is first poured on by itself, next with silver solution added. When the picture has reached the necessary density, it is fixed with hyposulphite of soda, and washed. I must remark, however, that I have never succeeded in developing a picture perfectly without resorting to a silver solution. I am not familiar with the alkaline developers, as I do not possess a sufficient amount of patience for them.

"In all dry plate processes the iodide of silver yields hard pictures; I therefore do not mention it here. The bromide of silver appears to be the preparation of the future, as it possesses the advantages that it may be over-exposed without solarization, and yields pictures which are as fine as those produced with wet plates."

AMERICAN CORRESPONDENCE.

COLLODIO-CHLORIDE—DAVID DUNCAN'S FRIENDS FOUND BY MEANS OF A CARTE-DE-VISITE—PHOTOGRAPHY IN THE WHITE MOUNTAINS.

Collodio-Chloride.—I have been considerably entertained of late by the amiable and amusing Mr. Sutton, who, in the pages of your contemporary, at this late day, attempts to resuscitate the query, "Who discovered collodio-chloride?" and then answers it himself, aiming to ignore the claims of the true inventor. Moreover, when his position is disproved, he "jumps" the subject, and begins to calumniate the process. I am glad to see the esteemed Editor of the NEWS able to show such a clear record in the matter, and also that he has the satisfaction of having freely given to those for whom he continuously labours, a process which will put money in all their pockets if they but have the brains to enable them to work it with success.

My reason for alluding to the matter at all, however, is not to enter into the dispute that was, but merely again to give a little testimony to the value of collodio-chloride for printing on porcelain. In this country every photographic establishment of any pretensions prides itself upon producing fine porcelain pictures. With such great success are they made, that they have entirely supplanted the ivory miniature and the finely coloured paper prints, the ground porcelain surface being deemed by colourists as superior to anything else for their work. A few years ago J. Henry Brown, Esq., of this city, had a reputation all over the country for making the most exquisite of ivory miniatures. He had much more than he

could do, for the work was necessarily slow. Suddenly, however, his orders began to decrease, a fact which he could not account for. The true state of affairs was, that our best photographers were making as good pictures on porcelain as he was on ivory. As a consequence, he must change his profession, or accept the situation and join hands with photography and collodio-chloride. He adopted the latter plan, and for a few years has been a member of the firm of Wenderoth, Taylor, and Brown, photographers, of this city. I suppose there are other miniature painters who have had to do likewise. So much for collodio-chloride.

Another fact. The great drawback to the successful practice of the process was, for a long time, the difficulty of getting a proper sort of porcelain or opal glass. Various manufacturers experimented at great expense, trying to produce what was wanted; but in most cases the glass was either too much curved, a bad colour, or could not be cut with a diamond. Two or three parties, more successful than the rest, finally succeeded in producing a very fair quality, but rather irregular in thickness and colour. Such we have been using some time, until recently a new article has come into the market, which seems to fulfil almost every requirement. I repeat to you what I was told by one of the company who manufacture it, when I say that many thousands of dollars were expended and tons of material wasted in trying to produce the perfect article. Now, had you been at the late Exhibition of our National Association in Philadelphia, I could have shown you sheets of it, varying from medium or $\frac{1}{2}$ size, $\frac{1}{8}$ inch thick, to 4 feet by 12 feet and 1 inch thick, straight and polished, equal to the best French plate glass on the one side, and splendidly ground on the other. That is the sort of glass, pure and white in colour, which we are now favoured with. It is known as "Kryolite Porcelain," and the Lenox Glass Company, Lenox, Mass., are the manufacturers. This will give you an idea of the importance of the porcelain glass manufacture in this country, and it will be enlarged when I tell you that our larger dealers in photographic goods will order several thousand dollars worth of it at one time, in order to get five per cent. more discount on it than their competitors do. Why, our very houses are made beautiful by porcelain pictures. We use them for portraiture; we print landscapes on them; we print them for lamp-shades, and for fancy pictures in all styles. So much for collodio-chloride.*

I know of parties who cannot make good pictures of this sort, but the same parties cannot make good ones of any other sort. But of all the trouble I have seen such parties have with them, I never saw one of them "split off the plate," as Mr. Sutton finds them to do in his hands. If collodio-chloride pictures are not popular in Europe, as Mr. Sutton says, they are assuredly a great success here.

David Duncan's friends found by means of a carte-de-visite.—You will remember my writing to you a few months ago of the death of one of your former contributors, David Duncan, and asking you to aid me in finding his relatives. You kindly inserted a notice in the NEWS, but without effect. True, the poor fellow did not leave a great deal, but there were some things which his relatives would prize, if they had them. A kind lady of New York, who boarded where Mr. Duncan was taken ill, sent advertisements to the London papers; wrote to the postmaster of a district in London where some of his correspondents seemed to live; and tried in every way she could to get some trace of the relatives, but without avail. She finally

* Since writing the above, I have had a chat with Mr. G. H. Fennemore, whose name is familiar to you. He is one of our best photographers, and the first one who made collodio-chloride pictures in this country. He says that during November and December of last year, the only months wherein he had kept any account, his printer made over two thousand collodio-chloride prints on porcelain! Now nearly every one of these was either put in a velvet case or frame, so that you see collodio-chloride gives employment to other branches of industry also.—E. L. W.

applied to me, and through me to you. The thought occurred to me, that if we only had one of Duncan's cartes, with the name of the photographer on, we could, perhaps, in that way get some clue, for being a photographer, the one who took his picture would more than likely know something about him. I stated my opinion to the lady, and she produced a picture made by Mr. C. Drewett, 47, High Street, Guilford, London, which she took to be Duncan's. I had my doubts about it, but it looked enough like him to be his brother. I tried the experiment, and wrote a detailed letter to Mr. Drewett, asking him for the desired information. In due course of mail the answer came. The carte-de-visite was that of David Duncan's brother, who had been apprenticed to Mr. Drewett by David himself, and who now had charge of Mr. Drewett's branch gallery at Aldershot. Thus, after months of search by other means to find the friends of one who had died in a foreign country, in order to acquaint them with his death, to enable them to secure his body if desired, and to obtain his worldly effects, photography, which should have been given the first chance, was at last applied to, and proved to be the best detective of us all.

Photography in the White Mountains.—I have been spending a couple of weeks again in the White Mountains, N. H., in company with that indefatigable landscape photographer, Mr. B. W. Kilburn. Whenever the weather was favourable the camera and tripod were our companions, and many a happy hour did we spend with them, securing some good things out of the many which constantly presented themselves to our wondering eyes. Mr. Kilburn resides at Littleton, twenty-five miles from the base of Mount Washington, where the wonderful railway to the clouds commences, fifteen miles from the Franconia Mountains, twenty-two miles from the Crawford Notch, and forty-eight miles from Conway. Near these four localities he makes the most of his best negatives, and his only way to get to them is by carriage road. Sometimes it was necessary for us to start as early as three o'clock in the morning, in order to reach a certain point at that time of the day when the light was best for the subject. Often we had to drag our "traps" up rugged inclines and over steep precipices, in order to reach the best point of sight. And be assured that such exercise is healthful, but by no means calculated to rest the body. We used the wet process, because we were sure of success. In tramping about that way "after views" one becomes almost as much interested and excited as when hunting game in the wild woods. In fact, the feeling one experiences when coming to some look-out upon the mountain side, where a grand view opens before you, with a rich glow of light upon it, just ripe and right for the camera, is almost the same as when you come upon the long sought for game running before you, within reach of your rifle shot, almost waiting for you to secure the prize. In the latter case all depends upon your cool, steady aim. You fire carefully, and the game is yours. So with the camera is a cool, careful aim to be taken, after studying all the chances of failure, if you would succeed. With us, "bang away" were synonymous terms with "expose!" It is enchanting to hunt such game as that, and delightfully elevating when you secure it. I prefer the camera to the rifle.

I was going to tell you more about some of Mr. Kilburn's ways and workings, but I have exceeded my space already, and must close, promising to be more practical in my next. Truly yours,
EDWARD L. WILSON.

SUGGESTIVE JOTTINGS.

BY W. T. BOVEY.

ACID TONING BATHS—WEAK SILVER SOLUTIONS—HEATING OF STUDIOS, ETC.

"The photographic journals are worth reading now-a-

days," said a friend to me the other day. Poor fellow! His remark reminded me of the old story entitled "Eyes and No Eyes," in which a country ramble taken by two youths is described. One kept his eyes wide open, and, seeing, imbibed many useful and pleasurable lessons. The other, with closed eyes, groped his way, but found no food for taste nor understanding.

I manage somehow to find something worth thinking over in every issue of the News, and regret that time is not always mine to jot down the substance of my cogitations. Temptation, however, takes no heed of time, and its current is just now pressing on me, for on opening the last number of the News [Oct. 13] I perceived, first, a leader on acid toning solutions; second, quoted remarks on the use of weak silver baths for printing purposes. Both of these departures from orthodox rule I have for years recommended, and it is satisfactory to myself to learn that my odd, heterodox notions are being re-set in authoritative mounting; for, after all, it is pleasant to penetrate wisdom before it is recognized by others. M. Liesegang's new toner is based on a sound and unquestionably correct principle, and its adoption will doubtless be accompanied with success, not in exceptional "my experience," but in the experience of all who choose to observe the following rule. To secure activity, uniformity, and reliability, added to extra richness of tone, it is requisite that the toning and silver solutions be kept in opposite conditions; that is to say, the silver bath should be made strictly neutral or slightly alkaline, the gold solution acid, as recommended by Dr. Liesegang. Neglect of this rule will assuredly raise a crop of discrepancies in the experience of experimentalists, while its observance will ensure constancy and success.

Weak Silver Baths.—Our American photographic brethren manage things better than we less practical Britons are in the habit of doing, for they investigate through the effective instrumentality of experimenting committees—an excellent method of reaching truths which we approach by creeping in isolated units. I notice in the report a remark that admits of correction. Out of four samples of paper tried, one refused to take to a strong silver solution kindly. The correct remedy suggested is the recommending the use of a weaker sensitizer, but the proposal to add alcohol to the bath would only succeed in making bad worse, for paper so treated would print eccentrically marbled fashion; a trace of an image here, a ghost there, the intervening spaces being filled in with broken and bulged rings, odd formed blots, and such other fantastic shapes as the imagination might feel disposed to conjure up. But, take it all in all, the report is brimfull of truth, and will be found of value to all who may give it due attention.

Turning on a few pages, I light on indefatigable Dr. Vogel, who has always something interesting to impart; and what he advances is always worth reading and knowing. But is he not a little out of season in directing us how to keep our glass houses cool? I have paused to look skywards and to glance at that portion of the world that faces the window before me. Both are veiled in mist—a blue gauze-like mist—through which near objects appear distant, and far objects loom weird-like, but not enchanting. Suggestive are they of those chilled, searching damps which set healthy men sneezing, rheumatic ones groaning, and (alas!) which sound the death knell of many a consumptive one who needs only the wintry mists to send them to their last earthly home. Talk of cooling glass houses in chill October, the threshold of coming snow and blustering winds! When the summer sun shines again, if you please, Dr. Vogel, renew your suggestion; at present we must turn our attention to artificial heat, for we have reasonable assurance that nature will soon supply us with a bountiful excess of natural cold. Strange!—photographic operations need genial heat, and glass houses are far from cheering when chilly—yet so little has been written or suggested on the subject. "I spent over one hundred pounds in trying to warm my studio," an eminent photographer remarked to

me in the course of a conversation on this subject. I was obliged to confess that I also had spent some unnecessary money in a similar pursuit, and it might prove useful at the present time if I briefly relate particulars of my seeking adventures.

My first essay was with "stoneware" pipes of some six inches diameter. When heated externally, the pipes sweated; internally, they soon clogged with soot, which stopped the draught, and put the fire out. My next trial was contrived, and the details worked out, by a triplet of brains: my late partner's, my own, and last, but not least, those of a "practical man" who "knew all about it." Bearing *carte blanche*, the practical man set to work. Results: a brick flue connected with a fire-place that projected beyond the outer side of the building. I modestly objected to this way of doing it; but the "practical man, who knew all about it," overruled the objection, and the work proceeded to completion. On trial, the smoke at first persisted in coming out by the furnace door; the draught, in making its entrance by the way of chimney pot. This rendered some modification of fire-place necessary; which done, sent the smoke through its legitimate channel of exit. But oh, how sluggishly did it ascend! so slow, that a looker-on waggishly advised the immediate engagement of a little nigger to help it to clear the pot. However, by dint of shovelling, poking, and coaxing, heat was slowly generated; but it declined to enter the building as long as the ground beneath the fire-place remained damp and cold. The upshot of the dilemma was to pull the concern to pieces, and to rebuild it after my own fashion. "The man who knew all about it" protested, I was obstinate, and for the once obstinacy was rewarded with success. My plan was simple: by it the fire-grate penetrated to the interior of the building, and all the heat was thus husbanded.

My next adventure was the warming of a room in which the placing of a flue was out of place and question. I wanted a drying heat, not a damp heat, and unwisely hit on a gas stove, patented, and of unapproachably good qualities. The result proved a failure, and serve me right, for due reflection would have suggested that the combustion of hydrogen with oxygen means water; that the admixture of oxygen with heated carbon implies carbonic acid, the first being inimical to drying, the last deleterious to health. The gas stove was, therefore, discarded. "And, now, what next?" A cast iron coke stove. Not to be thought of; it would be out of the frying-pan into the fire to introduce anything of the kind. Sulphurous exhalations and radiations must be discarded at any cost. Then what next? I thought of the stove I described as used by Mr. Edwards in his heliotype process. Looking up the address of the patentee, Mr. George, I called at the house, where I was introduced to a gentleman of extraordinary originality and intelligence. On stating my business, "stove" broke the ice. Stove was the talismanic word which shot right through the great inventor's soul, and thawed it at once to cordiality. Dinner waited. "Never mind," the hobby steed was crossed, and for nearly three hours circulating caloric up and down, gas, currents, ventilation, and physics generally were made subjects of conversation. And I am bound to assert that for depth of research, originality of ideas, and breadth of common sense conclusions, the gentleman with whom I conversed eclipsed all I ever met and conversed with. "But the price?" Well, it was, as I thought, stiff. A trial, however, being offered prior to purchase, I consented, and had one soon after set up, which, although similar in principle to the gas stove I described in a former paper, is constructed to burn coke, a much cheaper fuel than gas. The trial was accompanied with so complete a success that I gladly paid down the cash, and have had no reason to regret the outlay. The heat produced by this stove is of a remarkable kind. A continuous current from the outer air passes through the stove, and, heated, circulates through the room, finally making an exit through the stove into the chimney, from whence it escapes in company

with the smoke. The pleasant and healthful heat generated by this stove is worthy of comment. I was surprised on a very hot day of the summer just past to experience, on entering the room, a grateful coolness; I was more surprised, on examining the thermometer, to find it registering 90° Fahrenheit. This was a convincing proof that Mr. George had hit on the right thing. A shrewd observer of nature, he has, in his useful invention, adopted natural laws, and has succeeded.

In conclusion, I direct attention to the matters of heating simply because, having struck on the shoals, I am desirous of raising a beacon; and the moral of my recital is just this: do not place too much reliance on those men "who know all about it." If you want to warm your studios, think twice before acting, and if you cannot decide on any better plan, follow suite, and try a stove such as I am daily working with satisfaction and success.

PHOTOGRAPHY FOR THE UNINITIATED.—No. 5.

BY C. WAGER HULL.*

HAVING already made up our nitrate of silver bath, collodion, developer, and fixing solution of hyposulphite of soda, and having placed the bath in its proper position in the dark room, the developer in its place in said room by the sink, a portion of which (say two fluid ounces, or enough to develop the picture) in a small tumbler or wide-mouthed 4-oz. bottle,—finally, having poured eight to ten ounces of hypo solution into a tray in the outer room—we, with our clean glass, are now quite ready to make negative number one.

Before coating a plate, you should always choose your view, which in this case will be at home. Everything in your operating room having been set in order, take your camera and proceed to the lawn in front of the house. Here you have a fine view—one not only pleasing to the eye, but, as well, admirably suited to test the working of your chemicals. In the foreground both of the terraces lie, covered with a soft, rich growth of velvety grass, beautifully marked with sunshine and shadow, as the light, filtering through the still leaves, marks with dabbled beauties the rich sod at our feet. Upon our left a magnificent elm sets the limit there, while our right is limited by the locust grove. In the middle ground lies the boat-house, with its shingled roof, flag staff, and luxuriant growth of vines, towards which, sloping from the lower terrace to the sea-wall at water's edge, the quick-descending lawn with gravelled walks extends. The distance (three-quarters of a mile) is shut in by Blackwell's Island, with its sea-wall, fine rows of thrifty willows, and massive public buildings. Between our shore and the island quickly flows the impatient East River, now at the flood, hurrying on towards Hell Gate near by, in its haste to meet old ocean through Long Island Sound. Those boats, having seven fishermen, anchored near our shore, patiently waiting the shy, yet plucky, striped bass, with the two sloops tied up to the neighbouring pier, serve to make us a pretty landscape.

In choosing our point of view let us study it for a moment, first finding the object which we desire to have the main one. About this there can be no doubt: it must be the boat-house. Now let us choose the position. The south side is well lighted; it has the sun broadly upon it, broken by the vines and shadows cast by the extending arms of the fine old trees; its west side is but partly touched by old Sol as yet, the projecting cornice throwing most of it in shadow; the old elm is lighted brightly on the south and faintly on the west; it stands boldly out in splendid relief from our standpoint now, better by far than if we move off more to the south and east, and meet the full blaze of the sun upon it without any of the relief and boldness given by its shadow side. The light upon our distance, being beyond

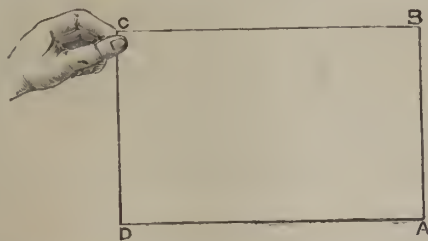
* *Photographic Times.*

our power to better from our position, need not be considered, so here we'll place our camera for negative number one. Keep it level. Good. Lower the shifting front to bring in more foreground, as our position is somewhat high; next, move the camera by loosening the set screw below, so as to bring the locust tree upon the right nicely upon the lefthand side of your plate; draw the focus upon the boat-house in this case, using the largest opening to focus by. Is it right? If it is, tighten up set screw, and examine to see if the sea-wall upon the island is sharp as well as the boat-house; if so, work with the largest opening; if not, reduce the opening until $f\ 8$. By opening I mean the diaphragm in the lenses.

If all is right we will leave the camera, and go again to the operating room and prepare a plate. Before we flow with collodion, we must dust the plate, which we do with the broad, flat, camel's-hair brush. Having dusted from off its surface any small particles that may be adhering thereto, we hang up the duster upon a nail, out of harm and dirt's way.

Collodionizing.—Let me coat this plate, and you watch each movement I make, and how I hold the plate, as well as the bottle of collodion. Seize the plate by the upper lefthand corner as it stands upon edge, the albumen side facing you, being the long or eight inch way laterally, and the narrow or five inch way vertically. Hold it firmly between the ball of the thumb of the left hand and the side of the forefinger; hold it by the least glass possible, for such portion cannot, of course, be covered with collodion, therefore the smaller the better. Next raise the plate to a horizontal position, so holding it; next, with the other hand, remove the cap from the collodion phial, placing it upon the table upside down, upon its top, and raise the phial, which, to pour well, should not be more than two-thirds filled. Upon the plate, held steadily and level, pour the collodion in the angle of the corner diagonally opposite to the corner by which you are holding the plate; pour steadily enough to about half cover the plate, intently watching the plate, and not the hottle. Now cease to pour; hold the bottle still in your right hand, with the other slowly and steadily changing the level of the plate so as to force the flow of the collodion towards the corner upon the line of the side (not end) by which you are holding; having covered this corner, depress your end, and force the flow towards your thumb, but not against it, thence to the remaining corner, which is the one next to you. From this corner allow the surplus to drain off slowly into the bottle. As soon as the surplus changes from a stream to a dropping, move the plate to and from you by a slow rocking motion, so that the lines may coalesce, otherwise the collodion as it drained away would be in ridges or lines. Do not, while rocking the plate, press heavily upon the neck of the hottle, or splinters and fine grains of glass will fall into your collodion from the edge of the plate, and give you trouble. Immediately cover your hottle. Next touch the film lightly at the upper edge, if tacky, and after removing with the finger any hanging edge of film from the flow off the corner of the plate, proceed to dip it into the bath of nitrate of silver.

To make this matter of coating a plate more plain, let me detain you a moment by this simple drawing. The four lines below represent a plate 5 by 8 inches. You hold



the plate by corner C, flow on the collodion in angle of the

corner A, pass it up by changing the level of the plate to B, thence along the upper edge to the holding-on point at C, and thence again to D, the point of flowing off into the hottle. The proper part of the plate to touch to determine if the film has set sufficiently is on the line of A B, near B. No more collodion than enough to nicely cover the plate should ever be poured upon it, so that but a few drops run off; this, however, like all manipulative parts, can only be determined by experience; in such parts you must be your own teacher.

Now you try a plate; do not use the one I have coated, for I want this first negative to be all of your own making, and I want you to keep it, and print from it, for it will probably be a curiosity and an amusing evidence of your progress. Good. Very well done. You put more collodion upon the floor than I did when coating my first, but you wasted less. I put more up my sleeve, and more successfully coated my arm and shirt than I did my first plate. Don't throw it away, it is not so bad; only a trifle uneven; keep it for the reason I have given you.

Sensitizing.—It is now ready for the silver bath; hurry along with it. Before you dip the plate into the silver so turn it as to have the top thin edge on the line C B, the lower edge, as it goes into the bath. Raise the dipper carefully up, and place the plate upon it; lower it with a steady, yet rather slow, motion into the bath; as soon as fairly submerged, gently move it up and down, also from side to side, so far as the size of your hath will admit, being careful not to allow the plate to come above the solution.

I have said raise the dipper carefully; my reason is, that should there be any sediment, it may not be disturbed; this, of course, would not be the case in your newly made hath; it soon may be, when it is some days older; a good habit once acquired is always continued. The object in having the thin edge down is on account of its greater freedom from streaks, and as you will place the plate into the plate-shield correspondingly to the way it was dipped, you therefore have the thin and most uniform edge for your sky, which is more likely to be injured by any unevenness of coating than the foreground, which will be the top, or thicker edge, as it stands in the plate-shield. Lower with a steady yet rather slow motion, for reason, steady, or else the plate will be marked by a horizontal line if you stop or much change its regularity of dip; rather slow, so that the bath may not be unnecessarily disturbed. Gently move to aid the even coating, and to somewhat hasten the same. After it has remained in the hath three to five minutes, having been moved about several times, steadily lift it out; as soon as removed, and while still above the bath, look along the face; if perfectly even, all is well; if oily looking lines are seen, re-dip and move about a few times, or until they disappear. Hold the plate for a few seconds over the bath, while still upon the dipper, until the surface silver has ceased to drop off rapidly; next remove it from the dipper and stand it upon several thicknesses of blotting-paper to drain still more, being careful to always retain the same position as it was in when dipped. While so standing, wipe off the back with a pad of Joseph or blotting-paper. All this is quickly done, need not take more than one minute, will save considerable silver, and keeps your plate-shield in better order than if the plate is placed in it all dripping; it also saves many a stain upon your plate. When the plate is within the shield, place against its back a piece of thick red blotting-paper, cut the size of the plate; now shut your shield, take it by the top, and, without turning it over, carry it carefully to the camera.

Exposure.—Place your shield upon the ground, leaning against one of the legs of the camera, or any object convenient, so that its position may not be changed. If you are not careful in this regard, you will have the surface silver flowing back over the surface again, and may for your carelessness have a streaked and miserable negative. Before going ahead, examine your camera to make certain that all

is right; if so, place the shield in its place and cover your lenses with the head-cloth used to aid you when looking upon the ground glass, or their caps; better, I think, the cloth.

Now comes an important question, and one which has no rule as fixed as those upon which you make up your solutions, viz., how long shall be the exposure? This all depends upon lenses, size of opening, quality of light, character of subject, conditions of chemicals; it is that portion of our art which must be learned by hard knocks and often dearly bought experience; no one can teach you; you must learn of practice. My experience tells me that this view, under the conditions we are now working, may be made in about ten seconds. As soon as your mind is made up upon this point, carefully remove the slide in your plate-shield; next, after vibration has ceased, remove the cloth or caps from the lenses and give the ten seconds. With great care replace the cloth or caps and the slide of the shield; this last slowly, cautiously, to avoid raising any dust, or dashing, by a sudden jar, the drained and draining silver over the face of your plate.

This letter having attained to considerable proportions, the development must be deferred until our next.

CURIOUS PHOTOGRAPHIC EXPERIENCES.

BY JOHN L. GIBON.*

We are practising a comparatively young profession, but one that has made almost magic strides towards a perfection that in this case seems almost attainable. Already, in different parts of the world, there are devoted to its interests magazines and papers that greatly aid in the enlightenment of the uninitiated, and in the improvement of those who are considered far advanced in its mysteries. These publications teem with articles of real practical importance, and able pens, month after month, give to a yearning multitude information that is eagerly studied, and, it is to be hoped, carefully remembered.

The labourer, however, will tire; and as it has been enjoined upon us to take from the seven days of a week one upon which to rest, so do we look even in our studies for some relaxation. Pictures adorn the heaviest philosophical works—they amuse the mind, as it were—and the gravest facts are oftentimes most indelibly impressed upon our understanding when we receive them through the medium of an anecdote or a homely simile. Let us sit down to ever so excellent a dinner, and should it only be composed of the substantial of life, we finish it with an unsatisfied feeling—we need the piquancy of a salad, or we desire the pleasure of tasting a dessert, however daintily we may mince of it. Without more ado, then, and hoping that no dissenting voice will object to the space thus occupied, I seriously propose that we shall recount a few of our daily workings, and, by interchanging our "experiences," open up a fund of anecdote that can but prove to be interesting. Lawyers, doctors, clergymen, and professionals of all grades, fill the columns of newspapers with incidents occurring in their various practices, and yet we photographers who constantly meet with so many people, venture but seldom to retail the thousand and one little episodes that come under our notice, and many of which could be worked up into items of literary importance. I especially feel my own want of power in initiating such a course, and can only hope that the exchanges that may emanate from other sources will prove more entertaining.

I could appropriately commence my own narrative in the style of a highly celebrated and somewhat accomplished novelist, and tell how, upon a gloomy day in November, I was standing, solitary, at one of the front windows of my reception room, gazing drearily out upon a street that, usually brilliant with equipages and promenaders, then looked as if deserted. The heavy leaden clouds seemed to

have lent their hue to all objects, the wind dismally moaned among the myriads of business piles around, the cars hurried along with few occupants, and the occasional pedestrians had a woe-begone sort of look that betokened in each and all of them a desire to get home and under cover.

All anticipation of business had long since left my mind, and I was most probably contemplating the continuance of such an unpromising spell of weather when a new feature was added to the scene. It was in strict accordance with the character of the day and its suggestions—a funeral. It came slowly along the street, solemnly and stately enough. My interest in its movements was suddenly turned into surprise at an unexpected manœuvre. The hearse had been halted before my door, and the carriages taken their position along the curb in its rear. Immediately after, a well-dressed stranger entered my rooms, and questioned me as to my readiness of making an immediate picture. Assuring him of my disposition to accommodate, my attention was again directed to the window, and my surprise soon changed into astonishment when I beheld the undertaker, assisted by his attendants, displace the coffin from its temporary resting-place, and carefully bring it into my gallery. The lid was soon removed, and the "subject" placed at my disposal. The remains were those of a bright looking youth of at least sixteen years of age. Death had spared a naturally handsome face, or, if he had dallied with its features at all, had added to it an expression of sweetness but seldom seen in life. The poor boy was carried tenderly to my glass room, and, confining myself to a head and shoulder effect only, I succeeded in making a picture that, devoid of the ghastly suggestions of the grim destroyer, cannot but even yet be a solace to those of the family who may still retain it. The work speedily finished, the incident was at an end. Decorum marked the whole procedure. The family was a French one.

I formerly was well acquainted with an eccentric person who had, amongst other characteristic oddities, conceived what he called a "Theory of Coincidences." He had, with infinite labour, compiled quite a volume of data, giving the reporter's accounts of numberless steamboat and railway accidents. Explosions, fires, murders, and suicidal histories followed each other in boundless profusion. He had classified these, and, zealously attaching the particular times of the occurrences to each event, he proposed to prove that invariably one horror or singular circumstance would shortly be followed up by another, similar in its most important details. Should this little essay ever meet his eye he will doubtless claim an additional link to his chain of so-called proofs.

A month had not elapsed since the affair I have recounted, when almost the identical scene again transpired. A second mournful procession came to me in the same manner, and upon the same errand. Following the analogy even more closely, the corpse was also that of a youth, and the features not unlike those of my previous visitant. The recurrence of such an episode after so short an interval of time gave to the matter a publicity that I had not courted, and the result was that a vast amount of superstitious lore was expended by the wise-acres of the neighbourhood for my special benefit.

As I devised this chapter for entertainment only, it now seems odd to me that I have picked out reminiscences that have a sad bearing. One after another, incidents of past histories flash upon my memory, and I can scarcely desist without adding an anecdote or two where my services have been devoted to the never-waking sleepers.

I will here interpolate the statement that my jottings are not idle fancies, but that they are the accounts of actual facts.

Changing to another season of the year, I must tell how, upon a bright, cheerful spring morning, a good-looking Quadroon came into my place, carrying with her what appeared to be a large clothes basket. She was tidily clad,

* *Photographic World.*

and gave one the impression of her being a trusty, janny ladies' maid. In response to her inquiries, I assured her of my immediate ability to wait upon her, and quickly coating a plate, was soon prepared to accommodate her. Coming out of the dark room I was somewhat annoyed to find that she did not appear to be ready for the sitting. I delivered myself to that effect. Without the slightest embarrassment she told me that she had no idea of sitting for a portrait, but that she had brought "this" to be photographed. She then coolly opened the lids of the basket, and produced a marvellously pretty infant. It was a tiny little thing, reminding one of a piece of wax work, excepting that its perfections of face and form were too great to confound with the less slightly efforts of the modeller. It had never known of the joys or sorrows of even infantile life—had probably never breathed—but one could not blame the fondness of the mother who had thus sought to perpetuate the image of what might have been to her an idol of affection. The manner of procedure was all that gave singularity to the transaction. It most certainly resulted in giving to me an idea that since then I have made further use of.

The photographing of the deceased is invariably looked upon as a most disagreeable branch of our business. Many avoid it. I acquired some little reputation for doing that class of work well, and, in addition to attending to my own customers, I have frequently been called upon to execute commissions received by others in the business, who objected to the details of the work. It occurred to me that the skylight was a more favourable room for such purposes than could be procured in any private residence, and since the affair of the basket I have had several infants surreptitiously carried to my gallery in the same manner and for the same object.

A few remarks as to the best plan of procedure for photographing the dead at the houses of their relatives might not be out of place here. I never recollect of having read of anything bearing upon the subject. As you are liable to be called upon at any time for such a purpose, it would be well to remember a few suggestions.

Always endeavour to make the picture before the body should be placed in its coffin. Confine your labours to the reproduction of the head only. Endeavour to place that so that an artist can afterwards, by painting in the eyes, convey the appearance of a possible or natural position. Avoid a full face view. Do not bring the body alongside of a window. The evils of such a course are almost irremediable, even in the hands of the most skilful colourist. A face half in light and half in shadow is most difficult to manage. Your instrument should be nearer the light than the subject. Remember you have no motion to contend with, and that the length of your exposure is limited only by the conditions of your plate. Make it your effort to produce the most life-like picture of which you are capable, and bear it in mind that, with the aid of the painter, not only good results are sometimes obtained, but even those of a most highly satisfactory character.

I had designed detailing the particulars of what might be called adventures, in which the dead were the main objects of interest, but my limits will hardly permit it. In one case the family, wealthy, and holding a good social position, so violently discussed the question as to how the picture of a deceased and favourite child should be taken, that not only a separation of friendly feelings was occasioned between the interested parties, but a division of the poor child's corpse was nearly produced. It had died of a malignant disease, and its misguided, though well-wishing relatives were rather too demonstrative in their efforts to procure the consummation of their peculiar desires. In another case, like a ghoul, I had to convert a receiving vault in a cemetery into a work-room, and surrounded by ghastly companions, picture and endeavour to make imperishable the spectacle of that which was so fast passing away.

Let us change the subject. I have no desire to be

mistaken for a gloomy monomaniac, who, having started upon a morbid theme, cannot release himself from its fascination. The humorous phase of our profession is, after all, far more attractive, and we have numberless instances of its application. There is one old gentleman whom I frequently see. That man can never again be induced to sit for his picture. He is apparently an intelligent person, and is certainly one well to do in the world. He conceived and executed the notion of having his face delineated for the benefit of his heirs. I was the innocent miscreant who carried out his unfortunate design. I shall never forget the time when, after exposing the plate and releasing his head from the clasp of the much maligned rest, he turned indignantly upon me, and declared that the chemicals I used in the camera-box had found their way through the lens, and had for ever ruined his eyesight. Expostulation and explanation were both unavailing. He still insists that he narrowly escaped being totally blinded, and he strongly advises a measure to be taken by the leading spirits of our commonwealth, preventing the further prosecution of a business so detrimental to the public welfare. The photographer is like unto the keeper of a hotel. His patrons are of many kinds and diverse natures. He acknowledges the salutations of those to whom he might with more propriety say, "Who are you?" than, "How are you?" He deals with human nature in its every aspect.

I will finish now by relating a little circumstance that occurred a few weeks ago, and that, I think, will entitle me to having found the "champion customer of the period." A well dressed and rather prepossessing lady came into our place, and, after casually examining specimens of work, desired to sit for a picture. I attended to her myself, and found no difficulty in producing an effective negative. She posed readily, and maintained a pleasing and desirable expression. The photograph was to be of the cabinet size. The price to be \$1.50. She left a deposit of 25 cents, and promised to call the next day to see the proof. She came, saw, and admired it. She professed to be travelling, and desired that the finished picture should be forwarded to her destination in Vermont, enjoining us to send it C. O. D. We did as directed. The Express Company was to collect the remaining \$1.25, in addition to the collection charges, which we rated at 50 cents. The instructions were forthwith carried out. The photograph reached its destination. The lady, apparently, had by this time changed her mind. Her approval had evidently merged into antipathy, for, with a talent that should be expended upon schemes of greater importance, she coolly repacked the cabinet, sent it to our address by return express, enjoining a C. O. D. \$1.75, in addition to freight charges of 60 cents additional,—in all, \$2.35. An attendant in our store, unaware of the transaction, received and paid for the package. Figuring over the little affair, I find that we are exactly minus \$1.10 for expressage on one cabinet picture, independent of any other entailed loss. The sell not being one of very great magnitude, I can very well afford to laugh over it, although I receive it as another intimation that there is but one proper way of conducting our business, *i. e.*, upon the "pay in advance" system. Upon this subject more anon.

A GOOD RE-DEVELOPER.

BY C. F. COOK.

I HAVE had a great deal of trouble in securing just the effects I wanted on all occasions, but now think I have hit it, so that I have things my own way. I shall not charge the fraternity anything for it, and now communicate it freely. Take of—

Soft water	4 ounces
Citric acid... ..	30 grains
Protosulphate of iron	12 grains

To be used with twenty grains of silver solution, and applied the same as pyrogallic acid.

I think that, if used thoughtfully and with good judgment, it will be found a useful standby. I send you a picture of a baby three months old which I treated as above, and I think you will agree that the flesh tints are very nice.—*Photographic World.*

ON SOME NEW METHODS OF PRINTING.*

WE now come to the important improvements introduced by Herr Albert, of Munich, and his townsman Herr Gehmoser, who have produced results little, if at all, inferior in delicacy and vigour to photographic prints in silver. The result has been achieved by two important modifications of previous processes,—first, the obtaining of a surface of extreme tenacity, by the joint action of light and chemical agency, before the image is impressed by light; and second, the introduction of a method of inking by which the want of vigour of Tessié du Motay's prints is corrected, and proofs obtained of any degree of depth without loss of delicacy and gradation on the half tones. The method of inking the printing surface we allude to is one very familiar to copper-plate printers, and not unknown to lithographers. It consists in the use of two inks simultaneously. One ink, being of a stiffer consistency than the other, acts most readily upon the darkest—that is, the least absorbent—parts of the light-impressed image, while, as is well known to lithographers, an ink reduced by non-siccative oil is favourable to the production of the weaker—that is, the more absorbent parts of the picture. With the first we get vigour, with the latter delicacy and more perfect gradation.

The first prints of Albert sent to us at the latter end of 1868, or early in 1869, were, like those of Tessié du Motay, wanting in force, but were charming as regards delicacy and softness; but in a batch sent to us a month or two later a great change was observable. So great, indeed, was the improvement, accompanied in some cases with a difference of tint between the dark and light tones, that during a critical examination of them with a friend familiar with all the various printing processes, we divined the *modus operandi*—the first decision being that there were two printings; the second, from the absolute perfection of the register, that there were two inks only. The publication of these impressions in the PHOTOGRAPHIC NEWS produced a great sensation in this country, and called, for the first time, the attention of British photographers and art-illustrators to the great march which our continental brethren had stolen upon them.

The next modification of the colloid surface was made by or for MM. Ohm and Grossman, of Berlin, and the modification is by no means unimportant. We say by or for, because the patent which embodies their important mode of working was obtained in this country as a communication from Mr. Rye, through an English patent agent, and contained some important modifications in formula. The modification consists in the totally novel addition to the gelatinous and albuminous bodies hitherto used of some haloid salts and gum resins. These, when combined with the film, render it not only tough, but non-absorbent to a much higher degree than compounds previously used for the purpose. At the same time, the relief is much less, and the impressions more perfect, being without those white or light grey lines frequently observed in some processes of the same kind. An elegant process was published about the same time by Herr Obernetter, of Munich, in which the necessary printing conditions of the colloid surface were obtained in a very ingenious manner, and the results produced were exceedingly fine. The heliotype process, the invention of Mr. E. Edwards in this country, was next introduced to the public. Desirous of obtaining impressions with finer grain than those secured by Tessié du Motay's process, and of more durability, he proposed to harden the film by the

addition of alum, and (although not, we believe, so stated in his specification) with chrome alum. This substance had been patented by Swan as possessing the property of rendering the colloid bodies insoluble, and its application has been shown to various purposes. It had already formed the subject-matter of a previous patent granted to Mr. Edwards,—that for a modified carbon process, a film of gelatine and alum on paper being substituted for the albumen paper coagulated by spirit, patented by Swan.

The application of the same compound to harden the printing surface, which has proved very successful, had been previously published by Albert in his American patent. We doubt, however, if any of the heliotype productions be quite equal to those of Albert, where light is the chief agent in hardening the gelatine film, or to those of Ohm and Grossman, in which the resins play so important a part. In these the relief is much less than in those of Tessié du Motay and Edwards, and hence a finer texture, and the absence of the false lines or forms we have alluded to. These would appear to arise from the paper bridging over, if we may use the expression, the cavities of the impressions, and thereby failing to take up the ink therefrom. This partly arises, doubtless, in the case of the heliotype, from the use of the platin press, which is less favourable to printing from an intaglio surface than the rolling or scraping pressure of the press of copper-plate and lithographic printer respectively.

The surfaces of Albert, and Ohm and Grossman, while in much less relief than those of Edwards, and therefore requiring less pressure, are, nevertheless, capable of sustaining the more powerful and scraping pressure of a lithographic press, and hence, doubtless, the absence of the inequalities of impression. Herr Albert, in an early communication on the subject, stated that his plates might be printed either by the lithographic, copper-plate, or letter-press, modes of pressure; but he chiefly confines himself to the use of the ordinary copper-plate press with rolling pressure.

In the brief space available for this notice we are conscious of doing but scant justice either to the history of the principle involved, or the varied forms of application it has obtained. Our immediate object is to explain how the very satisfactory nature prints of a fine architectural subject, printed in permanent ink by mechanical means, are obtained. They are produced by the Autotype Fine Art Company, the photo-mechanical printing department being under the management of Messrs. Sawyer and Bird, working under the patent of Messrs. Ohm and Grossman, to which we have adverted, with some of the modifications which earnest and ingenious workers invariably effect in carrying out a novel principle. We need not here commend the fidelity of photography: we simply commend attention to the delicacy, force, and general quality of the impressions which, designed by the sun, we here produce, with the facility of the printing press, in the enduring form, which has stood the test of centuries, of printer's ink.

G. WHARTON SIMPSON.

Correspondence.

ASSISTANTS AND APPRENTICES.

DEAR SIR,—The discussions in the NEWS concerning photographic assistants and apprentices have much interested me; but, although there have been some good articles written upon these subjects, there seems to be no satisfactory conclusion arrived at. The scale of remuneration demanded by assistants can be no certain proof of the value of their service—any pledge of their morality or fitness for certain departments—any more than that offered by a master can be a criterion of his benevolence and liberality. On both sides this matter must be governed by commercial laws, and in the case of small businesses by necessity.

* Continued from page 499.

To photographers residing in small provincial towns, an assistant at five pounds per week would prove as ruinous as a present of a white elephant with its numerous retinue of attendants, and would be as much out of place, for in such establishments it is rare that more than one assistant is kept, and, of course, he cannot be exempt from doing the drudgery of the profession. This would certainly be offensive to the gentleman assistant's (I think this is the advertising term) dignity, and certainly would be somewhat like using a race-horse to draw dung. In some cases there might prove too much assumption for the comfort of a quiet country family; in fact, this class are only fitted for large establishments where a staff of underlings can be maintained.

Now it frequently happens that proprietors of small businesses, from declining years, illness, or other causes, require help; if all who would be willing to render it at such remuneration as could be afforded are untrustworthy, what are they to do? In my own experience I have found quite the contrary to be the fact, and in my visits amongst my provincial brethren, of which I have now and then given some sketches in former articles, I have come across some worthy and highly intelligent men, doing their duty both by master and customer, at what may be considered very low wages. These small businesses constitute a great part of the profession, and their proprietors are often men of great ability. It must be patent to everyone that opportunities for forming extensive establishments must be few, and that all men are not fitted for great commercial enterprise, and that some are content with a small but safe venture. In those quiet places the assistant will be more likely to find a comfortable home, and they are the best unscaries for apprentices, as being constantly under the eye of the master will have a most beneficial influence both on their moral and professional training. He is also generally a sort of Jack-of-all-trades, whose example will tend to draw out the ingenuity of the learner, and make him a man of ready resource in after life.

It is too frequently overlooked that the knowledge gained during an apprenticeship, like scholastic learning, is only preparatory, and should be of a general character, that he may be able to understand the whole theory of his art, and choose that department which his inclination may prompt him to follow.

Something has been said about the class of society from which apprentices should be drawn. Will the better classes think photography worth their consideration as a pursuit for their children? I fear not while its professors, as a body, are so disinclined, and so many parasites are doing so much to lower the profits and status of the profession.

Not long since I received a letter from a talented friend, stating that the whole of the demand for cartes amongst the better classes had been taken out of his hands during the entire winter by an amateur, an officer in the army, a stranger, whose only means of introduction to the society of the place was by gratuitous photography. The instance I now mention came under my own notice. A bricklayer's labourer, who had tried photography, and, like his prototype, who wished to be a pastrycook, whose pie crust was of mortar made, whose bread was made of brick, he failed; but, retaining his camera, he now aids his scanty wages by caricaturing for any unwary person he can prevail upon to employ him. The lower classes, as a rule, are too uneducated for the purpose, therefore, at present, it is hard to say where to look for youths fitted for photographic pupils; but the extended influence of education under the recent Acts of Parliament will most likely remedy this. In the mean time I should be most happy to see our beautiful art raised nearer to its proper status by some institution such as I was the first to propose in the NEWS some years since. Whatever is done should be done without delay.—I am, dear sir, yours truly,
J. MARTIN.

PS.—To show that some legal agreement binding pupils for a certain time to the instructor is requisite, I may state that a youth who had been with me four months, whose indentures were made out, but not signed, happened to meet with a difficulty last week, snaked out of my house like a dog who had stolen a bone, and I have never seen him since; there was no quarrel, and I still do not know the cause, and believe there was none whatever.

COMMERCIAL USE OF COLLODIO-CHLORIDE.

SIR,—A few weeks ago I saw a short criticism of yours upon some contemptuous remarks, from the pen of a Mr. Sutton,

regarding the collodio-chloride process, in which he stated (as I guessed from your article) that it had been a total failure.

The subject interested me at the time, and I would have written to you then, but could not find an opportunity. I have not seen Mr. Sutton's letter, nor do I know where to find its author, or I would at once have sent him proofs of the falseness of his statements. You, sir, will be glad to hear that I still continue working your valuable process, through Herr Obernotter, of Munich, and with great satisfaction both to myself and customers.

I send you several specimens printed on paper which has been in my possession for the last six weeks; and I cannot help saying that material which gives such delicate results deserves better treatment at the hands of professional photographers than it has got in the past.—I am, sir, respectfully,
Dunse, October 20th, 1871. GEORGE BRUCE.

[The examples forwarded by our correspondent are amongst the most perfect prints we have ever seen.—Ed.]

ALBUMEN COATING FOR WET PLATES.

SIR,—As I have been in the habit of using albumenized glass for a long time past, and have always found it superior to plain glass in every particular, allow me to state my experience in direct contradiction to Dr. Liesegang's.

During the past summer I have had many opportunities to test the matter; two or three times, when taking horse groups, &c., I have, through movements, &c., used up my stock of albumenized glass before I had taken all the negatives I required. I have then been compelled to clean off some of my failures, and have always found that negatives taken on plain glass were in every way inferior to the ones taken on albumenized glass in the former part of the day. Not only did they require a longer exposure, but they always required intensifying, which the others did not.

Another thing: negatives on plain glass must not be allowed to dry before fixing, &c., or the chances are that they either slip in washing, or split in drying. With albumenized glass, directly the negative is developed it is flushed with a mixture of acetic acid and water, drained, and put into a plate-box, to be finished at leisure. If it is wanted to let it dry before fixing, it may be washed after developing, and then dried, to be intensified and fixed at leisure, without the slightest danger of the film slipping, as it is almost impossible to float it off.

The method of photography in the field without water, intensifier, or fixer, is invaluable, for not only is the impediment reduced to a minimum, but the negatives have a better chance of being good if intensified at home at leisure, than if done in the field in the hurry of work.

I have used albumen in all the published formulas, but finally adopted, six months ago, the following:—Beat up the white of one egg, and to it add 20, 40, or 60 ounces of water, just as the egg is large or small; then add a few drops of carbolic acid, and filter. It is then ready for use.—I remain, yours respectfully,
W. T. WILKINSON.

Ledbury, October 17th, 1871.

COL. WORTLEY'S COLLODIO-BROMIDE PLATES.

SIR,—Having recently tried Col. Stuart Wortley's dry plates, I beg to bear testimony to their excellence, both as regards the short exposure they require, and the quality and perfect cleanliness of the image they yield. I was unsuccessful with my first plates, which I developed by the ordinary light of the dark room. Recalling, however, Col. Wortley's caution as to their extreme sensitiveness, I afterwards used a photographic lantern, excluding other light, and obtained negatives of great beauty and excellence with scarcely more than the exposure of wet plates.—I am, sir, your obedient servant,
H.

Talk in the Studio.

ACID TONING BATHS.—Our esteemed contributor, Mr. W. T. Bovey, referring to the difficulty in working an acid toning bath similar to that recently described in our pages, says:—"Dr. Liesegang is certainly vague in his instructions, as the quantity of acid and carbonate of soda needed to produce the well known effect on litmus paper may be carried to an excess which would produce just such results as indicated in your reply to S. Parry. Too much soda would create an inertness which no

subsequent addition of acid could destroy. Consequently, the bath would be inert, because of an excess of soda having been applied in the first instance, and would create inertness, on account of the after addition of an excess of acid. Now to insure success, it appears to me that the gold solution should be strictly neutral, or very slightly alkaline. An excess of free carbonate of soda to be carefully avoided. The same remark applies to the addition of acid. The solution should be faintly acid, no more. With these precautions, I am of opinion that no failure can attach itself to Dr. Liesegang's formula."

COL. STUART WORTLEY.—It will interest many of our readers to learn that the distinction of the Legion of Honour has been presented to Mr. George Moore, Col. Stuart Wortley, the Lord Mayor, and Mr. Alfred de Rothschild, by the French Government, for the services rendered by them in connection with the Mansion House Committee in re-victualling Paris after the siege had been raised. The Prefect of the Seine left London last evening on his return to Paris.

NEW PHOTOGRAPHIC ENGRAVING PROCESS.—We learn from the *Journal of the Franklin Institute* that the method of engraving by means of a jet of sand, described a few months ago, is receiving practical application. Our contemporary says:—"The latest adaptation its ingenious inventor has succeeded in developing into practical efficiency is to a peculiar process of replacing the art of wood cutting. The few experiments conducted in this direction have given such promise of success, that we feel justified in predicting for it a most important role in the future of the art it represents. We hope, in our next issue, to be able to present to our readers an engraving produced by the use of the sand-blast, of which we have in our possession some excellent specimens. The process, which we are only at liberty to describe in general terms, consists in bringing upon a suitable matrix a photographic copy of the drawing or engraving which it is desired to reproduce. This is then passed beneath the sand-blast, and the cutting thus obtained. This is finally subjected to the electrotyping process, and any desirable number of copies thus produced."

LETTERS PATENT.—The House of Commons' Select Committee appointed to enquire into the law and practice and the effect of grants of letters patent for inventions left their work unfinished. They reported to the House the evidence they have taken, and this has now been published. The Committee, in a very brief report, recommend their re-appointment next session to continue the inquiry. Mr. Dillwyn proposed to add:—"So far as the inquiry has proceeded, the Committee are convinced, from the evidence already given, that a general feeling of dissatisfaction exists with the administration of the Act of 1852, especially with regard to the conflicting applications for patents, respecting which, during the six months of provisional protection, no information can be obtained. The Committee desire also to draw attention to the various memorials alluded to in the answers to questions 670 to 681, relative to the appointment of additional persons as commissioners, in accordance with the first section of the Patent Law Amendment Act, 1852, and to other matters. In making this report the Committee do not desire in any way to prejudice the question of the general policy of the continuance of a patent law, or to express an opinion as to any alterations or amendments to it which may be required." This motion, however, was withdrawn; and on the motion of Mr. Hinde Palmer, and by a vote of five against four, the Committee stated, as part of their report—"Against prejudging any question referred to them, that in the meantime it is highly desirable that the powers and provisions of the Patent Law Amendment Act, 1852, should be fully carried into effect."

To Correspondents.

ADDITIONAL CONTRIBUTIONS TO THE BLAIR TESTIMONIAL.

Messrs. Mawson and Swan £5 0 0
Mr. Jabez Hughes 1 1 0

BOB ATKINS.—We believe there is no patent for the nickel plating process in this country; but the details of the operation are not made public. 2. It is probable that the chloride of nickel is employed in the operation. 3. There are various good works on electroplating; Mr. How, of Foster Lane, publishes a useful manual.

TRIPOD.—Silk cannot be used in the manufacture of pyroxyline.

CINTRA.—Unfortunately, the untuned prints enclosed in your letter were very much discoloured by the time they reached our hands, leaving us somewhat in doubt as to the exact nature of your trouble, which is not described in your letter. We presume, however, that it consists in the grey or lavender coloured stains present. Similar stains are often caused by the use of a bath too strong for the paper, and, at times, are caused by the use of paper which has been kept very dry before exciting. In such case the paper is apt to dry irregularly, drops or pools of solution standing on the surface of the paper, and drying slowly. You state, however, that the same fault occurs when the paper is blotted off before drying, which should be a remedy for the defect we have mentioned. Are you quite sure that the back of the paper does not come into contact with something whilst hanging up to dry? Are the pads placed at the back of your prints whilst in the frame dry and clean? We shall be glad to know the issue of your trouble, but cannot speak with positiveness as to its cause. The gentleman you mention is, unfortunately, although clever, crotchety and untrustworthy, basing very positive conclusions on extremely limited and insufficient experiments.

C. F. R.—We do not know the manufacturer of the stereoscopic mounts for transparencies, but should think it probable that any photographic dealer would procure them for you.

E. W. 10.—As you would see, Mr. Wilson communicated in our last his hints to photographers on the working of the collodio-bromide process.

BAFFLED.—As you seem positive that the fault is in the nitrate bath, you limit our range of suggestion. In a newly made bath of pure materials there can be no source of trouble; any difficulty with the bath newly made must arise from impurity either in the nitrate of silver or the water. You have tried several samples of silver, and believe that to be pure. In such case the fault would rest with the water. This is, of course, distilled, and you may purify from any trace of organic matter by means of permanganate of potash. But, from your description of the trouble, we fancy the fault really does not rest with the bath. We are familiar with a very similar difficulty, which is not uncommon, especially at this season of the year. Various remedies tend to alleviate the matter; but we have known cases in which it has been very difficult to get rid of. The most certain remedy consists in diluting the collodion with a little thin plain collodion, or sometimes with a little ether and alcohol. Another remedy consists in letting the film set well before immersing in the bath. Immerse the plate sidewise, and, when half sensitized, remove and place in endwise. As a rule, the first named remedy answers best, that is, if we rightly apprehend the difficulty.

RUSTICUS.—Albumen depending on its salts for solubility, you cannot remove these salts and preserve the albumen in solution from precipitation. If the alkaline salts present in white of egg are carefully and exactly neutralized by means of acetic acid, a glutinous flaky precipitate of pure albumen is thrown down. If you refer to your copy of Pownes' Manual, you will find all these facts clearly set down. Gregory's Manual of Organic Chemistry will probably answer your purpose.

JOHN STONE.—Your difficulty appears to be very tantalizing. From the example forwarded we should still be disposed to suspect over-exposure. What is the appearance on development? Do you obtain any image on first applying pyrogallie acid solution alone, and, if so, how soon after its application? Try steadily reducing the exposure until no trace of an image appears on applying the pyro, until after the ammonia solution has been added. If the images still refuse to acquire intensity with ammonia, try pyro and silver, as first directed by Col. Wortley. Do you take care to avoid all trace of light in the developing room? See letter on the subject on another page. Remember that, as a rule, a good dry-plate negative is developed somewhat slowly, and have patience to allow slow development.

CAPTAIN TURTON.—You may safely use a gas stove in your studio if you take proper precautions to carry off the products of combustion. On page 76 of our YEAR-BOOK for 1868 you will find an account of a very convenient mode of using gas innocuously in the studio, by means of George's Calorizer. The photographs to which you refer will, we are glad to say, be sent to the November exhibition.

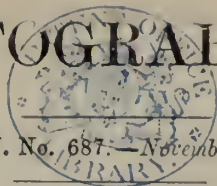
R. T. W.—Most certainly send. We at once posted the letter. The cards are very excellent indeed. Thanks in advance for the further jottings.

THOS. SINGLETON.—Thanks for your excellent landscapes and sea views; also for explanatory statement.

ROBERT DAY.—Thanks for prints, &c., duly received. The work of your son is exceedingly excellent, and very satisfactory indeed. The instantaneous photographs by your daughter are also capital. We have not, however, received the promised hints or formulae for developers. We shall have pleasure in receiving them, and then examining the photographs in connection with the formulae. It is pleasant to us to receive the assurance that our work is useful to our readers, and is so kindly appreciated.

Several correspondents, and several articles in type, are compelled to stand over.

THE PHOTOGRAPHIC NEWS.



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ANOTHER METHOD OF REPRODUCING NEGATIVES.

In describing our method of reproducing negatives on collodio-bromide plates, we pointed out the advantage to be gained by contact printing for such a purpose, and the immunity from imperfect definition at the edges of the plate which was gained in that mode of reproduction. We have now to describe another method of reproducing negatives in which contact printing is employed, for the details of which we are indebted to Mr. Swan, who practised the process with success.

In the method we are about to describe ordinary carbon tissue is employed, and the operations generally are analogous to those in carbon printing. If a good transparency of the negative be in existence, the negative may be produced at once from this transparency; but if not, the first step consists in producing a good transparency, which is, in fact, simply a good carbon print on glass somewhat fully exposed. Most of our readers are familiar with the details of the carbon process, but we may briefly recapitulate the necessary steps. A piece of ordinary carbon tissue—or, better still, a piece of the vigorous carbon tissue prepared for transparencies by the Autotype Company—is floated for two or three minutes on a five per cent. solution of bichromate of potash, dried, and exposed under a negative, taking care to leave a "safe edge"—that is, an edge of the tissue—all round, which has been protected from the action of light, in order to facilitate the adhesion of the tissue to the glass plate to which it has to be transferred. The exposure may be regulated by the actinometer, or timed by judgment as a plate in the camera is timed, care being taken that the exposure is full, rather than short. A plate of glass is made chemically clean—or, better still, coated with plain collodion—and plunged into water as soon as it is set, precisely as sensitive collodion is plunged into the nitrate bath. The exposed print, also, is plunged into a dish of water, where it will first curl itself upwards, and next begin to straighten or grow flat; at this stage it is taken and placed, pigmented side down, on the collodion film, and pressed down with the squeegee. The glass, with the tissue attached, is next placed in water at about 80° Fahr., the paper removed as soon as the gelatine is sufficiently softened, and the print developed in due course.

The transparency thus produced is generally vigorous enough to reproduce negatives from; but if further intensity be required, it may be secured by the method which we shall presently describe. To produce the negative the same process is repeated in all its details, using the transparency as a *cliche*. When the negative has been developed, it remains to be intensified; and it is in this part of the process that the chief novelty consists. After thoroughly washing, a solution of permanganate of potash is applied to the negative, by which a process of intensification is secured similar to

that produced on a silver image by the same solution. The permanganate is decomposed by the gelatine, and a precipitate of sesqui-oxide of manganese, of a rich chestnut-brown tint—or, at times, a brown inclining to olive, which is highly non-actinic—is thrown down on the image, readily producing printing intensity. The strength of the permanganate solution is not very important; we have used Condy's red fluid, which, diluted with three or four times its bulk of water, answers well. This method, of course, may be employed to intensify the transparency if it be found desirable to increase its vigour before employing it to print the negative. A similar method might be employed to modify the tint of carbon prints if desired.

THE FORTHCOMING PHOTOGRAPHIC EXHIBITION.

As the exhibition of photographs to be opened on Tuesday evening week in Conduit Street will, it is anticipated, be one of the most complete and interesting displays of photographs ever brought before the public, it is very important that exhibitors should aid the executive in carrying out the arrangements with the completeness which is intended. The exhibition, which was opened, a few years ago, as the display of an evening inaugurating the winter session of the Society, and which, from its excellence, was kept open for a week, has been followed each succeeding year with an exhibition of greater excellence, the duration of which has been constantly prolonged by additional days or weeks not originally contemplated. On this occasion specific arrangements are made for keeping the exhibition open for a month; and as a large number of contributions is anticipated, and a perfect catalogue will be prepared, it is of vital importance that all pictures intended for exhibition should be sent in punctually to the time announced for receiving them. Pictures arriving at a later period, even if accepted, are inevitably relegated to worse positions in hanging, and risk of omission in cataloguing. We would, therefore, urge on all our readers who can, the interest and importance of contributing something to such an exhibition; and, above all, of sending in their pictures to 9, Conduit Street, not later than Tuesday next, the 7th inst., accompanied by a letter to the Secretary containing details of every picture for insertion in the catalogue. For all other particulars we refer our readers to our issue of October 20th, containing the official instructions.

NICKEL PLATING.

The subject of protecting metals by an electro-deposition of nickel, recently brought under the attention of our readers by Mr. Spiller, having excited considerable interest, we publish the following communication on the sub-

ject from the pages of American contemporaries. The *Journal of the Franklin Institute* has the following:—

"Prof. F. Stolba communicates a plan for nickel-plating by the action of zinc upon salts of nickel in the presence of chloride of zinc and the metal to be coated. By this process, the author informs us, he has succeeded in plating objects of wrought and cast iron, steel, copper, brass, zinc, and lead. It is only necessary that the size of the objects should permit them to be covered entirely by the plating liquid, and that their surfaces should be free from rust or grease. The following is the *modus operandi*:—

"A quantity of concentrated chloride of zinc solution is placed in a cleaned metallic vessel, and to this is added an equal volume of water. This is heated to boiling, and hydrochloric acid is added, drop by drop, until the precipitate which had formed on adding water has disappeared. A small quantity of zinc powder is now added, which produces a zinc coating on the metal as far as the liquid extends. Enough of the nickel salt (the chloride or sulphate answers equally well) is now introduced to colour the liquid distinctly green; the objects to be plated are placed in it, together with some zinc clippings, and the liquid is brought to boiling.

"The nickel is very soon precipitated; and in course of fifteen minutes, if the work has been properly performed, the objects will be found completely coated. The coating will vary in lustre with the character of the metallic surface; where this is polished the plating will be likewise lustrous, and *vice versa*.

"Varying the process by the addition of a salt of cobalt instead of nickel will afford a cobalt plating which, the author informs us, is steel gray in colour, less lustrous, and more liable to tarnish than the nickel."

The *English Mechanic*, after giving Mr. Spiller's remarks in our pages, quotes an American journal as follows:—

"The coating of nickel is quite hard, nearly as hard as iron, so that it keeps its polish much better than Britannia metal, or of other similar tin alloy—even better than brass or silver; secondly, it adheres well, even when put on in thick layers, so that it may be easily polished, and then has a shade between that of polished steel and that of alloy of silver and copper; thirdly, it requires no lacquer or varnish, since it does not tarnish by exposure to the air, as brass does, and even silver, when exposed to the least trace of sulphurous vapours. It retains its lustre for a very long time, being proof against oxidation under ordinary circumstances, wherefore Richter counted nickel among the noble metals. It only oxidizes at a red heat when in contact with air; when air is excluded, heat reduces its oxide to the metallic state. Plating with nickel is accomplished like other electro plating, only the bath or nickel solution is prepared in a peculiar way. The simple soluble salts of nickel appear not adapted for the purpose; double salts are required. Becquerel, the great French chemist, prescribes a solution of the double sulphate of nickel and potassa; this solution is not patented, and may be used by every one. Mr. Adams, of Boston, patented the use of the double chloride of nickel and ammonium, or the sulphate of nickel and ammonium. The speciality on which his patent mainly rests is the careful exclusion of potash, soda, or their equivalents, caused by his erroneous supposition that the smallest quantity of potash or soda would prevent the success of the operation. Probably this error proceeded from the observation that potash or soda reduces solutions of nickel salts, and precipitates nickel in the state of a hydrated oxide; the acid of the nickel salt combining with the alkaline base. But a part only of the nickel solution can be thus reduced, and the precipitate is easily dissolved again, or its formation prevented by the addition of a proper amount of the same acid in a free state. Moreover, when carbonate of potash or soda is used for forming this precipitate, a portion of it will be re-dissolved by a concentrated solution of these carbonates. It is clear that nickel-plating in general cannot be patented."

Critical Notices.

INSTRUCTION IN PHOTOGRAPHY, for Use at the S. M. E., Chatham. By Lient. ABNEY, R.E., F.R.A.S.

THE handbook of photography provided by Lient. Abney for the instruction of the Royal Engineers engaged in military photography at Chatham is one of the best elementary books we have seen. Essentially practical, exceedingly clear and lucid, it is quite as comprehensive as an elementary book should be. Although intended as a guide to practice, rather than a theoretical treatise, sufficient explanatory matter precedes the details of manipulation in each department of instruction to enable the thoughtful operator to get a clear idea of the theory of the operations he is about to carry out, and give him intelligent interest in his work. The practical portion of the work possesses that peculiar value and charm which only attach to the instructions of an actual worker familiar with every detail he describes, producing a feeling of perfect reliance in the mind of the pupil, never possible with a mere compilation. We only regret the limited field to which such a valuable work is confined, as it is worthy of the largest circulation possible amongst the general public. It is described as printed for private circulation, and is, it seems, intended only as an instruction book for the Sappers and Miners at Chatham.

Foreign Miscellanea.

THE last number of the *Moniteur de la Photographie* contains an announcement of the approaching photographic exhibition in Conduit Street, and asks for any contributions of interest from French photographers; pictures taken during the Prussian war and Communist troubles are especially invited.

Photography seems to have quite recovered its usual activity in Paris, judging from the business done by many of the commercial houses in that capital; some photographic requisites are so essentially *articles de Paris* as to be practically unobtainable elsewhere.

M. Lacan publishes in the *Moniteur* an account of his efforts during the Paris siege to aid by means of photography in affording information useful to the military authorities.

It is reported that MM. Bergamasco, of St. Petersburg, have found it impossible, owing to the limited time at their disposal, to forward any examples of portraiture to this year's exhibition. This is much to be regretted, as the charming specimens of cabinet portraiture recently produced by that firm vie in excellence with any furnished by the crack photographers of Western Europe. MM. Bergamasco promise, however, next year, to send a collection of their works. Berlin will be represented by some of its best craftsmen, and from Vienna likewise a collection of good pictures is expected.

In Germany the custom of albumenizing plates prior to their being coated with collodion is becoming almost universal, and the practice of polishing the glass surface is now regarded as quite antiquated, and a thing of the past.

Dr. Vogel has made another and interesting study of the latent photographic image; the communication, which has appeared in the *Photographische Mittheilungen*, will be reproduced in our columns.

An article on new weights and measures appears in *Licht*, from the pen of M. J. Kruger.

England and America seem far in advance of Germany and France in the matter of dry plates. For every process worked out by our friends across the Channel, we appear to elaborate half-a-dozen; and now-a-days landscape photographs are secured, at any rate by amateurs, more frequently upon dry than wet plates. Not only with us are they largely prepared by private individuals, but

they have now for some time past been articles of commerce, and may be purchased in the same way as other photographic paraphernalia.

A report on Morgener's "Book of Instruction in Retouching Negatives" is denounced by a committee of the German Photographic Society in New York as a wholesale plagiarism throughout of M. Hartman's remarks on the subject, which appeared some months since in the *Mittheilungen*, and were reproduced in the NEWS. If the American work in question is really a translation of the article in question—which, indeed, appears to be the case—M. Morgener, however, defends himself, and apparently with success.

An illustration of M. Below's phototype process appears in the last number of the *Mittheilungen*.

As regards the blistering of albumenized paper, of which there have been many complaints of late, M. Fritz Haugk, in *Licht*, ascribes the defect to the employment of very dry paper during the operation of albumenizing. The film of albumen cannot so readily penetrate the paper material if the same does not contain a certain quantity of moisture. And this belief is borne out, says M. Haugk, by the fact that damping of the albumenized paper is a good preventive for blisters.

A good harvest is being made in Paris by the sale of war photographs of every description. Many of these are unmistakable shams, especially those representing battle scenes, of which it would have been impossible, almost, to have obtained photographic representations.

The Berlin Societies hold their meetings this month, while those of the French Photographic Society commence in November.

MILITARY PHOTOGRAPHY AT BORDEAUX.

THE *Moniteur de la Photographie* gives an account of the straits to which the army of the Loire was reduced for want of proper maps and topographical arrangements, the establishment existing at Paris being, of course, cut off by siege from the rest of the country. There was no photographic staff attached to the army to copy maps and plans, and the want of these was, at times, very severely felt. The article, which appeared originally in *La Gironde*, says:—

"Already on the 21st July at Saint Avoid, the commandant of the 2nd corps complained that he had no map of the eastern frontier, and in October the commandant of first division of the 15th corps, General Martin des Pallieres, was obliged to have recourse to one of Johanne's* guide-books, purchased at a library in Tours, for he could obtain no other chart. From this alone the lamentable state of the topographical arrangements may be gathered.

"By a lucky chance there happened to be a brave officer of marines attached to the army of the Loire, who, during some dozen years of civil life, had acquired a knowledge of the power of private industry. He at once asked for permission to produce, by means of photography and autography, copies of the Ordnance maps, and also demanded authority to make the necessary arrangements, to hunt up photographers, to discover lithographers, and to assure these, when found, from service in the army. After much circumlocution he at last obtained full permission and authority, and Captain Jusselain—for such was the officer's name—set to work forthwith.

"His first essays were made at the studio of M. Blaisc, a photographer of Tours, but the greater part of the work was executed by M. Terperau, of Bordeaux, whose excellent works in regard to landscape pictures are already well known.

"M. Terperau was, however, without necessaries or appliances for the production of maps, and, moreover, had no time to provide himself with them. M. Jusselain, who had come to Bordeaux in search of a skilful photographer to aid him in carrying out his resolutions, entered the studio one

day, and asked for the reproduction, without a minute's delay, of a map of Valencay. The map was required by the morning, but this M. Terperau pronounced to be impossible seeing that he was in possession of no plates of sufficient size. The map would have to be divided in two, and photographed from distances mathematically equal, so that the same scale could be preserved, and that the two halves should fit perfectly when placed together. The first experiment was made at once, and, fortunately, a successful result was obtained at the first trial; thus, M. Terperau was enabled to mobilize his apparatus on the very first day: to fix the focus of his instrument, fasten the legs of the apparatus firmly to the floor, so as to keep everything rigidly in the same position. The screw of the camera was fixed, and the drawing-board for stretching the original map made fast against the wall; in this way every copy was obtained upon a similar scale.

"The printing of the large negatives was next to be undertaken, and as M. Terperau possessed but a couple of pressure frames of sufficient size, the difficulty was not easily overcome. No frames sufficiently large were to be had in Bordeaux, but by good fortune M. Terperau fell in with an apparatus maker with whom he was acquainted. Being a young able bodied man, the journeyman had been pressed into military service, but, thanks to the powers of Captain Jusselain, this difficulty was soon set aside, and the workman was liberated on condition of his setting to work at once to manufacture printing frames.

A dozen or so of frames were soon ready, and the operations of printing were rapidly proceeded with, although assistance in the manipulations by persons accustomed to the work was difficult to obtain. The authorities pressed for supplies of maps, the value of which the war ministry were now beginning to understand.

"Matters had to be conducted as quickly and efficiently as was possible under the circumstances, and M. Terperau was complimented upon the excellence and rapidity of his work. One day he recognized, in the uniform of a corporal who had come to the studio for his portrait, one of the best operators of the South of France, M. Caillard, of Dax, and of this gentleman he immediately made a prisoner. 'You shall never go out of my house again,' said M. Terperau, and, like the other young soldier, M. Caillard very soon gave up the chassépot for the camera, and entered upon a career which, if less glorious in appearance, was certainly not less useful.

"It may be mentioned that M. Terperau reproduced in all forty-three maps of large size, and of these printed from twenty-five to fifty copies, and this, be it remembered, at the least favourable season to photographic manipulations; the appliances at hand, too, were those simply of an ordinary photographer situated in a provincial town, who had no preliminary warning of his service being required in this direction, and who had but little assistance at his disposal. M. Terperau's efforts form, indeed, a striking example of the value of private industry when properly made use of."

FRENCH CORRESPONDENCE.

DURING the past week photography has been honoured in Paris in a very unaccustomed manner, serving as the theme for a discourse delivered at the annual meeting of the Five Academies held on the 29th October, at the Institute, under the presidency of M. Jules Simon, Minister of Public Instruction. M. Ernest Legouvé chose for the title of a brilliant oration, "A propos d'un album photographique." Never did the enlightened and gentle author of "Adrienne Lecouvreur," and of the "Marquis de la Seiglière," the orator so full of refinement and of good sense who, during the siege of Paris, was capable by a simple address of at once raising the hopes and confidence of all—never, I repeat, did M. Legouvé appear more happily inspired, and I think that the readers of the PHOTOGRAPHIC NEWS will not be adverse to receiving a few extracts from this remarkable

* The French "Murray."—Ed. P.N.

address, which will remain an everlasting tribute to the glory of our art.

M. Legouve commenced by giving a very clever definition of the role played by the wonderful invention, touching its relation to art and to science, its value to history in general, as also to private individuals—an invention employed by the most humble, as by the highest and grandest in the land, and which satisfies at the same time our ardent desires and our dearest wishes. "Our present era," says M. Legouve, "is not an era of imagination and of romance; reality in its strictest sense forms its only interest. In the world of science the time for speculations has passed away, and there has succeeded to it the era of practical experiments. In history we want to know the precise nature of the work done by each celebrated personage, the nature of their actions, their character, and in what way their deeds can be compared to themselves. The human face divine is a witness which, if it does not tell us all, informs us, at any rate, of something which nothing else can tell us; it is a witness both against and in favour of the accused, which aggravates, extenuates, rectifies, completes other testimonies—a witness furnished by God himself, and which, if consulted with due caution, lies little, and deceives rarely. Often, indeed, it is only the face that one trusts. And it is this that photography has given us; the camera, in truth, affords us a portrait not only of our face, but of our pretensions also, and the result obtained is such, that one cannot but regard the practice of being photographed from time to time as a very beneficial measure. A good photograph brings about an examination of one's conscience; it puts before our eyes more than one secret trait of character which we dare not acknowledge to ourselves. What man of fifty—or say sixty, if you like—has not quietly asked his portrait, face to face, how little he is sincere in most things: 'Eh, what!' he says, in contemplating his picture, 'is that the gentleman whose beard I brush every day?' And his stupefaction is perhaps augmented in a very disagreeable manner when, showing the likeness to his friends, they forthwith exclaim 'Oh, excellent! that's yourself exactly; at last, at any rate, you have a picture really like you!' Thank you, indeed, but one always possesses a portrait of oneself much more beautiful than reality. Believe me, my friends, both young and old, take my advice, and get yourselves photographed. You may have many advisers in this world, but none of them will give better advice than your portrait. 'Ah, my good sir!' it will say, 'you must leave off that extra glass of port, you must really cease that brilliant way of living, and must be content to be good, useful, and human.' Such advice is applicable to every age. This is what my photographic album tells me, and it is certainly exceedingly good counsel. But, mind you, the album itself has need of advice likewise. If one tells the truth so rigidly to others, one ought to permit them also to tell the truth in return. Photography has one great failing: like all portrait painters, it often disfigures the faces that it reproduces. I know more than one photograph that calumniates. A photographic portrait should be regarded as something for which one is not liable or responsible. . . . But how are we to correct the false impression, or supplement the imperfect pictures? I will tell you: by adding to each a few lines of autographic writing, which is itself another portrait. I give my idea to portrait collectors for what it is worth."

In his long discourse, of which I am able only to give you some short extracts, M. Legouve passed in review all the applications of photography as a writer who had for a long time past studied his subject: his final words were as follows:—

"I cannot refer to all these benefits without pointing out the injustice we have done to him to whom we owe them all. The man who conceived the first idea of this grand invention, the man who first realised the discovery in its first shape, was a Frenchman, and we have actually effaced his name from his discovery, and have constituted it an

anonymous invention. It is now, alas! too late to repair our injustice against our compatriot, M. Daguerre."

This is the only name that M. Legouve desires to withdraw from oblivion. For my own part, I must say that I read through the last lines of his speech more than twice, so surprised and struck was I by them. Here was a man of talent, a *litterateur* of note, and an academician, who for the space of an hour and a-half had charmed an assembly of the most learned, the most scientific, men of the day, with a discourse upon one of the most important discoveries of the century; full of his subject, he desires in an honourable manner to render justice to the forgotten inventor, and yet, like an ordinary scribbler, he at the last moment makes a mistake in the name. After having deplored the curious and culpable error by which America received a name other than that of its discoverer, he himself renders to *Vespasius* the honour due to Columbus, and cites the name of *Dagucrrre*, and not that of *Niepee*. Is it not truly pitiable? Moreover, it would have been so very easy for M. Legouve to have saved himself from such an error; I know very well that our academicians do not read our little journals, but the *Moniteur Officiel* and the works of Arago, which contain *in extenso* the treaty drawn up between *Niepee* and *Daguerre*, and the act that accorded to *Isidore Niepee* a pension of 4,000 francs, as son of the discoverer of the processes ceded to the estate—these documents have surely been perused by them. What, indeed, would the illustrious astronomer have said, had he assisted at the meeting in question?

I have just received for transmission to the Photographic Society of London, for exhibition at their approaching display, a letter from M. Liebert, from which I cannot resist quoting a paragraph:—

"I shall send on Monday to M. Pritchard a collection of one hundred views of the ruins of Paris and its environs, forming an *album historique* such as I have prepared for publication. The collection may be sold, if any amateur after the exhibition should desire its possession, for 250 francs, half of which sum to go to the sufferers by the fire at Chicago, and the other half towards the fund for providing for the widows and orphans of France made during the war of 1870-71."

Here certainly is an excellent idea, that does honour to a skilful photographer. I am persuaded that the collection will not want a purchaser.

M. Jules Girard, already the author of a remarkable work on photography applied to the microscope, has just published a new pamphlet, entitled "Photography Applied to Geographical Research." In this little work, besides the special indications relating to his subject, he reviews the different operations for executing negatives outside the laboratory, and describes the most simple and practical processes. The book, written with great clearness and in a most experienced manner, is illustrated with heliographic specimens of a most interesting nature. I am certain that it will be warmly received in Paris. ERNEST LACAN.

AMERICAN CORRESPONDENCE.

THE FIRE IN CHICAGO—PHOTOGRAPHIC PROPERTIES OF THE COPPER SALTS—CASTOR OIL IN THE NEGATIVE VARNISH.

The Fire in Chicago.—Foremost in all our minds and hearts now is the dreadful calamity which has befallen our beautiful and wonderful sister city, Chicago. It has been said by some that it is a "national calamity," and, judging from the noble manner in which our English brethren have responded to the cry for help and sympathy, I may not go far wrong in calling it an international calamity. Again, it is a *photographic* calamity, and we who are connected with the art here feel it deeply. Some of the most extensive and beautiful palaces of photography in the country—and, perhaps, in the world—have gone down to their dreadful doom, and nothing is left of them but the smouldering cinders. Among them was the recently finished studio of Mr. F. T. Fassitt, which

was not only a model establishment in construction and arrangement, but included an immense collection of photographs from all parts of the world, together with Mrs. Fassitt's studio, and many works of art. Mr. Henry Rocher, that noble-hearted German, who has done so much to elevate and dignify the art by the production of excellent work, was likewise a sufferer, only having time to store a few of his effects in the vault under his pavement, and he knows not yet whether they are safe or not. He is now waiting, with the others, until he can think what to do, and where and when to start again. He writes me that he will go at it soon, "certainly in Chicago." Messrs. S. W. Sawyer (who have Mr. Carbutt's former gallery), E. L. Brand, and C. Moser, each had fine establishments, within a few doors of each other, and over a mile from Mr. Rocher's place. All have gone down together. Messrs. Hall, Smith, and many others, men whose faces are familiar to me, and whose places or business I have frequented, are all gone. The whole fraternity in Chicago, with few exceptions in the way of small gem galleries, have shared a like fate. Every establishment in the city for the sale of photographic requisites is also wiped out, including Messrs. C. W. Stevens, A. Hester and Co., J. B. Batchelder, and R. B. Appleby. Mr. Stevens, with characteristic enterprise, opened a new establishment eight days after the destruction of his store, and is now driving away as usual. Our fraternity have their sympathies already awakened in the matter, and our National Association Executive Committee is negotiating a loan to aid the sufferers in re-establishing themselves. Money is also being subscribed to aid in relieving their immediate wants for themselves and families. No one unfamiliar with the really great city of Chicago can realize the extent of the destruction that has taken place. It is sad, indeed, but in a few months business will be thriving there, and just as good photographs as ever be made in new studios, with new apparatus and new vigour. There was a hard struggle between Chicago and St. Louis, at our last National Convention, for the honour of holding our next convention there. St. Louis won, and it is now, without doubt, well that she did.

Photographic Properties of the Copper Salts.—Dr. Shultz Sellack, whose interesting experiments you have frequently recorded in the NEWS, is no longer in Berlin with our mutual friend Dr. Vogel, but has taken up his abode in this country. He has just sent me a communication on the photographic properties of the copper salts, some notes from which may interest you, as his suggestions seem to me to be very valuable. He says:—"I have recently found that the haloid salts of copper—iodide and bromide of copper—have the faculty of photographic development, like the salts of silver. A plate of pure copper iodized or bromized by the Daguerrocotype process, and exposed in the camera, develops a picture when subjected to mercurial vapours; also when the bromized or iodized copper plate is sufficiently exposed under a photographic negative, a picture is produced which can be fixed by hyposulphite. The sensitive copper plate, therefore, acts just like the Daguerrocotype plate. A process similar to the wet collodion process is impracticable, however, with the copper salts, on account of their solubility in water. However, it is proven that the wonderful process of photographic development is not peculiar to the salts of silver only. It would be of the highest interest to substitute other compounds for the silver salts in the negative process, not on account of the value of the metal, but because of the imperfect sensibility of its salts for the different colours, the pure red and yellow rays having absolutely no effect upon them. I have previously stated that this defective sensibility of the haloid salts of silver is in connection with their very slight colour, the chloride being rather colourless, and the iodide and bromide being only slightly yellow; further,

that any substance which is altogether sensitive to light is sensitive to the dark colours in proportion to the depth of its own colour. A sensitive substance absorbing all visible colours will be as sensitive as the eye. The sensitive salts of copper are much more darkly coloured than the salts of silver, but an easy process of applying them has not yet been found. We may indulge the hope that the photography of the future will adopt darkly coloured sensitive compounds, which by far surpass the salts of silver in their sensitiveness to the different colours." Dr. Sellack promises to prosecute his interesting researches still further; and let us hope that he may reveal a process by which we may prosecute instantaneous portraiture.

Castor Oil in the Negative Varnish.—I cannot now remember who suggested first the use of castor oil in the negative varnish, but whoever he be, here are renewed thanks to him. While the complaint I see so often mentioned in Europe of the splitting of the negative film is not very prevalent here, still many of our photographers have been sufferers in that direction, and among them my friend Mr. B. W. Kilburn, the famous White Mountain photographer. He has lost many valuable negatives in that way, but since he has used castor oil in his varnish, now about a year, he has had no recurrence of the trouble whatever. The use of the castor oil gives him a feeling of security when he places his choice negatives in the printer's hands, that he says is worth a great deal to him. He makes his own varnish about as follows:—

Alcohol	2 quarts
White lac	12 ounces
Gum sandarac	1½ "
Castor oil	1 to 2 drops to each ounce of varnish

In this way a tough, clear varnish is obtained, and with it, as I believe, perfect immunity from the cracking or peeling of the film.—Truly yours,
Philadelphia, October 16th. EDWARD L. WILSON.

LANTERN HINTS.—No. 1.

BY JAMES MARTIN.

As photographic tourists are, or will soon be, returning from their summer excursions laden with interesting reminiscences of their rambles, allow me to remind them that there is no better means of affording their friends a lucid and picturesque explanation of the various scenes and incidents of their travel during the approaching long winter evenings, than by means of the magic lantern. In fact, this instrument has become so useful in so many branches of the photographer's art, as to render it a necessary part of his apparatus, and the contest between France and Germany has afforded such a variety of sensational pictures illustrative of the vicissitudes and horrors of war, as may not, and I sincerely hope will not, occur again in our times, affording an opportunity to exhibitors which should not be neglected.

To purchasers of photographic representations of places or objects, I should say that stereoscopic transparencies on glass is one of, if not the best form of production, as they show better and more life-like than any other in the stereoscope, are very permanent, and can be exhibited in the magic lantern without any addition or alteration whatever, requiring only a wooden holder to fit the front of the lantern, made somewhat like that of a slip-slide of a piece of veneer, having at one end an aperture of either dome, cushion, oval, or circular shape, so placed as to form a margin to the transparency of the marginal size, when it is properly placed in a rebate formed at the back, and ready to be placed in the holder of the lantern. Care should be taken when exhibiting that the veneer side of the holder, and that glass on which the picture is executed, is always placed next the condensers.

Whilst speaking of magic lanterns and their fittings, let me say that I have often thought how easily a super-

numery camera could be made to do duty as a first-rate lantern; supposing, for instance, the possession of a sliding body camera; if with a movable front, so much the better. Plenty such are to be met with second-hand, and for little or nothing. The size required will be governed by the diameter of the condensers to be used; half or whole-plate would, I should think, be of sufficient size for three to three and a quarter inch condensers. Now to turn this into a magic lantern it will be the readiest and cheapest plan to apply to an optician to supply a lantern front in tin or brass, having lenses, nozzle, spring-holder, and condensers in collar complete, only requiring to be screwed into the front of the camera, and then we have the optical part at once. For ventilation, get a tinman to make a chimney of such a shape and size as required, which must be fitted on a collar having a flange, to be screwed to the top of the camera, through which, and also the inside body, a hole must be cut to correspond with the size of the chimney. The hole in the inside body should be somewhat of an oblong shape, to allow for its being drawn in and out without obstructing the upper one that forms the mouth of the chimney. Holes must also be cut through both the bodies at the bottom, so that a proper draught may be obtained; this will be proved by the lamp burning brightly and free from smoke. In aid of this, the camera lantern must be raised on four little feet or blocks of wood about one inch in height. If lighted by oil, the cup argand lamp will be best, as requiring the least space; this should be placed in a tin collar having a flange, which must be screwed to the bottom of the inner sliding body; thus it can be adjusted nearer to or further from the condensers as required. The ground glass of the camera will, of course, be discarded, the wooden screen at the back taken out, then the door will be found very convenient for the purpose of adjusting the lights. For lighting with gas, arrangements can be easily made if required.

Space has compelled me to be somewhat indefinite in my instructions, but I am sure that your ingenious readers will perceive that an old camera may be thus utilized and transformed into a most efficient magic lantern.

Amongst the novelties of the approaching season I observe a chromotrope holder, so arranged as to exhibit any number of glasses, thus economizing weight, space, and expense, no inconsiderable items affecting mechanical pictures for the lantern, as exhibitors know to their cost. The only drawback I fear is, that as the painted surfaces of the pictures must be frequently exposed, they will be liable to injury, as those without covering glasses always are. As the designs are only geometrical figures, coloured with even tints, why not paint them in enamel colours and burn them in? They would thus be safe from all injury except breakage, could be sold at low prices, would be much more brilliant and transparent than those painted in common colours, and could be as easily executed as a design upon an earthenware plate or cup.

Would some of Mr. Solomon's pupils in enamel try the experiment, and publish the result, I feel sure it would be a successful one.

PECULIARITIES OF FACES.

BY ROLAND VANWEIKE.

"WHY, yes; I've seen so many peculiar faces while I've been away, that I did not know but I had become quite proficient in their management, as I have been continually making photographs of them wherever I have been."

That's the way to do it, Focus. Under the skylight is not the only place to study faces, but we can improve ourselves by studying them wherever we see one. I was in hopes to have had an opportunity to talk over the lessons suggested by the grand display of photographic work at the National Exhibition; but I have no doubt you profited by it, nevertheless, and have also improved yourself by observation and some experience during your summer vacation.

"Yes, I think I have. I've dabbled some in photography, and have not been unmindful of the faces, especially the pretty ones; and some of them, I must confess, possessed peculiarities that were decidedly interesting. I have thought many times of the Exhibition, and what I saw there, and prominent among the memories of that occasion was the thought, so fitly expressed and so charmingly illustrated, 'Beautiful faces are they that wear the light of a beautiful spirit there.' But I thought I must come back to you and to the stern realities of life, and see what was to be done with those long noses, squint eyes, lantern jaws, and I don't know what not!"

I see, Focus, you have been under good influences while away, and I think some of those peculiar faces you have seen have made an impression that will develop into something one of these days. There is no better evidence of it in a young man than to see him becoming poetical. As for the long noses, &c., I have concluded to facilitate matters by noting down the treatment of those peculiarities suggested in our last lesson, as it might require some time to cover them all in actual practice.

"That will suit me; I can study them out and apply them at my leisure."

Thin face with high cheek bones we disposed of in our last lesson. Retreating forehead and prominent nose admit of but little latitude in posing. Nearly a front view is the only one at all favourable, and in most cases the only one to give satisfaction.

Crooked nose, generally two noses. Close observation shows that many people have two faces—not that they are what is termed in a hypocritical sense "two-faced," but the two sides of the face present a very different looking picture; and the feature most concerned in this peculiarity is the nose. Now, one side of such a face will generally be much more favourable for the sitter than the other. You will notice, by getting views each way, that you have two distinctly-shaped noses, and the point is to choose the best. Generally the side of the face towards which the nose evinces the greatest partiality is the most favourable. This matter of the nose is one that requires close attention and observation, it you would select the best view of a face. It is amusing sometimes to witness the astonishment of people when told they have two noses. You have no doubt noticed a great difference in the pictures of General Grant that show different sides of his face; and yet, if you notice carefully, you will find that difference to be mostly in his nose.

Now we come to the *pugs* and *turn-ups*. Their cases are very similar, as far as the treatment they require is concerned. A face afflicted with either of them will scarcely admit of anything else than nearly a front view. Where either presents the nostrils very conspicuous it is well to give as much three-quarter view as the case will bear, and depress the head, or raise your camera all that will be admissible. Such faces should be lighted well from the side, keeping the top and front light subdued; this gives relief to the features lacking prominence, and tends to soften and harmonize them.

Large Mouth.—This member is not difficult to manage if you can keep it shut when you want it; it requires a view well three-quarters or profile, provided the other features will admit of it. Perfect repose is necessary for a large mouth, as anything towards a smirk will exaggerate its proportions immensely.

Large Ears.—These are said to be evidences of generosity, though there are always vulgar people enough who see in them a kindred to a certain four-footed beast, which is usually something of a clown, and has a strong will of his own. Be careful never to make a direct front view of a face set between a pair of large ears; put one of them out of sight, and let the other lose its prominence against the head, instead of being cut out against the background.

Staring Eyes.—This is a difficulty hard to overcome sometimes. The most that can be done is to prevail upon the

sitter to relax the muscles, if possible; it is generally the result of a peculiar nervousness that comes over the person at the time of sitting. Fixing the point of sight quite low will relieve such eyes very materially.

Weak and Squinting Eyes.—These also are difficult, but can be dealt with most successfully in a subdued light, or with the eyes turned well from the light. A convenient method of treating such subjects is to let the sitter appear to be reading, or in some position with the eyes cast down.

Cross-Eyes, or a Cast in one Eye.—These require especial care and study in their treatment. The point to be gained is to so direct the eyes as to give them the appearance of being straight. In cases where the eyes cross, or both turn in towards the nose, the best way to overcome the difficulty is to give the sitter a view well towards a profile, and fix the point of sight so that the eye that is seen will seem straight. The same course may be pursued where only one eye is affected. But in many cases the sitter may be posed without reference to the eyes, only not allow them to be fixed on any particular object till you are all ready; then move your point of sight gently one way or the other till the eyes assume their best position. With a three-quarter view of the face the sitter will sometimes look directly towards the camera, and again off in the direction of a profile view, to give the eyes the appearance of looking directly forward. Equalizing, as far as possible, the difference in the refractory optics is the most we can do where both are visible.

Sunken Eyes require a particular arrangement of light. Soften your top-light, using mostly side-light; or use a reflector to throw the light under the brows. The face should be turned well towards the light, and raise the chin as much as it will bear. A thin, angular face generally accompanies such eyes, and an arrangement of light giving very soft shadows will be found favourable in every respect.

Very Light Eyes with Sunburnt Face.—The difficulty in this case is to get any eyes at all. How many pictures we see from such faces where the eyes are an utter blank! The eyes must be turned from the light, letting them come well in shadow; give a good full exposure. Direct light in a light eye burns it all out.

Retreating Chin will require about the same management as retreating forehead.

Long Neck.—This feature in a graceful sitter, especially a lady, is often not objectionable; but frequently the subject is awkward and uncouth, and dressed apparently so as to give the greatest prominence to every objectionable feature. A position turning the head away from the direction of the body as much as possible, with the head inclined forward or to one side, will tend to modify its proportions, and give grace and symmetry. Avoid an upright stiff position, in such cases, and use your best endeavours to study out the position adapted to your sitter. In all these difficult cases the sitter will often insist upon some particular position or arrangement at variance with what you know to be best adapted to them. The best way is to make a trial to accommodate your subject, and then another according to your own ideas; the result will generally prove to them your superior judgment.

THE STEREOGRAPH.

BY PROF. J. TOWLER, M.D.*

THE stereograph consists of two apparently similar pictures, about two inches and a half square, mounted side by side on the same card. We say these pictures are apparently similar, from which expression the reader will naturally imply that in reality they are not similar, and he will then examine them very minutely, hoping to discover some difference, some divergence of some kind, or some secret in the construction; but the examination will be futile as long as it consists in simple observation, for the eye can scarcely discover the difference, by reason of its minuteness. There is, however, a very important difference between the two

stereoscopic constituents of a stereograph, and this difference is the very cause of stereoscopicity; for without it the two pictures cannot produce the effect of solidity in vision.

The object of the stereograph is to produce a solid picture by means of two flat pictures; that is, a picture in space endowed with the three items—length, breadth, and thickness—that constitute solidity. The result is one of the most pleasing, as well as one of the wonderful, in the science of optics.

The length, breadth, and thickness are the components of the difference above mentioned, and are subject to the laws of geometry; they are consequently capable of accurate demonstration. The difference in question is entirely under our control, which means that one of the items may be changed whilst the two others may remain unchanged. From this it may be inferred that we have it in our power so to arrange this difference as to expand the object represented in the solid picture, either latitudinally or longitudinally; and again, from this expression, the inference may be drawn that we have it in our power to make a stereograph that shall represent an object naturally or unnaturally; naturally, for instance, such as the eyes would behold it if it were really an object; unnaturally, such as the untutored or incipient artist sometimes represents an object, either too much widened or too much deepened. This difference being capable of mathematical demonstration, subject to the laws of geometry and trigonometry, and at the same time under our control, it might be supposed that the artist has it in his power to compose a stereograph. Theoretically, this is a correct supposition; that is, an artist can compose a stereograph. Practically, the composition of a stereograph representing a landscape, with all its multifarious objects, although a possible feat, would be a labour of vanity more than of utility. Single objects, however, especially if their forms are geometrical, are easily drawn with the hand in such a manner as to represent a solid picture, by the super-imposition of two single pictures possessing the requisite difference, and mounted side by side. Indeed, the first stereographs were constructed by the hand; their effects were charming.

It now becomes our duty to explain what this difference, about which we have been speaking, consists in; how it is produced, what its nature, when it produces distortion, and what its limits to avoid distortion.

Secondly, to explain by what means two pictures, endowed with this essential difference, can be viewed so as to produce a solid picture. Place yourself in front of a window, about three feet from it, and make a mark on one of the panes with black paint or colour; now select some point on a tree or plant not far from the window (four or five feet), and get into a position so that the point on the tree coincides in position with the black mark on the pane of glass when viewed by the right eye alone; keep the head fixed in this position, close the right eye, and open the left; the point on the tree no longer coincides with the black mark on the pane of glass, but is seen an inch or two to the left of it. This shows distinctly that the two eyes see objects respectively in different positions, and has each an independent picture. Let an assistant mark the position on the pane of glass of the object as seen by the left eye. You have now two marks on the glass, and we will suppose their distance apart to be two inches. Select now a mark on the brick wall on the opposite side of the street, the head remaining in the same position as before, so that when seen by the right eye this mark shall coincide with the first black mark on the pane of glass; close the right eye and open the left: the object as now seen by the left eye on the pane of glass will be nearer to the original black mark than the preceding object. This experiment not only shows that each eye has an independent picture of each object, but it proves that the more distant the object is removed from the eyes the shorter will be the distance of the corresponding pictures on the pane of glass. This is true for all objects, far and near; that is, the right-

* Philadelphia Photographer.

utilized by others. The instant when the last ray of direct sunlight is just obliterated has been employed by Professor Young, of America, to such purpose as to reveal the existence of a marvellously complex solar atmosphere, in which the vapours of our familiar metals replace the gases which in our air form the breath of life. From that first instant, onwards, until the moment when the sun is about to disappear, that glory of light which astronomers call the corona has been studied and analysed in such sort that one would imagine that nothing new could be learned respecting it. Yet our expeditionists have set forth with the purpose of learning something new, and the fault will not be theirs if they are unsuccessful. To encourage them to strenuous exertion they have this to consider, that if they fail, many months must pass before astronomers have another opportunity to institute such researches as they now propose to make. It is quite certain that we shall not have to call the attention of our readers to any eclipse expeditions either in 1872 or 1873. In the latter year, indeed, there will be no total solar eclipse at all. And the total eclipse of November 30, 1872, is such an one that no astronomer is likely to take the trouble to witness it. It is so barely total, that it actually begins and ends on the earth as an annular one, the moon at those times not fully hiding the sun even on the line of central eclipse. It is only in the middle of the moon's shadow track upon the earth that the sun will be fairly hidden, and there only for a few seconds. Not until April 16, 1874, will there be an eclipse worth an expedition; and in these days of rapid scientific progress an interval of twenty-eight months seems like an age. Our observers, then, in India and Ceylon, as well as the continental astronomers in Java, and colonial astronomers in North Australia, are bound to exert themselves most diligently, so that astronomers may not want eclipse *pabulum* during that long interval.

It is easy to indicate the position to which past researches have brought the students of that wonderful crown of light which is seen around the eclipsed sun. The American observers in 1869 found that this object is in great part self-luminous, and that its light in some respects resembles in quality that of the aurora borealis. But doubts prevailed as to the extension of this self-luminous solar glory. Some thought that it did not extend more than some ninety thousand miles from the sun's surface, while others believed that its extension was to be measured by hundreds of thousands of miles. Last year the American observations were confirmed, and something was learned as to the extent of the corona. A certain well-marked gap or dark rift in the corona then seen was photographed in Spain by Mr. Willard, of America, and also in Sicily (more satisfactorily) by Mr. Brothers, of Manchester. These photographs, enlarged to a common scale, were submitted to Sir John Herschel, and by him pronounced decisive as to the extra-terrestrial character of a radiated corona extending at least as far from the sun as the boundaries of this gap. On such a matter Herschel's opinion, always authoritative, may be regarded as all but final. The existence of a real solar appendage reaching at least a million miles from the sun's surface having thus been demonstrated, it now remains for observers to determine how this strange appendage is shaped, and how constituted. They must distinguish it, if they possibly can, from all that light with which this appendage itself fills our atmosphere during the progress of a total eclipse. They will have to avoid being deceived, as so many have been deceived, by the strange optical effects produced during the passage of the moon's vast shadow through the air above and around them. At that time false rays appear, which the inexperienced may too readily confound with the true coronal beams. There is also a semblance of motion even among those rays which are really fixed. Everything is new and startling, and no slight mental effort is required to fix the thoughts on that sole feature which the observer has undertaken to examine, when so much of what is taking place around tends to distract his attention. In the approach-

ing eclipse this must be the first thought of the observer, or his work will be altogether valueless.

Fortunately an instrument is to be used which will record the features of the eclipse without being in any way affected by the distractions we have mentioned. The telescopicist may fail to make useful observations, or he may be so misled as to make false ones; the spectroscopist may be unable to distinguish between the light of the corona and that of the illuminated air; the draughtsman may produce some of those marvellous pictures on which so much stress has lately been laid—but the photographic camera will do its work unmoved by the appalling aspect of the surrounding scene. Whatever the photographic pictures may show, we may be sure that neither excitement nor affection for a favourite theory have influenced the result. Much of the information obtained by other means will be greatly increased in value by the photographic records. If the spectroscopist gets light of such and such a quality from a certain part of the corona, the photograph will show what was the aspect of that particular portion. If a draughtsman succeeds (for a wonder) in picturing the corona with some degree of accuracy, the photographs will render it easy to interpret such parts of the work as may be less perfect than the rest. We are inclined to hope great things from the photographers of the approaching eclipse. Remembering that an envious cloud concealed the sun from Mr. Brothers for all but the last eleven seconds of totality, and that the photograph taken during eight of those seconds is far the best picture of the corona in existence, it does certainly seem reasonable to expect that the application of his method under more favourable circumstances will lead to results of the utmost interest and importance.

Meantime we must be content with wishing the expeditionists the success they deserve. They have not sailed on a pleasure trip, and it is known that some of them have had to sacrifice much in order to join the expedition. We say that whether fortune smile or frown on their exertions, they have already deserved the applause of their fellow workers in science.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE usual monthly meeting of this Association was held at the Free Public Library, on Tuesday, the 31st ult., Mr. O. R. GREEN in the chair.

The minutes of the previous meeting were read and passed.

Round the room were arranged a large number of most excellent views, all taken by Messrs. Sayce and Bolton's collodio-bromide process. Of these,

Mr. J. Henderson exhibited a number of stereos., and twenty-four 12 by 10 views, mostly of Lincoln; and

Mr. W. H. Wilson exhibited eighteen 7 by 5 and fifteen 12 by 10 views of Wells, Raglan Castle, Furness Abbey, &c.

Mr. GREEN called attention to a view, by Mr. Henderson, of Lincoln Cathedral, with houses in the foreground, which, he said, was the finest he had ever seen taken of that place.

Mr. HENDERSON remarked that Lincoln was the best place for photographers to go to in windy or bad weather.

A number of negatives and stereos were handed round illustrative of the following letter read by the secretary:—

"Liverpool, October 31, 1871.

"DEAR SIR,—Seven years having passed since I published a process dispensing with the nitrate of silver bath, and to which I applied, for distinction sake, the term newly coined, viz., 'The Collodio-Bromide of Silver Process,' I think it may not be uninteresting to the present members of your Association to examine the results of the early working of the process by my hands.

"I send, therefore, herewith three negatives. 1st. One exposed in September, 1864, and actually the third that I experimented upon. Exposure, thirty seconds: formula, that published in the *British Journal*.

"2nd. Grasmere Church, in June, 1865; formula, that which I published in the PHOTOGRAPHIC NEWS of 30th June, 1865, and one from which prints at the time were reviewed by Mr. Simpson, the Editor.

"3rd. A negative, dated June 1865, exposed for ten seconds only,

a six-inch focus Grubb's single stereo lens, with one quarter-inch diaphragm, being employed. The peculiarity of this negative is, that it is by the wet process for collodio-bromide of silver, and is the first ever exposed. The formula was as follows:—Coat the plate with collodio-bromide of silver; allow the film to set, then flush with water, drain, and place in the dark slide. Expose a trifle longer than for wet collodion, and develop with the usual fifteen-grain sulphate of iron solution, to which a few drops of nitrate of silver solution have been added. Before developing, it is desirable that the plate should be again flushed with water to ensure uniform action.

"I send also prints of the first and second negatives mentioned above; also a few others, taken in 1865, since which I have done nothing in photography. With best wishes for the success of your Association, I remain, dear sir, yours very truly,
"W. Murray, Esq." "B. J. SAYCE.

After some discussion on the origin of the process, which had been practised with so much success and with such excellent results by most of the members of the Association for the last six years,

Mr. HENDERSON thought it was only right that Mr. Sayce's letter should be published.

Mr. O. R. GREEN passed round two of his splendid 24 by 18 negatives of Melrose Abbey, which he had taken during the summer. These attracted much attention.

Mr. GREEN, in answer to several inquiries, stated that the average weight of each negative was about ten pounds. He used Sayce and Bolton's process, and had to pour on each plate eight ounces of collodio-bromide of silver to cover it properly, draining off the excess. He had not been able to print from them yet, but had no doubt that they would be all he could desire, as the negatives were full of detail and without a fault. He also stated that he had exposed on the same day a 24 by 18 plate made by the Liverpool Dry Plate Company, which he had had by him for fifteen months. This plate, also, was all he could wish, and no different from a fresh plate of the same subject. The exposures were twenty minutes, but a worker of collodio-albumen would have given forty-five minutes for an 8 by 5 plate. He therefore thought that the process was the best for giving the quickest plates for keeping indefinitely.

The SECRETARY showed two albums containing views he had taken in Canonbie, on the border of Dumfriesshire. He described the place as a most beautiful locality for wood and water scenery. Along the banks of the Esk was considered to be one of the most lovely districts in Scotland. There was good fishing and also a good hotel. It was a district, he thought, where an amateur would be pleased to visit, and find ample work for his camera, either for large plates or stereos.

A number of prints sent by Mr. J. H. Gough, taken by a tea process, were examined with interest. They were very clear and full of detail in the shadows. A wish was expressed that the formula should be given.

Mr. NASH, a former member of the Association, sent a number of 9 by 7 views, taken in Brazil, which were very interesting.

The CHAIRMAN said it was pleasant to find that old members had not forgotten the Society, and that from time to time communications were received which showed the interest they took in its welfare.

An article from the *English Mechanic and World of Science* was then read, entitled "Permanent Photographs on Glass."

Mr. ROBERTSON exhibited a dozen stereos by Mr. M. Carey Lea's gum and coelumeal process. He found it to work rapid and well.

Prints were also shown by Messrs. Cooke and Roberts.

It was proposed that a *soiree* should be held, and Mr. J. M. Bennett, Mr. Forrest, and the Secretary, were requested to report at the next meeting.

It was announced that, through the kindness of the Secretary of the Photographic Society of London, tickets had been sent to the President for this Exhibition commencing 14th inst.

The presentation print for 1871, by Messrs. Robinson and Cherrill, was then distributed, and the meeting adjourned.

Correspondence.

ON DRY PLATES.

SIR,—Dr. Van Monckhoven's description of his new dry process quickens me to make a communication—which a multitude of more pressing demands has caused me to defer—on the dry-plate question. I have been, as you may remember, a dry-plate worker in an experimental manner for several years,

and have had as fair success as any amateur with whom I have exchanged experiences. I have used all the processes recommended, beside several suggested by my experience. That now described by Dr. Van Monckhoven was one of these latter. I tried it in both the forms which he communicates, and found it slower and more subject to markings utterly destructive to its general utility than almost any other.

There can be no question that for all landscape—except instantaneous, or nearly so—and where cloud effects are necessary, dry-plate photography is to be relied on as the method of the future; and, to my mind, equally slight doubt exists that commercially prepared plates are cheaper and surer to all amateurs and most professionals than any they can make themselves. This for many reasons not now important to detail; but I have so completely accepted their condition that I have for two or three years only used the Liverpool Dry Plates, and with a most satisfactory general success. They are not, however, everything that could be desired, and the last lot of several dozens which I got were covered all over, when developed, with minute spots of intensity, which, of course, made the pictures look like snow-storms, only that they did not appear within shadows. Every plate of the lot showed it, and I was in the American backwoods, where no remedy was possible. I send you a print as an example, slightly over-printed, so that you see them more fully. This was clearly from carelessness in preparing the preservative. Beside this accidental fault, I have found the film come full of pinholes at times, and in parts of a plate—a fault of the process itself, and one which makes me want something better. I found this in some of the albumen processes, but the inability to get commercial albumen plates prevented me from giving up the Liverpool manufacture, and I am desirous of getting at all the forms of plates which can be bought at reasonable terms and of uniform quality, and, if possible, to fix in some way the relative excellence, if not to establish a standard commercial plate, with reference to their export to America as well as for my own use.

But I find it impossible to depend on the experience or recommendation of anyone in these things. I can myself develop a plate of any kind without much difficulty, and find the alkali method the simplest and quickest. Dr. Van Monckhoven has not patience for it. He finds the plates prepared in his method good; I found them poor; and in these differences there is more than a difference of opinion: there are different objects aimed at, and until you know what a photographer wants to do, you cannot estimate the value of his testimony. One man tests his dry plate by making a transparency, another on an interior; and I have found plates make perfect transparencies which would not make a landscape negative fit to print from; while one which makes a good landscape may, with even very long exposure, fog with an interior. As a general thing, studio experiments with powerful lenses are not indicative of the practical value of a plate, nor is the rapidity of it of any importance in my mind, save as an economy of time. And here I must confirm what Dr. Van Monckhoven says of the exposure of plates. I have never found that less than six (and better, eight) exposures gave good pictures. If a dry plate is in the least under-exposed it becomes very difficult to develop without fog—to tyros impossible; and since the actual time of exposure makes a small fraction of the time employed, it seems to me poor economy to make the gain of a few minutes a danger to the quality of the result.

I have not tried the Wortley plates, but the negatives I have seen of them are all under-exposed, and lacking detail in the shadows. I have prepared plates by Lea's process which were to wet plates as three to two in time of exposure, but the shadows were not satisfactory, and if longer exposed the lights were injured.

What we want is a commercial plate which can be depended on for equality of exposure, freedom from stains where broad distaues or open skies are required, so as to avoid stopping-out (the destruction of all artistic quality), freedom from fog in feeble lights, and from blistering (all gum plates, in my experience, blister more or less); and then whether they take two or twenty exposures of wet collodion is quite a minor consideration. If this can be furnished, I think that hundreds of amateurs who now have not time to do more than experiment, and often lose all patience under the mechanical difficulties, would take dry-plate working as the end of all their perplexities. I want such a plate to recommend to pupils and friends, and for my own use. If the manufacturers of dry plates will, one and all, kindly send me a dozen of 7½ by 4½ to experiment on, I would

willingly use them in a series of practical experiences of an experimental character, and pay for the plates besides.

I enclose you, also, a print from a successful negative taken in Greece with a normal Liverpool plate, that you may judge if the estimate I fix is not a good one. This is untouched in any way, but printed too intensely.—Yours truly,

W. J. STILLMAN.

100, Clarendon Road, Notting Hill, W., October 25th, 1871.

PRELIMINARY COATINGS OF ALBUMEN.

MY DEAR SIR,—I was glad to see your article on albumen preliminary coating last week, as I find, from my own experience, a widely different state of things to that described by our friend Dr. Liesegang, to whom we are all so often indebted. I have carefully tried plates, having half covered with albumen and half free, and find no difference required for exposure. You are quite right in asserting that albumen gives valuable qualities to the negative, besides an adherence and perfect cleanness uncertain of attainment otherwise.

I observed in a recent issue that Herr Grasshoff referred to pouring on albumen as the proper way to coat the plates, but he can never have tried the Blanchard brush, which gives immunity from all bubbles and markings, and saves time. The albumen should be one egg to a pint of water, and a few drops of carbolic acid or chlor-alum. Dr. Liesegang is not the only one who has fancied he found retardation by the use of albumen, but he is, nevertheless, I fully believe, in error, as I look upon it as conclusive to coat half a plate, and expose both halves simultaneously. Nor is it important whether the albumen be old or new, as I have seen stated. Try the same test, and it can at once be proved there is no difference.

A valuable suggestion was given lately by one of your correspondents, about the use of washing crystals for cleaning old plates off. It is very useful. All have duplicate negatives, and often grosses of plates, done years ago, in balloon crinolines and stand-up collars, that no one orders from. People (at least, all well disposed ones) give their countenances so often now-a-days to photography that, unless they are remarkable for special art qualities, copies from full-length cartes of six to eight years ago are not often wanted. Never, probably, was there so complete a change in costume in a similar period. No matter how strong the varnish, it succumbs at once to boiling solution of washing crystals (Manby's), and the plates only want rinsing and drying. Never apply the albumen on wet plates; it goes over the back and spoils the bath.

I am often surprised to find so many refuse to use albumen as a preliminary coating; some have tried it (not with the brush) and found bubbles and streaks: let them try again, and this time—properly.

To store albumenized plates, a cupboard should be made in the chemical room, near the nitrate baths, with grooves, and the plates racked in it for use, *albumen side downwards*; they thus get no dust, and then the brush is not wanted before collodionizing. A fertile source of spots under the old regime was the broad camel's hair brush before coating causing electrical conditions and attraction of floating particles. Perhaps this is a mere crotchety notion, but I think not.

Never albumenize a small lot of plates, but have everything ready after business hours in a room free from dust, not too hot; slow drying is best. Do a good large batch, so as not to be always at it. I daresay anybody, from an "intelligent rustic" to a Cabinet Minister, can be taught to albumenize plates, but I have a weakness for doing mine myself.—Faithfully yours,

SAMUEL FRY.

PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

SIR,—Your article in the PHOTOGRAPHIC NEWS of October 20th complains that the photographs exhibited at the Exhibition at South Kensington were in many cases hung in corridors and other undesirable places. It may be well that the reason of that should be clearly stated.

When the collection of photographs sent in before the appointed date were examined by the Committee of Selection, due space was set apart for them in the Albert Hall Gallery. Owing, however, to the war on the Continent, all the contributions from continental states were in arrears, and came dropping in at intervals, many, even, not arriving till after the 1st of May, the date on which the Exhibition was opened. In

like manner the contributions from India and the Colonies were all late, and did not arrive till all the space allotted by the Commissioners to photography was filled up. The arrangements for filling that space were made by the Committee of Selection and Hanging, with the photographs that had been sent in in due time, and the Commissioners could, therefore, only place those which arrived so late in any position which might happen to be vacant.

I think it may be admitted that the collection of photographs exhibited was the finest since the Paris Exhibition of 1867, and though foreign artists are still ahead of us in portraiture (Mr. Slingsby's fine portrait of a lady running them hard, however), in landscape and genre pictures they are much inferior to our best workers, while in new processes, such as carbon, enamelling, and mechanical printing, we appear in England to be advancing with far greater rapidity than our brethren abroad have done.—I am, &c.,

H. STUART WORLEY, Lt. Col.

Talk in the Studio.

RE-AGENT FOR DETECTING NITRIC ACID.—The proposed re-agent is the sulphate of aniline; it detects, with the most minute accuracy, the least traces of nitric acid. In order to obtain the desired result, the *modus operandi* is as follows:—Place in a watch glass about one cubic centimetre of pure and concentrated sulphuric acid at a density of 1.84; then pour, drop by drop, half a cubic centimetre of a solution of sulphate of aniline, prepared by mixing ten drops of commercial aniline with fifty cubic centimetres of diluted sulphuric acid. A glass rod is then dipped in the liquid to be tested, and it is then introduced in the watch glass and stirred in a circular way. From time to time the experimenter should blow slowly on the agitated liquid; if the liquid thus stirred contains traces of nitric acid, circular lines of a deep red are soon visible, colouring the whole liquid to a pink. On adding a very small quantity of nitric acid to the mixture the liquid becomes of a carmine colour; the addition of a single drop of very diluted nitric acid renders the liquid a deep red, and afterwards a dead red. This simple process can be applied to the detection of nitric acid in the commercial sulphuric acid. I have thus been able to detect nitric acid in water from wells; and generally this acid is to be found in rain-water after a storm. Hypoazotic or hyponitric acid produces also the same reaction; moreover, when only traces of hypounitric acid are detected, the distinction can easily be made by the use of starch and iodide of potassium acidulated by sulphuric acid.—*English Mechanic*.

TO RECTIFY ALCOHOL.—A correspondent of the *English Mechanic* gives the following:—"To test the strength of spirits, moisten a slip of paper with your sample; if it burns out, and the paper then catches fire, the spirit is pure enough for varnishes. Or burn in a spoon with a little gunpowder. If the latter explodes, your spirit is good for above purposes. The smallest amount of water will injure lac varnish, turning your work dead white; but here is the remedy which I have frequently employed, and found most effective:—Clean an ox bladder very carefully from grease and flesh by turning inside out. Rub the surfaces with a solution of isinglass in water three or four times; then three parts fill the bladder with your spirit, and tie the mouth tightly. Hang up in a temperature of 122° Fahr. If not able to get solar heat, the vicinity of kitchen fire or oven will do. In six to twelve hours the spirit, according to the volume of water therein, will be concentrated. A glass vessel with a tight bladder covering answers equally well. Decant when pure (after testing), and keep in tightly-stoppered 8-ounce phials. Where the spirit is required for any nice operations, or for pharmaceutical purposes, take carbonate of potassa one-third by weight of the quantity of spirit; mix together in a stoppered bottle, shake violently, and then let it stand for ten or twelve hours. Much of the water will fall to the bottom. Decant the upper liquor, and treat as before, and so on until the potash remains quite dry. To remove the minute portions of potash in the spirit, distil in a water bath; test, and then put in stoppered phials as before."

CYANIDE OF IODINE IN IODINE.—Dr. G. C. Wittstein has found in a sample of iodine made in the ordinary way 28.75 per cent. of iodide of cyanogen. In another sample, where the maker had tried to separate the impurity by sublimation, there was found 56.87 per cent. The mode of analysis in both cases was to rub together in a mortar weighed quantities of iodine

and metallic mercury, until all the free iodine was combined; to treat the mass with water, and weigh the insoluble residue. The loss of weight represents the impurity. When iodine containing iodide of cyanogen is treated with metallic iron, proto-iodide and proto-cyanide of iron are formed. The addition of carbonate of potassa precipitates both all the iron and all the cyanogen, and the resulting iodide of potassium is free from cyanogen.—*Dingler's Polytechnic Journal.*

To Correspondents.

J. HENRI C.—We do not know of any photographs of Taunton, nor of any photographer there who takes such views.

A. McC.—The question whether it is an actionable offence to exhibit a gentleman's portrait in opposition to his wishes is a matter we cannot decide. Under ordinary circumstances we should regard it as unwise to exhibit a portrait against the protest of the owner; but in a case like that you describe, in which the sitter neglects to pay or objects to pay for the portrait, it would seem that he has scarcely placed himself in a proper position for making the objection, and would scarcely commence an action in which he could not present himself with clean hands. Probably there are many details affecting the question which should be known before a decision can be given. Possibly the sitter objects to the exhibition of the portrait for the same reason that he objects to pay, namely, that he is displeased with it, and regards it as ugly or unsatisfactory. The management of such customers is one of the worrying trials to which portraitists are subject, with which it is very difficult to deal. The celebrated painter who, when a sitter declined to accept or pay for his portrait, replied that it was of little consequence, because he could paint a tail to the figure, and obtain the price for it as the picture of a monkey, secured his money by the threat; but a photographer could scarcely succeed if he adopted such a course. The best plan is to be as conciliatory as possible, and if a sitter, even unreasonably, objects to one portrait, it is wisest to give him a re-sit. It generally pays best in the long run.

A. BEGINNER.—Discoloured spots on prints may be of various kinds. Your description is scarcely sufficiently precise to enable us to decide satisfactorily. The most common form of discoloured spots appearing on prints a short time after they are finished are the yellow spots which arise from imperfect fixation. Such spots are caused either by the hypo fixing bath being old or weak, or by the print being imperfectly immersed, or from air-bubbles forming on the prints whilst in the fixing bath. Portions of the print, being thus imperfectly fixed, very soon discolour. 2. The causes of pinholes in negatives are so various, and the remedies not less various, that we cannot repeat them all here; your best plan will be to read up the various articles we have published on the subject. The most common cause of pinholes, besides dust on the plate or in the bath, is the presence of excess of iodide of silver in the bath, often the result of long use. The remedy is to pour the bath into an equal bulk of distilled water, filter, and then add nitrate of silver sufficient to make the solution of proper strength.

IVAN.—There are various modes of making the paper keep perfectly good for a few days after sensitizing. Something, of course, depends on the quality of the paper; but at this season of the year almost any paper ought to keep perfectly white during the day when floated the evening before. The use of a nitrate bath stronger than necessary conduces to the paper discolouring; over-long floating tends to the same end; hanging the paper in a damp place has a similar tendency. The addition of a little sugar to the silver bath facilitates the production of pure whites when the paper is kept. Blotting off the solution on clean blotting-paper will generally make it keep two or three days. Washing the paper will make it keep longer. You will find the names of firms undertaking the purchase or reduction of residues in our advertising columns.

ALPHA BETA.—The Manual of the Autotype Company is published by the Company in Rathbone Place. The price is half-a-crown. 2. We occasionally give our readers specimens of new processes, but always at a heavy cost to ourselves. Any plan of issuing such specimens at irregular intervals at an enhanced price for the number would introduce most serious difficulties in the publishing department; ordinary prepayments would be disturbed, and many inconveniences arise. The cheap photographic journalism which has for years prevailed in this country leaves no margin for extras; whereas in America a journal is charged at the rate of two shillings for each number, and specimens can easily be issued.

PEDRO.—If the precipitate be perfectly free from impurities, you may expect to obtain from sulphide of silver about three-fourths of its weight of metallic silver. You cannot easily convert sulphide of silver into nitrate. 2. You may mix the collodion you name without risk.

T. H. REDIN.—The tone is exceedingly fine to our taste, at once unusually rich and delicate. The picture is a very good one indeed.

JOHN STONE.—We are pleased to learn that you have got some clue to the trouble. We shall be glad to hear of further results.

C. S. DOBBS.—The Kriolite porcelain is manufactured in America. We do not know of any agent for its sale in this country.

X. Y. Z.—The data you give is insufficient for a comparative estimate. To form an opinion of the relative rapidity of two lenses, it is necessary to know the focus of each and the aperture of the stop with which they are worked. You do not state whether, in testing the French lens in question beside the English lens you name, you worked the latter with full aperture or with a stop. If both were worked with full aperture we should expect the latter to be much more rapid. As a rule, French portrait lenses are not nearly so rapid as the quick acting English lenses you name, which, although much more costly, are chiefly used by the best Parisian portraitists. The No. 1 to which you refer is an excellent lens, but not quite so rapid as No. 2. 2. The best use to which you can put the gold precipitated from old toning baths is to convert it again into chloride of gold by dissolving it in nitro-hydrochloric acid. If washed perfectly free from all traces of the iron, it would be worth the usual price of metallic gold. 3. You will find the announcements of trustworthy refiners in our advertising columns. 4. The soft, low-toned, continental photographs to which you refer are not produced by veiling the light, but by managing the general illumination carefully, and taking care not to over-develop or over-intensify the negative. A thin negative from a well lighted figure and skilful retouching on the negative are the necessary elements in producing such pictures.

IN A FOG.—Almost every treatise on photography and every manual explains more or less clearly the principles upon which photography is based. We cannot enter at length into the subject, but we can give you a brief answer to each of your questions. The film becomes thick-looking and opaque when plunged in the nitrate bath, because the iodine in the collodion abstracts silver from the bath and forms iodide of silver, which is of a creamy yellow tint and opaque. The light effects a partial decomposition of iodide of silver, which is completed by the application of iron, which is a reducing agent—that is, it has the power, under suitable condition, of precipitating metallic silver from its salts—and where light has acted it throws down the silver in a metallic form. Pyrogallic acid is also a reducing agent, and precipitates still more metallic silver on the image, making it thicker and darker. If you let us know what volumes of the News you have we can probably refer you to such articles as will explain more fully.

RUSTIC.—It will be necessary to purchase a new stove. The cost we do not know, nor, at present, the address of the patentee. We shall endeavour to learn.

KNOW NOTHING.—In order to get rid of as much as possible of the rough texture common in copies of photographs there are two methods. One consists in illuminating the print to be copied with a perfectly even diffused light, reaching the surface equally from every direction, so as to avoid cast shadows of the projections in the texture of the paper; the other plan consists in wetting the print and bringing it into optical contact with a clean plate of glass before proceeding to copy. 2. It is quite impossible to say which is the best dry process; half-a-dozen persons will mention half-a-dozen processes. We can only publish all good processes, and leave each experimentalist to select his own. Col. Stuart Wortley's process is a good one; the coffee process is a good one; the gum-gallic process is a good one; the collodio-albumen process is a good one; and so are many others. Much depends on the taste, aptitude, facilities, and aims of the worker. 3. The best plan to produce 15 by 12 prints from quarter-plate negatives is to adopt the plan we have often described, of producing enlarged negatives by first taking a transparency, and from that an enlarged negative in a copying camera.

A. H. BOUL.—We shall have pleasure in proposing you. As the next meeting is the conversazione with which the session is opened, you will require a ticket for admission. If you write to Mr. Spiller, the secretary, 35, Grosvenor Road North, N., and state the circumstances, he will, doubtless, send you one.

C. N.—Much will depend on the quality of the collodion as to whether it cracks or not in drying. If you pour a thin solution of gum water over the film just before it dries, you will generally find that it will prevent cracking. The only means of preventing the joinings from showing consists in careful and skilful manipulation. Mr. Johnstone himself succeeds perfectly.

YORK.—We have not tried the special formula to which you refer, but we think there is reason to believe that it will very materially promote the keeping qualities of the sensitive paper. Some years ago we tried a similar principle, employing a little citric acid in the albumen solution. The sensitive paper kept well, but required longer exposure, printed red, and toned slowly. This was a dozen years ago, and it is probable that now we should be able readily to overcome these things. 2. We have often thought it a defect that lenses were not more descriptively engraved on the brasswork. As a rule, you will find the name of the special series to which a lens belongs engraved in the tube; but experience alone will enable you to distinguish certainly the special character of each lens even of the same maker.

E. OGIER.—Thanks. We shall take occasion to call and see the pictures in question.

R. DAY.—Thanks; we shall use the communication.

Several correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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SUBSTITUTES FOR SILVER IN PHOTOGRAPHY.

It is not a little surprising that, seeing so much able experiment has been devoted to the development of photography during the third part of a century in which it has existed, so little research has been directed to the discovery of substances other than the salts of silver as the basis of sensitiveness to light. Since Mr. Hunt published his "Researches on Light," about twenty years ago, in which a history of photo-chemical experiment to that time was given, scarcely any effort has been made to enlarge the range of substances available in photography. Mr. Hunt publishes a tolerably extensive list of bodies specifically sensitive to the action of light; but besides those of silver, the salts of chrome, uranium, and iron are the only sensitive agents upon which processes of a practical character have been based, and at the present time we have no method of producing negatives except by means of silver salts. Whether this metal will maintain its supremacy in the photography of the future, or whether it will depend on the sensitiveness of metallic substances at all, are questions open to interesting speculation. In the meantime, ground has been again broken in this line of investigation by Dr. Schultz-Sellac, as mentioned by our esteemed American correspondent in our last. This German chemist, now resident in the United States, not only speculates on the subject, but records his experiments with the haloid salts of copper, which he finds behave in many respects like those of silver.

"The number of substances," he observes, "which are chemically decomposed by light, is extremely great; when the product of decomposition, as ordinarily, has another colour than the original substance, a picture by effect of light, so to say a photographic picture, can be produced with any of these substances by exposing a surface covered with it under a pattern, or photographic negative, or in the camera. The pictures on silvered paper, the common photographs, are sufficiently coloured, but pictures produced in this way on paper impregnated with the salts of oxide of iron, uranium, chromic acid, &c., are very weakly coloured, however the products of decomposition, the sub-oxides of iron, uranium, &c., may, by simple chemical reaction, be transformed into other compounds of intense colour. In that manner pictures in Berlin blue, in aniline colours, and others are produced. In all these processes a long time and intense light is necessary to obtain a sufficiently coloured picture. It is Daguerre's and Fox Talbot's great discovery that iodide, bromide, and chloride of silver have the faculty of photographic development; this enables us to take a picture by a short exposure, and has engendered the art of photography. The sensitive Daguerrian or collodion plate gets, by exposure, the so-called invisible picture—that is, a very weak picture of slightly decomposed

iodide or bromide of silver. By development, the invisible picture is coated with a deposit of silver; the silver deposit which constitutes the developed picture is not the product of a chemical reaction with the invisible picture, but originates by a peculiar physical property of the latter: the photographic attraction. The photographic development is not known with any other substance than the iodide, bromide, and chloride of silver. The development of the picture in Poitevin's process with tartrate of iron, which consists in sticking any powdery substance to the exposed parts, cannot be paralleled with it."

Dr. Schultz-Sellac then records the experiments mentioned by Mr. Wilson in our last, and as he promises to prosecute his experiments in this direction, we shall look with interest for his results.

PREPARATION OF PURE COLLODION.

DR. D. VAN MONCKHOVEN has recently been devoting attention to the subject of purifying pyroxyline by the method proposed by M. de la Haye some twelve years ago, and verified in the experiments of M. Camuzet last year. We have before referred to our own experience with M. de la Haye's method; Dr. Van Monckhoven has been more fortunate. In a paper read before the Vienna Society he remarks that all photographers are conversant with the fact that the character of a silver bath is materially altered by the sensitizing therein of a certain number of collodion plates, its destruction following after a greater or less interval. Several descriptions of collodion have the effect of influencing the silver bath very rapidly by yielding to the same substances of organic origin, which force themselves into notice by appearing upon the plates in the form of fog.

According to theory, he adds, it is only the bromine and iodine compounds contained in the collodion that react upon the silver bath by absorbing the silver therefrom; but this action would not, of course, be instrumental in bringing about fogging. That foreign matter of organic origin does find its way into the silver bath from the collodion has, however, been most conclusively proved by rendering the liquid alkaline, and submitting it then to the action of the sun. The metallic silver precipitates itself upon the walls of the bath, the metal being reduced by the action of the organic particles, and the latter are oxidized, or, as we sometimes term it, burnt out. These facts are so well known to all of us, that he considers it unnecessary to dilate further upon the subject; but, nevertheless, the source of this foreign matter is by no means easy to discover. In general the organic particles are ascribed to the presence of a resinous body, such as is contained in nitro-glucose, or other similar substances. This may be true; but then it should be remembered what an

extraordinarily small quantity of resin there can be contained in pyroxyline, and, at the same time, how very rapidly the silver bath is sometimes spoiled. Certainly it is surprising that so small a cause should bring about so much disaster. And this theory receives confirmation in the fact that pyroxyline which is obtained after washing with alcohol does not in any way differ from the original, although the resin, when present in the pyroxyline, has been removed by the alcohol.

The beautiful experiments of M. Camuzet upon the solubility of gun-cotton, when the same has been dissolved in a mixture of ether and alcohol, show that a certain proportion of the substance becomes dissolved in the silver bath. In repeating these experiments, Dr. Monckhoven found that the thicker the collodion is that it yields, the more the pyroxyline will lose in weight in the water. The water which has served to precipitate the pyroxyline from the solution of ether and alcohol contains a substance similar to gelatine, and it would be interesting to investigate whether this substance could not be employed in the bichromate printing processes instead of gelatine.

It occurred to Dr. Van Monckhoven—and his experience bore out his hopes—that he should be able to obtain an excellent collodion by using the pyroxyline precipitated by means of water from gun-cotton dissolved in ether and alcohol, such as would be without injurious action upon the silver bath. His manner of doing this was as follows:—In one litre of alcohol and ether he dissolved forty grammes of ordinary gun-cotton, it being quite indifferent to him whether the same is of good or bad quality. He poured the solution in a large ten-litre glass bottle, and shook the whole liquid well. The pyroxyline is hereby precipitated, and is then collected upon a muslin filter. Of course, by distilling the mixture of water and spirit, the alcohol and ether may easily be recovered.

The precipitated pyroxyline recovered in this way amounts, after drying, to twenty to thirty-five grammes, according to the character of the cotton employed. The material is in the form of exceedingly hard, crumbly fragments, of a very light nature, and in no way resembling the original substance. It is very difficult to inflame, burns with great difficulty, and is entirely dissolved in absolute alcohol. The most curious circumstance connected with the affair is, that even with a very bad quality of pyroxyline, in the first instance, an excellent collodion may be obtained. The water, so to speak, removes all photographic impurities contained in the original pyroxyline.

He moreover remarked the curious and important fact that the precipitated pyroxyline, when converted into collodion, is affected in a different manner by the iodizing salts when these are added to the solution. It is well known that in a general way collodion is thickened and rendered gelatinous by the addition of iodide of cadmium; while, on the other hand, it is liquefied by admixture of iodide of sodium or ammonium. The precipitated pyroxyline, however, when converted into collodion, does not show any such behaviour, and although he examined several samples prepared on the first of July last, none of them were affected in the manner above described.

Dr. Van Monckhoven concluded his remarks by exhibiting to the members some specimens of the precipitated collodion, so that an independent judgment of its qualities might be formed.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

THE FORTHCOMING EXHIBITION—PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION—MR. SAYCE AND THE COLLODIO-BROMIDE PROCESS—RAPIDITY OF DRY PLATES—FADING PHOTOGRAPHS—PHOTO-COLOGRAPHIC PROCESSES AND PATENTS—SOCIETIES.

THE preparations for the forthcoming exhibition in Conduit Street amongst various photographers, so far as I have had opportunity of judging, give promise of an

unusually fine display of photographs; and the exhibition will be especially strong in large pictures. The resolve to make arrangements for keeping the display open for a month is, I think, very wise on the part of the council, and not less so the project of opening the rooms in the evening for a few nights before finally closing the exhibition, as this arrangement will permit many operators to examine the contributions who would otherwise find it difficult to obtain opportunity of seeing them. I have heard some amusing objections made to the hanging of the pictures at the last exhibition, one class of objectors practically neutralizing the complaints of the other. On one hand it is stated that some very able amateurs are disinclined to contribute because the exhibition was swamped by the multitude and prominence of professional contributions; whilst, on the other hand, it is alleged that the best and largest space was absorbed by amateur specimens of enormous size. I believe that the simple fact is, that good pictures from any source obtain, as nearly as possible, their due meed of appreciation and fair hanging by the committee undertaking the arrangement.

Speaking of the hanging of pictures at exhibitions, I am reminded of the explanation given by Col. Stuart Wortley of the scattered character of the photographic display at the International Exhibition, to the effect that many of the contributions arrived late, after the space originally assigned to photography had been filled up. This is a good defence of the committee charged with the hanging of the photographs; but it is scarcely satisfactory as relates to the authorities who, in the first instance, restricted photography to such a paltry space. Many English contributors were so little satisfied with the limited space assigned to them that they will not again contribute: certainly no English photographer had extravagant space awarded, and yet their pictures filled the hanging space intended for the "photography of the world." If, therefore, all the foreign contributions had arrived in good time, and the committee had been under the necessity of hanging them, as well as the English photographs, in the limited space set aside for photography, the display would have been a miserably insufficient representation of the world's photography. I cannot help fearing that the next year's International Exhibition will fare badly in relation to photography, and I am sorry for it.

I was glad to see that at a recent meeting of the Manchester Society Mr. Sayce recalled the fact that the introduction of the collodio-bromide process was due to himself. He made no allusion to the discussions of other claimants, some of whom have altogether ignored the originator; but, with rare modesty, contented himself by referring, as a matter of history, to the fact that seven years ago he introduced the process and the name by which it had ever since been known. Whether any of the modifications since made could have been patented or not is matter for question; but there can be little doubt that the originator could have patented the process if he had been so disposed. He, however, gave it freely to the photographic world, and it behoves every photographer to protect the claims to discovery of those gentlemen who, without fee or reward, work out a new process, and give it untrammelled to public use.

Allusion to the collodio-bromide process reminds me of Mr. Stillman's excellent letter on dry processes in your last. I cordially agree with him as to the importance of a trustworthy commercial manufacture of dry plates, and that, with some exceptions, such trustworthiness has not been satisfactorily obtained. Commercial collodio-bromide plates have come nearest to this, and probably will eventually altogether meet it. There is one point, however, in which his experience differs from mine. He states that all the Stuart Wortley plates he has seen have been under-exposed. All that I have seen (and I have seen a good many) have been, on the other hand,

either sufficiently or over-exposed, and the majority the latter. For most dry plates an exposure of six times as long as wet is undoubtedly necessary; but for Col. Wortley's collodio-bromide, R. Manners Gordon's gum-gallic, and some others, I think less than half the usual exposure of ordinary dry plates is ample.

An amusing story relating to the rapid fading of photographs came under my attention lately. It was stated that in a certain town in the South of England a photographer recently opened a studio, and produced very pleasing portraits at exceedingly low rates. For a few weeks he did what was described as a "roaring trade." Before the run of success was exhausted, however, the photographer had disappeared, and many who had delayed sitting regretted that they had not earlier taken advantage of the opportunity by which their friends had profited, and great surprise was expressed that the photographer should leave the town whilst custom and cash still awaited him. In the course of a week or two, however, the reason for his disappearance became manifest—at least, the narrator of the story so explains the circumstance. Every picture, he states, began to fade, and in the course of a few weeks there was not a trace of one of them left! My informant naively remarked that the photographer had learnt one part of his business well—that of producing portraits—but he evidently had not acquired the art of fixing them; and hence he was compelled to flit from place to place, after a short sojourn, in every instance leaving, however successful he might be, just before his pictures began to vanish away! Such is the, doubtless veritable, story recently related to me.

As the various photo-colographic processes gain in importance by growing in excellence, and, at the same time, increase in number, the question as to what may or may not be done without infringing patent rights becomes interesting, and the announcements bristling with warning which appear in the advertising columns of the journals in no way lessen the interest, although they may alarm timid folk. I think it is one of those subjects which ought to be set at rest by fair discussion in the journals. If any legitimate patent claims really exist, photographers should respect them; but it is only fair that the distinct points in any of the processes which are claimed as new and as protected by patent should be clearly stated. Personally I am at a loss to indicate, in reply to a question put to me, what points are claimed in Mr. Edwards's patent, against the infringement of which photographers have recently been cautioned. At any rate, it is worth remembering that Albert's process, so far as it is detailed in the French and American specifications, is clearly free to the English public, and that Albert has produced by far the finest prints which have been produced by any of the collographic processes.

The South London Society began its session well. Mr. Croughton read an admirable paper on "Carbon as a Basis for Finished Work," and elicited a very interesting discussion. The examples exhibited by Mr. Croughton were exceedingly charming and perfect.

ON EXPOSURE, AND THE BRIGHTNESS OF THE PHOTOGRAPHIC IMAGE.

BY LIEUT. ABNEY, R.E., F.R.A.S.

I FIND that with most of those with whom I come in contact it requires a good deal of explanation to cause them to grasp the reason of the different exposures necessary for objects placed at different distances from the camera. As many photographers may not care to think out the matter for themselves, it may not be inappropriate to give them an explanation on paper, and a rule to follow. As some starting point must be fixed, I propose to take that with which many are familiar, viz, that the closer the object to the lens, the longer will be the focus, that is, the further away the focussing screen from the

lens. This, in mathematical language, is expressed thus for single lenses, and may be applied to combinations with almost perfect truth, viz;

$$\frac{1}{u_1} = \frac{1}{v_1} + \frac{1}{f}$$

Where u_1 = the distance of the object from the camera,
 v_1 = the focal distance of the image from the centre of the lens,

f = the equivalent focus of a lens (that is, the focus of a very distant object, such as the sun or moon; or, for practical purposes, an object a quarter of a mile off).

Now, it is manifest that the size of the image in comparison with that of the object varies exactly as their respective distances; that is (if we call a' the length of the object and a'' the length of its image)—

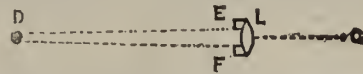
$$\frac{v_1}{u_1} = \frac{a''}{a'}$$

The size or area of the image to the object varies as the squares of a , and a'' .

Therefore $\frac{v_1^2}{u_1^2} = \frac{a''^2}{a'^2}$ (i)

Having thus got a starting point we can now go further on our road towards obtaining relative times of exposure. First, we must find the quantity of light that is admitted through a lens.

Let D be any object. It is required to find the quantity of



light that is sent through the lens L (which has an aperture EF) to form the image C. For our purposes D may be taken as the centre of a sphere, of which the radius is DE; i. e., a distance very nearly equal to u_1 . If A' be the semi-diameter of the aperture of the stop EF, then the total quantity of light emitted from the object is to the quantity falling on the lens as $\pi A'^2$ to $4\pi u_1^2$. But the quantity of light which passes through the lens also bears a constant proportion to that which strikes the lens. This constant we will call m . Let Q be the total quantity of light from the object, and Q' be the quantity that forms the image.

Then $\frac{Q'}{Q} = m \times \frac{\pi A'^2}{4\pi u_1^2} = \frac{1}{4} m \frac{A'^2}{u_1^2}$ (ii)

Having found the quantity, we next proceed to find the intensity or brightness of the image. Let us call the brightness of the image B', and of the object itself B.

First. Evidently the greater the quantity of light from the object passing through the lens the brighter will be the image; that is, the brightness varies directly as the quantity (Q).



Second. The smaller the image the brighter it must appear, as the quantity of light is condensed, as it were; that is, the brightness varies inversely as the areas of the object and image.

If we put this mathematically—

$$B' : B = Q' : Q :: a^2 : a''^2$$

$$\text{or } \frac{B'}{B} = \frac{Q' a^2}{Q a''^2}$$

Substituting the values of $\frac{Q'}{Q}$ and $\frac{a^2}{a''^2}$ from (i) and (ii)

$$\text{we get } \frac{B'}{B} = \frac{m A'^2}{4 v_1^2}$$

$$\text{Similarly } \frac{B''}{B} = \frac{m A''^2}{4 v_1'^2}$$

* In comparing two different lenses we should have to write m' for the constant of the second lens; consequently in the next equation we should have $\frac{m}{m'}$.

and therefore $\frac{B'}{B''} = \frac{A'^2 v''^2}{A''^2 v'^2}$

This leads us, then, to the conclusion that relative brightnesses are independent of the quantity of light, but vary according to aperture and focal length. The brighter the image the less the time of exposure. It is generally thought that the times vary exactly inversely to brightness. Though I believe this is not quite the case, but that it varies in a greater ratio, let us take this law as holding good, and we shall certainly not over-estimate the difference in times of exposure. We will say, then, that—

$$\frac{t'}{t''} = \frac{B'}{B''} = \frac{A'^2 v''^2}{A''^2 v'^2}$$

that is, $t'' = \frac{A''^2 v'^2}{A'^2 v''^2} \times t'$

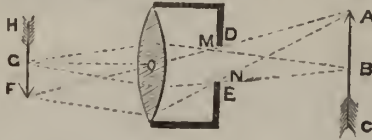
When t' and t'' are the times of exposure.

Let us take an example. Suppose for one object the length of focus is 12" and an aperture is used of $\frac{1}{2}$ " in area, and that the time requisite for exposure is 10 seconds, what would be the time of exposure for an object whose focus is 13" and an aperture used of $\frac{1}{4}$ " in area?

$$t'' = \frac{A'^2 v''^2}{A''^2 v'^2} \times t' = \frac{1}{4} \times 13^2 \times 10 = 23\frac{1}{2} \text{ seconds}$$

Now this is a case which might occur not only in exposing two plates on different objects and two apertures, but also in exposing one plate, and, of course, with one aperture.

Here is a figure demonstrating it. A B C is an object or



objects which may or may not lie in the same plane. At all events, H G F is supposed to be the image of the said objects brought into focus by the aperture D E on to the plate. Let G O = 12 inches, G F = 3 inches, and the area of D E = $\frac{1}{2}$ -inch. Taking the point B we find that it sends its rays through the aperture utilizing the whole $\frac{1}{2}$ inch, but as we move towards A we find the $\frac{1}{2}$ " diminishing on account of the angle at which the rays strike, till at A we get the aperture diminished to M N. If M N make an angle of (say) 30° with D E, the effective area of aperture = $\frac{1}{2} \times \cos 30 = \frac{1}{4}$ " nearly. Again, the focal length of F is greater than that of G, and, calculating it out, we find it to be 12 $\frac{3}{4}$ inches nearly.

Supposing the time of exposure necessary for B to be 10 seconds, we shall find, by using the above formula, that the exposure necessary for A is nearly 13 seconds. If A be foreground and B distance, we at once see how it happens that if we expose rightly for A we overtime for B. Of course colour, the atmosphere, and other points will modify this difference, but generally on the wrong side. These considerations point a moral to the photographer. He must either choose a subject in which the time necessary to impress the colour of the distance will balance the time necessary for the foreground, or else, by shading his lens during exposure, he must endeavour to give compensation.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.

CONSUMPTION OF VARNISH AND ALBUMEN—INTENSIFIER AND WASHING WATER PER SQUARE FOOT—THE VALUE OF THE PERMANGANATE OF POTASSIUM—FAULTS OF ALBUMENIZED PLATES—ABOUT TRAVELLERS, CAMERAS, AND LANDSCAPE LENSES.

In my last letter I spoke of the consumption of different chemicals in the preparation of negative plates; permit me now to correct an error. So far as I can remember I stated that the amount of varnish necessary to varnish

a plate would be equal to three-fourths the amount of collodion. This is not true; the varnish which is necessary amounts only to one-third, and the square foot of plate requires only about seven and a-half cubic centimetres of varnish.

In my trip through the Carpathian Mountains I have ascertained the consumption of the other chemicals, and subjoin the results. For a square foot of plate I use twenty-five cubic centimetres of albumen solution for albumenizing the plate, also four pounds of water for washing after development, and from one hundred to one hundred and fifty cubic centimetres of cyanide of potassium solution, of the strength of 1:25, for fixing; with a more diluted solution from one hundred and eighty to two hundred cubic centimetres would be required. The washing, after fixing, requires, of course, a much greater amount of water, and as water on high mountains is generally a very scarce article, I prefer to fix my plates when I return home, having then plenty of leisure for fixing and washing.

The quantity of silver necessary for intensifying varies with the nature of the light and the brilliancy of the collodion. With a rather dull working collodion I use for the square foot, forty-eight cubic centimetres of nitrate of silver solution, of the following composition:—

Nitrate of silver	...	...	...	2 parts
Citric acid	...	...	...	2 "
Water	...	...	...	100 "

I have to ask the reader's pardon for mixing indiscriminately in these statements the terms pounds, cubic centimetres, square feet, &c. In the mountains I had not the means of determining everything by one and the same standard. I had to help myself partly with weights, partly with measures.

I noticed in my mountain travels a peculiar defect, which was occasioned by the water containing lime; in intensifying the picture a white precipitate of citrate of lime would be formed on the plate.

Again, I had an opportunity of noticing the excellent services which the permanganate of potash renders the photographer. A small piece of pine wood dropped into the nitrate bath, and remained in it for, perhaps, an hour, while I was absent from the tent. The bath turned brown at once, and the plates were veiled and perfectly insensitive. My headquarters were several miles distant, and as I was only supplied with the most necessary articles, it would have been impossible for me to continue my work if I had not had the permanganate of potash; about five drops of it (solution 1:50) were sufficient to destroy the foreign organic substances which the bath had extracted from the wood, and in a few minutes the bath was completely restored and worked like a fresh one.

I will here refer to a kind of fault in the negatives—I mean those produced by albumenizing. We are indebted to America for the albumen process as a substitute for the tedious plate cleaning. It has been generally adopted here, partially with good success; but over and over again we hear of defects, and these happen even to the cleanest and most careful operators. In view of these facts it surprises me that I have never read in American papers of similar complaints, and it almost seems as if the American photographer had not to contend with them. I leave it to your readers to answer if this is so. Here in the mountains I have observed peculiar spots, which have a five or six cornered shape, and are placed side by side like the cells of a honeycomb, but smaller; they can be seen on breathing on the albumenized plate, and become dark after development; sometimes they are only present in the lights. I have never observed this in Berlin, but here very frequently, and it may be that the limestone water of these mountains has something to do with it.

Mr. Grasshoff employs carbolic acid as a preservative of the albumen solution. To the white of one egg [three to five drops of carbolic acid are added; the mixture is shaken

for half an hour, and the clear part is diluted with ten to fifteen times its volume of water, and filtered.

In travelling the albumen process does not offer the same advantages as at home. We have too often to contend with dust; it is better to wash and dry the plates thoroughly at home, and to pack them between clean pieces of blotting-paper, so that the plates are entirely covered (the placing of small pieces of paper between the plates is objectionable). Such plates are easily made ready for exposure; breathing on them and rubbing with a towel is all that is necessary.

Only a few words more about travelling cameras and stands. From England we receive tripod stands which are extremely light and compact; they are easily folded together, they are set up in half a minute, all the screws are fastened to the stand and cannot get lost. These are great advantages; and still all these tripods have a grave fault—they shake too much in the wind.

The English camera of Meagher proves very valuable; it has the only fault of being a little too heavy. The box is square, admitting of placing the plates either way—*i. e.*, the long or short side horizontal—without changing the position of the camera; this seems an advantage, but it necessitates making the camera much larger than the plate for which it is intended, and this makes it, of course, more voluminous and heavier; besides, the advantages are not very great. To me it has sometimes happened that I have placed plates in the plate-holder with the longest side horizontal, and only at the last moment I discovered that a vertical position would be preferable; I had then to return to the tent and change the plates; this is inconvenient, and takes much time. In this respect the so-called Philadelphia box is preferable; it can be removed in a moment, and the position of the plate in the plate-holder does not require a change. The Philadelphia box has the advantage also of being much lighter; but the disadvantage is that the focussing screws and the platform screw get easily lost; these should be firmly connected with the camera. It would also be desirable to have the handle of the focussing screw a little larger, as it would turn much easier. It is a great advantage of the American cameras that the front shutter of the plate-holder can be drawn out completely; this is, unfortunately, not the case with our European cameras; the shutter-board is fastened to the holder, and, when drawn out, offers a large surface to the wind.

In regard to lenses for landscape purposes, I give, as the result of a large experience, the preference to Steinheil's lenses. They have a field of view of sixty degrees, and this is, in most cases, more than sufficient. Compared with ordinary landscape lenses, these objectives possess a great amount of light, which enables the photographer to focus easily, and admits also of the taking of groups in the open air; besides, they are light, easily transported, and cheap.

For my camera, $8\frac{1}{2}$ by $6\frac{1}{2}$, I use two Steinheil's No. 2 and No. 3. The former I use when I need a larger field view, the second when I wish to have the main object somewhat larger and the foreground smaller.

Pantoscope and similar instruments I use only when the field of view is extraordinarily large, and the distance cannot be increased.

ON THE LATENT PHOTOGRAPHIC IMAGE.

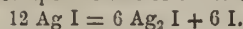
BY DR. H. VOGEL.*

Communicated from the Photographic Studio of the Royal Industrial College.

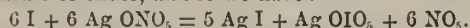
DESPITE the numerous investigations that have been made from time to time of the invisible photographic image created upon the plate during its exposure to light in the dark slide, and which only becomes apparent in the developing process by the attraction of the silver precipitate, we have as yet obtained but indications of the real chemical action that takes place. With some warmth has the ques-

tion been discussed whether the image is produced by a simple physical change, or by reason of the chemical action of the light, and we have, therefore, had to remain satisfied with the proof that a chemical decomposition either does or does not take place, together with an approximate explanation of the nature of the change. It has been proved that by the decomposition of chloride of silver and bromide of silver, sub-chloride and sub-bromide of silver is formed. It is further extremely probable that iodide of silver in like manner yields sub-iodide of silver. We have, therefore, accepted these constituents, or proportions of them, as composing the latent image, so that the photographic invisible picture upon iodide of silver may be regarded as of sub-iodide of silver, and that upon an iodo-bromide film as of sub-bromide and sub-iodide of silver combined. A little consideration of the subject, however, shows us that the matter is not altogether so simple in every case. Let us take, for instance, the best known example, the exposure to light of iodide of silver in the presence of a solution of nitrate of silver. The latter absorbs eagerly the iodine liberated by the exposure to light of the iodide, and there is produced, not only sub-iodide of silver, but also iodate of silver and free nitric acid.

Light would act upon iodide of silver *alone* thus:—

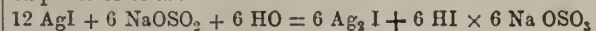


The liberated iodine is, however, at once combined with the nitrate of silver, and so we have:—



Thus, besides sub-iodide of silver, there is formed fresh iodide of silver, iodate of silver, and free nitric acid.

It is highly probable that the decomposition does not rest here, but that, on the contrary, the freshly formed iodide of silver is so forth in an analogous manner again decomposed by light. And it is just the circumstance that fresh material is continued to be formed by the iodide of silver (in the case of wet plates exposed in the presence of nitrate of silver solution) that gives these plates the preference above others, as we shall hereafter see. If we expose to light, for instance, iodide of silver in the presence of any other iodine-absorbent body, the result is always a totally different one; thus, as a most simple example, let us take iodide of silver in the presence of sulphate of soda:—



The difference is apparent. With nitrate of silver there was formed, besides sub-iodide of silver, five-sixths as much fresh iodide of silver, which is again decomposed, and goes to the benefit of the image; with the sulphite of soda the liberated iodine is lost, becoming hydro-iodic acid, or some such compound, according to the nature of the bodies present, and no fresh iodide of silver is formed, as with nitrate of silver, and no iodate of silver either.

The latent image upon iodide of silver, when obtained in the presence of nitrate of silver, consists of sub-iodide of silver, together with iodate of silver and free nitric acid. The image formed in the presence of other bodies consists, besides sub-iodide of silver, of some other iodine compound (generally of the hydro-iodic type) and, moreover, some product of oxidation.

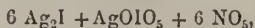
Although it may be difficult, and, perhaps, even impossible, to prove the existence of these bodies in the latent images, as the proportions thereof are so extremely minute, yet from certain reactions we may conclude that, in accordance with the theories laid down, iodide of silver pictures produced under different circumstances will exhibit different chemical characters.

Seven years ago I stated that the latent image produced upon iodide of silver in the presence of nitrate of silver solution is annihilated by means of a solution of iodide of potassium. I continued my investigation by examining the effect of the same solution upon an iodide of silver image produced in the presence of other bodies. The

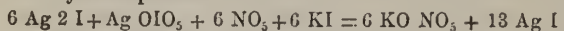
* *Photographische Mittheilungen.*

iodide of silver was exposed to light under the influence of ferrocyanide of potassium; an iodized collodion plate was rendered insensitive by continued immersion in a solution of iodide of potassium, washed, and then treated with a ten per cent. aqueous solution of ferrocyanide of potassium, and exposed to light. That the action of the light upon iodide is more energetic in the presence of ferrocyanide of potassium is well known. The plate was afterwards washed, and one-half thereof immersed for twenty-five minutes in an iodide of potassium solution (1 part of iodide to 100 parts water), and both halves then washed and developed with silver salts and iron. The half that had been treated with iodide of potassium solution was developed quite as clearly as the other, but yielded a somewhat fainter image. From this it follows, therefore, that iodide of potassium is unable to destroy the iodide of silver image produced by exposure in the presence of ferrocyanide of potassium, while an iodide picture produced with nitrate of silver solution is thereby annihilated.

This destruction of the nitrate of silver iodide picture by means of iodide of potassium solution may be easily explained according to the theory laid down. In a picture of this kind we know there exists:—



and if we add 6KI, there is produced six equivalents of free iodine, which forthwith form iodide of silver with the sub-iodide of silver of which the latent image consists. This may be expressed:—



Such a decomposition is impossible with the ferrocyanide of potassium image, which is constituted in quite a different manner; only by the admittance of air could it be supposed that by means of the ozone some iodine would be liberated, and thus the sub-iodide of silver would be changed back again into iodide. To prevent this presence of air I work with the iodide of potassium solution in a bath.

In a much more marked degree, however, was the difference observed between the nitrate of silver image and that produced with ferrocyanide of potassium, when treated with a solution (1 to 10) of ferrocyanide itself. This lessened the developing quality of the nitrate of silver and washed bromo-iodized film in a very marked manner, so that only a faint, flat image was obtainable. A pure iodide of silver film exposed in the presence of nitrate of silver solution, when treated with ferrocyanide solution, could scarcely be developed at all.

We know that the solution of ferrocyanide of potassium brings about, on exposure, the photographic metamorphosis of iodide of silver (so that the latter blackens more vigorously than pure iodide of silver), and the same ferrocyanide solution removes altogether, as my experiment proves, the faculty of iodide of silver exposed with nitrate of silver to develop at all. We might believe, from this, that a similar deteriorating influence of the ferrocyanide of potassium would be observable upon iodide of silver exposed in its presence. Such is, however, not the case. I exposed an iodide of silver plate with ferrocyanide, and then washed one half of the surface, while the other remained another half-hour in contact with the solution, and afterwards the whole plate was again washed and developed. The image produced was equally good throughout. It is therefore evident that iodide of silver exposed to light in the presence of ferrocyanide of potassium behaves differently to that treated with nitrate of silver solution. The developing faculties of the latter are destroyed by the action of ferrocyanide of potassium, but this is not the case with the former. It is not yet possible to express by means of an equation the chemical change that occurs in the reaction of ferrocyanide of potassium upon iodide of silver, in the same way as with the iodide of potassium reaction, inasmuch as the behaviour of the first two named bodies, and likewise the complicated changes of which the ferrocyanide is capa-

ble, requires further investigation. In an analogous manner to ferrocyanide of potassium, certain organic substances behave, such as not seldom occur in decomposition products in photographic chemicals.

For some considerable period I worked with an old negative bath which yielded streaky negatives with a very marked grey tint, and with the same collodion that afforded, with a new bath, a beautiful yellow and creamy film. These grey plates proved to be exceedingly insensitive, and gave, even with prolonged exposure, only flat pictures. It was, however, remarkable that the invisible image produced upon the iodide of silver film in this case was not destroyed by the action of iodide of potassium solution, while the latent picture produced upon iodide plates prepared with a fresh bath disappeared entirely under the same treatment.

It follows, therefore, from this, that through the presence of certain organic substances in the sensitizing bath an iodide image can be produced of a different chemical nature to that obtained with pure nitrate of silver solution, and showing qualities similar to the ferrocyanide picture previously alluded to; and as, in the course of time, in every silver bath, organic matter of the above character accumulates, it is no wonder at all that the "working" of the bath—or, in other words, the photographic results that it furnishes—should gradually alter; for the change that takes place is easily explained by the accumulation in the bath of certain iodine-absorbing bodies of a foreign nature, which bring about a totally different decomposition of the iodide of silver by light to that effected by the nitrate of silver above.

Hereby, indeed, is a difference cleared up which occurred some seven years ago in the statements made by Dr. Schnauss and myself. Schnauss explained that the latent iodide of silver image was not destroyed by the application of iodide of potassium, while my experiments afforded me the opposite evidence; and both of us held fast to our opinions. It now appears that in all probability both parties were correct. Schnauss worked, perhaps, with an old bath which contained already organic products of decomposition, while I manipulated with a perfectly fresh solution. The pictures resulting from these two liquids, as my experiments teach us, possess different chemical natures.

Further study of the behaviour of the different sensitizers of iodide of silver would no doubt bring to light many interesting points of difference, a knowledge of which would solve many of the photographic problems which at present trouble us.

In accordance with my experiments, the following deductions may be made:—

1. That the iodide of silver light image produced in the presence of different sensitizers is of a different chemical nature.
2. That the iodide of silver light picture produced in the presence of pure nitrate of silver solution is destroyed both by the action of iodide of potassium and ferrocyanide of potassium solutions.
3. That the bromo-iodide of silver light picture is only weakened by the action of either iodide of potassium or ferrocyanide of potassium.
4. That the latent iodide of silver image produced in the presence of ferrocyanide of potassium solution cannot be destroyed either by the action of iodide of potassium or ferrocyanide of potassium.
5. That in the presence of certain organic bodies the latent iodide of silver image produced is not destroyed by the action of iodide of potassium.

It is certainly astonishing what a very minute quantity of organic matter is sufficient to injure a silver bath—or, in other words, to hinder wholly, or in part, the production of a nitrate of silver iodide picture, such as is the result of our normal negative process. The traces of organic products of decomposition found in the collodion

is oftentimes sufficient to bring about this result. A freshly prepared silver bath of 1200 cubic centimetres, that I possessed during my Egyptian tour, was in this way rendered unserviceable after sensitizing half a dozen plates, three or four drops of permanganate solution (one to fifty) sufficing, however, to bring back the bath into good working order.

ON THE PROPORTIONAL REPRODUCTION OF DESIGNS.

BY LUDOVICO DE COURTEN.*

It frequently happens in photography that one is desirous to reproduce an engraving or picture to a particular size bearing a distinct proportion to the original. When it is required only to obtain an object of a dimension to cover the plate to a fourth, half, or what not, the thing is very easy to do, for it is necessary then to place oneself simply at such a distance from the original that the image takes up exactly one of the squares traced upon the ground glass. But in this case one does not know the actual proportion that the copy bears to the original, and it is this proportional reproduction of designs upon which I desire to say a few words.

To reproduce any design to a given proportion, it is necessary that all sides of the copy should be in proportion to those of the model. A grave error would arise if, to reduce a rectangle to half its proportionate size, half of one of its sides were taken; in that case, a reduction to one fourth would be obtained; and, in the same way, in taking one third the length of the side, a reduction to one ninth would be obtained.

As the numbers of reductions required in practice is not very great, it will suffice to establish a little table showing how the more ordinary dimensions are obtained: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$. Without proceeding with mathematical accuracy, which would render the operation long and impracticable, I reduce the matter to a very simple plan. In fact, having divided one of the sides (the largest is preferable) of the rectangle to be reproduced into seven parts, I take five of them to obtain a side of an image that shall be half the size of the original. This measurement, without being rigorously exact, is, at any rate, within a fraction of the right proportion, and is sufficient for most cases.

I will now indicate my plan of proceeding. Let us suppose that the image to be reproduced measures one metre in length at its greatest side or base, and that we desire to reduce it one half. The metre, or one hundred centimetres, is divided by seven, and, without having regard for the fraction, we obtain fourteen as the product. If we then take five sevenths of the base ($5 \div 14 = 70$), we find that seventy centimetres ought to be the length of the largest side when reduced one half.

Thus, for reductions of—

- $\frac{1}{2}$, five sevenths of the base is taken.
- $\frac{1}{3}$, four " "
- $\frac{1}{4}$, half of the base.
- $\frac{1}{5}$, half that necessary to produce the $\frac{1}{3}$, or, in other words, $2\frac{1}{2}$ sevenths of the base.
- $\frac{1}{6}$, the third of the base.

These results will be useful as giving the operator at once data upon which he can work.

One side of the rectangle divided into a certain number of parts will always give a reduction equal to the total of these same parts multiplied into themselves. Thus, a division into two parts gives a result of quarter size ($2 \times 2 = 4$), a division into three parts yields a ninth ($3 \times 3 = 9$), in four parts a sixteenth ($4 \times 4 = 16$), and so on.

TAKING BABIES.

BY ELBERT ANDERSON.

MR. ANDERSON, continuing his dialogic lessons in our Philadelphia contemporary, gives his pupil some hints on taking babies. He says:—

* *Moniteur de la Photographie.*

In the first place, I prefer a collodion made with bromide of potassium for children, and bright lights generally, which is the kind of light in which I generally put babies; and, for a more subdued light, and especially on rainy days, I prefer a collodion made with bromide of cadmium.

M. This seems somewhat contradictory to me.

A. How so?

M. You prefer a potassium collodion for children and babies, consequently you prefer a collodion which I presume works quick; yet in dull weather and in weak lights you use a cadmium collodion: how's that?

A. You misunderstand me. I do not use a potassium collodion because I think it works quicker, but because I think its chemical effects are better in a bright light, just where the children are generally put; and I use a cadmium collodion in a more subdued and weaker light because I think its effects are better in such light. In taking babies (not children) we must go for the head, and let the draperies—

M. Rip!

A. Exactly.

M. How is the collodion made?

A. Use $4\frac{1}{2}$ grains iodide ammonium to 2 grains bromide of potassium. Dissolve the ammonium in the alcohol, and the potassium in the smallest portion of water that will take it up, and add it to the alcohol and shake; now add the ether gradually, little at a time, shaking between each addition. The mixture will turn milky from precipitated potash. Observe, the precipitate should remain suspended in the collodion, and not fall to the bottom of the bottle. When all is added, and thoroughly shaken, filter it through filtering paper, and it ought to run through perfectly clear; if not, filter a second time. Now add 4 to $4\frac{1}{2}$ grains cotton and shake until dissolved. This will clear in a day or two, ready for use. Make a few ounces at a time only, and use pretty new for babies. When the residues or older portions are bottled it is good for bright lights. In making copies of dark originals, and taking pictures of badly-lighted interiors, especially when the time of exposure is prolonged, I recommend the use of a cadmium collodion.

M. By the by, how about the developer?

A. Water, 16 ounces; iron, 2 ounces; acetic acid, 2 ounces.

M. No alcohol?

A. No; only, if necessary, to flow the plate. When this is the case, it were better to boil the bath ten or twelve minutes or so. Alcohol in the developer performs a part not generally understood, and I shall take special care, at some future day, to thoroughly explain the exact action it has on the negative.

M. How do you manage to keep the little dev—darlings quiet?

A. This is what I use; it is simple in itself, and absolutely effective. Toys, ringing bells, whistling, &c., are all very well in their way, and generally in mine too. I use two eight-ounce graduated, one of which I fill with water, into which drop a brilliantly painted ball of wood. Now commence pouring the water from one graduated into the other gradually, and tell the little one to look out and see the ball bob over, which you may prolong at pleasure. The intense desire to see the ball bob over generally produces the desired effect. Try it. Out West, in—

M. The Rocky Mountains, for instance.

A. They place the sitter, and, when ready, the operator draws out an enormous horse pistol, which he points directly at the sitter's head, exclaiming, "Move a hair's breadth, if you dare, an' I'll blow yer cussed brains out!" Now, Marshall, I want to ask you something. Here are several imperial cards of gentlemen, and you will notice in every one a whitish line all around the black coat, where it comes in contact with the lighter part of the background; and further, you will observe it in some of the proofs, and not in others; further still, it is in some parts of the same proof, and not in others. What is the cause of this?

M. Pshaw, Anderson! don't you know what that is?

A. Do you?

M. Certainly; it's his breathing. It is not on his dark hair, where that touches the light background, because the head doesn't breathe; moreover, it is supported by the head-rest.

A. You are sure, then, this is the reason?

M. Why, of course.

A. See, here are some flowers in this vase, against the light background; they have the same whitish line around them. They do not breathe, do they? The back of this chair has the same.

M. Well, I'm blained if that isn't so.

A. Perhaps you will say, if the flowers do not breathe, they blow. How's that?

M. "No more of that, Hal, an' thou lovest me." I don't like to talk of blowing; I might be thought personal, you know. What's your notion of it?

A. The proof has this line because your negative has it; your negative has it because your ground glass has it; in fact, your lens is the cause of it; all those dark parts, against the light ground, which have it, are out of focus, and it is only there that this occurs, whereas those parts in focus—the back of the hair, for instance—have it not. This is so obvious it will certainly need no further explanation.

M. That's so. Here's a question which appears to have puzzled the Hypo Club.

A. Give it—*breath*.

M. What causes the plate to become covered with metallic spangles of silver, at times, in developing, and not at other times; the collodion bath, developer, time, &c., being the same in each case?

A. In developing a negative, and in pouring the developer on and off the plate until it becomes muddy, and now nearly emptying the developing glass. This will not cause the spangles on this plate; but fill up the developing glass with fresh developer (without washing out the glass), and develop a fresh plate, when its surface will become covered with these floating spangles. Halloo! here's a squatter. Excuse me now. Call in again when I'm not busy; I've something very curious to show you.

M. Well, I'm OPH.

CAN A BETTER DEVELOPER BE FOUND?

BY M. CAREY LEA.*

It is surprising that there should be so little original research made in the direction of developers. It is by no means certain that we have yet found the best of all existing substances capable of bringing out the latent image.

For a long time gallic acid was supposed to enjoy this property alone. Then it was found that pyrogallic acid acted still more powerfully. Next came sulphate of iron, yet more energetic: this was long in making its way and supplanting pyrogallic acid. It has been said that morphia is capable of acting as a developer and evoking the latent image, and I have shown that hæmatoxyline also possesses this property.

As yet these five substances are the only known developers. There is no reason to suppose that they are all that exist, or that they are necessarily the best. The search for new developers presents great interest, and has been little prosecuted.

In this connection the following remarks may have some interest. All the known developers are reducing agents; that is, they are capable of combining with oxygen, and consequently capable of deoxygenating other bodies; also of abstracting those bodies which play a part analogous to oxygen, as chlorine, bromine, and iodine. But the converse by no means follows. That a body is capable of deoxidizing is no proof that it is capable of developing; yet it is, undoubtedly, among such classes of bodies that new developers must be looked for.

Many bodies capable of acting powerfully as preservatives, and readily oxidizable, are totally incapable of acting as developers. Cloves present a remarkable example of this. The oil of cloves is so powerful a reducing agent that it will rapidly reduce silver to the metallic state. The decoction of cloves is a powerful preservative, and affords excellent dry plates. Under these circumstances it appeared very probable that the decoction of cloves would act as a developer. I subjected this matter to careful experiment, and found cloves perfectly incapable of developing. So, too, the cochineal preparation, which I use for dry plates, proved also wholly incapable of developing, and the same was the case with flavine, another preservative of no small power.

As further experiments are made in this direction, other developers will, doubtless, be discovered. Let us hope that we may in this way obtain some one more powerful and more useful than any that we have as yet.

PRACTICAL LANDSCAPE PHOTOGRAPHY.

BY PROF. J. TOWLER, M.D.*

DURING the month of September I had the good fortune and pleasure of meeting my friend T. C. Roche; shall I append the title Esquire, or leave simply the unsophisticated name? Plain T. C. Roche looks best, because I know the man; his merit is within, and not extraneous; his work is his doctor's degree. My friend had just returned from the Yosemite, on the Merced River, county of Mariposa, Cal., where he had been transferring to the stereoscope those lofty precipices and giddy cascades, of whose grandeur and magnificence the mind can form but a faint conception from description. Watkins was the first, I believe, to photograph the scenery in the Yosemite Valley, and his large views are unsurpassed in excellence of workmanship and taste of position. Muybridge came next, and brought forth grand results. Friend Bierstadt, of Niagara Falls, followed suit; he, too, is a master-hand in the photographic art, and has taste; his stereoscopic views are in the hands of all true lovers of the grand and the beautiful; and now that Roche has been on the ground I would advise all magnates, potentates, imperial dignitaries, and corrupt statesmen to bespeak a complete set of their views. They will act like the balm of Gilead upon their hypertrophied conceits, and teach them that the scenes of nature are far ahead of all their financial conceptions.

I spent two or three days with Mr. Roche in the Watkins's Glen, at the head of Seneca Lake; he came on purpose to take stereographs of this ravine, whose reputation is just beginning to get a firm foothold on the public sentiment. For years I have been trying to make all friends of scenic grandeur believe that this region of the Lakes Seneca and Cayuga present titbits of beauty and magnificence not surpassed by the Alpine ravines, not even by the valley of the Merced. Mr. Roche himself confesses to the superiority of these glens for the stereoscope over all that he has seen, either on the Pacific or the Atlantic coast. His judgment has weight.

I am permitted to describe the whole process of making a negative on the field, as practised by my friend.

Collodion.—The collodion which he uses he prepares as follows:—

Alcohol	...	...	...	8 ounces
Ether	...	...	...	8 "
Gun-cotton	...	...	...	96 grains
Iodide of ammonium	...	...	...	96 "
Iodide of cadmium	...	...	...	40 "
Bromide of cadmium	...	...	...	48 "

This collodion is for the gallery, that is, for portraiture; for the field he adds 24 grains more of a bromide.

The glass used by Mr. Roche is of excellent quality, flat, and free from flaws; but he does not albuminize the plates, which is an evident proof of itself that he bestows much

* Philadelphia Photographer.

* Philadelphia Photographer.

labour and care in cleaning them, for failure in a plate is something I did not observe.

Silver Solution.—The bath solution is filtered in the morning, before he starts for the scene of action. He is very particular to keep this in good working condition, for he ascribes nearly all the defects in the negative to some untoward condition of the silver solution. The solution is filtered into a large bottle, and kept there until required for a day's work; it is then poured into the ordinary rubber bath furnished with an air-tight lid, held fast by screw-clamps. Before he employs a new rubber bath, he washes the inside thoroughly with a solution of potash or soda, which removes the grease still adhering to the walls of the vessel; he then washes it carefully with water to remove the alkali. When the vessel is quite dry, he pours into it a sufficient quantity of negative varnish, and by tilting the bath he causes the varnish to cover every part of the inside which is intended to receive the silver solution; the excess of varnish is poured back into the bottle from which it was taken. As soon as the varnish is completely dry, the bath is ready to receive the silver. By this treatment there will be no trouble in the shape of fortification curves, and specks, &c., of reduced silver, which invariably occur when a new rubber bath is used for the first time or two without such treatment.

Developer.—The developer in use is simply the ordinary iron developer, with the addition of a small proportion of sugar-candy, and without alcohol. This developer produces a rich bloom on the film, a very slight roseate hue, which gives a very pleasing negative, and all the intensity that may be required. Mr. Roche is averse, and properly so, to redevelopment, which in stereographs never fails to produce snowy patches when viewed in the stereoscope. The ignorant and uninitiated, it is true, are better pleased with strong contrasts, and are very apt to select the worst pictures, but the artist and those accustomed to the use of the stereoscope invariably select photographs full of detail, well developed, and free from blanched patches of any kind.

Now, whilst I am just discussing this subject, it may be a pertinent question for any one to put: How are such artistic negatives to be taken?

There are two conditions absolutely necessary in all cases where foliage, rocks, buildings, and water are to be photographed together, which are: the light must be diffused; that is, the sun must be behind a cloudy sky, and the exposure must be long. In this way the development is easy, and, being under control, can be stopped at the proper time.

Exposure.—Our readers, at least some of them, will be surprised to learn that the length of exposure, in order to produce in the Warkin's Glen an artistic negative, must seldom be less than five minutes for an aperture of a quarter of an inch, and in very many instances it has to be increased to ten, and even fifteen minutes. The same length of time will naturally be required in all similar deep ravines. Knowing this fact, I have abandoned all hopes of getting good results with dry plates in such dark nooks; and, furthermore, I am convinced that there is a limit at which attenuated light ceases to act on the sensitive film at all, and that this limit of attenuation is sooner reached for a dry plate than for a wet plate.

Mr. Roche, accustomed as he is to outdoor photography, can soon judge from the brightness of the picture on the ground-glass how long the exposure must be. His first exposure was a little more than three minutes (rather long for a wet plate, you will say, especially on a bright morning in August and September), but this was not enough; his second plate, therefore, he exposed nearly five minutes. The picture was all right, and he did not vary the length until he changed his location after dinner, where the light was less powerful; here he gave eight minutes' exposure, which was scarcely sufficient, although the negative was tolerably good, and, I think, irreproachable; he afterwards increased the exposure to ten minutes; and finally, towards

four o'clock, had to abandon the operation for the day—the light ceased to act from the dark rocks.

There is one curious fact which I must relate here: when Mr. Roche was about to start on his expedition to the Yosemite Valley and the saints in Utah, he focussed his lenses in New York, and had never varied since—that is, he kept his camera at full cock all the way. He had two pair of lenses, one for all ordinary work—a pair of Dallmeyer's view lenses, which I do not think can be surpassed in efficiency; he had also a pair of Busch's lenses, little bits of things, apparently more suitable for a microscope than for photographic purposes; these he used when driven into very close quarters—their focal length is about one inch and a-half, or, perhaps, two inches; but they will take a sharp picture much larger than is required for the stereograph. Such a pair of lenses is invaluable—indispensable in several positions in the glens in this region of New York State.

Fixing the Negative.—The quantity of negatives taken in a day by our artist is quite large—on an average between thirty and forty. This, you will say, is impossible. I will tell you how he expedites matters. Of course he has his serving man to carry his dark chamber, fetch water, empty the dishes, &c. A large shawl of rubber is thrown over his head and shoulders by the man during development, and as soon as this is complete, the negative is washed in a dish of water, then taken out and coated with a mixture of water four parts, and glycerine one part. This being done, the rubber is removed at a given sign, and the negative is stored away until evening, when it is fixed in a weak solution of cyanide of potassium in the usual way, and washed. Plates thus coated with dilute glycerine keep moist for a long time, a circumstance that has been long known but little practised, and in this way much valuable time is saved. When the light ceases to act the plates are fixed, and in every instance during the time that I was in company with Mr. Roche there was not a single failure of development or fixing when once the right time of exposure was obtained.

MANAGEMENT OF A DISORDERED NEGATIVE BATH.

BY M. CAREY LEA.*

The advantages of fusing over those of simply boiling down a negative bath have scarcely been brought as prominently forward as they deserve to be. It is true that the fusing is a little trouble, but, on the other hand, we get rid of the diluting, the filtering, and the evaporating of such great quantities of liquid. For if a bath is not to be fused, the iodide of silver must be got out of it by dilution, and to accomplish this effectually it is usual to dilute threefold. In doing this, the writer believes that he was the first to point out the great advantage gained by pouring the bath into the water used for diluting, and not, as previously done, adding the water to the bath, an advantage now generally understood and availed of. This dilution, nevertheless, gives a threefold quantity of liquid to evaporate.

Where the bath is intended to be fused, there is no need for previous diluting, but the solution is evaporated down just as it is, to dryness. It is generally convenient, when the whole is reduced to a small bulk and is still liquid, to transfer it to a smaller vessel, as the large evaporating basins are unsuitable for the fusing. As the evaporation is carried on, the liquid solidifies to a white cake; then, on raising the heat higher, this fuses to a liquid as thin as water, and nearly as transparent. Previous to the complete fusion, there is a continuous effervescence, which is probably owing to the decomposition of the nitrate of ammonia, which is formed plentifully in all baths with which colloids containing iodide or bromide of ammonium are used. The red fumes sometimes spoken of I have never seen. Some of the nitrate is undoubtedly decomposed, and converted to nitrite, but this is not accompanied by any visible escape of nitrous fumes.

* Philadelphia Photographer.

After the mass has remained in quiet and complete fusion for three or four minutes, the heat should be turned off; not, however, all at once, but at first left for several minutes rather low, and then first turned completely off. Attention to this will make the strain much less upon the fusing vessel, and enable it to be used many more times. It seems scarcely necessary to say that fine and good porcelain, such as is manufactured expressly for chemists' use, is alone suitable.

In the operation of fusing, we not only get rid of the alcohol and ether, but of other impurities. The iodide of silver appears to lose its solubility by the fusion, and when the fused cake is dissolved in water, quantities of iodide separate out. That this separation of iodide may be as complete as possible, the cake must not be dissolved in a small quantity of water, and then this solution be diluted, but, having determined on the quantity of water to be used for its solution, the cake should be put into this (tepid water is best), and be actively and thoroughly stirred about with a long glass rod until solution is complete. For if a saturated or very strong solution were at first made, this strong solution would be much more capable of taking up the powder of iodide, and then, once taken up, of holding part of it even after a subsequent dilution.

Non-volatile organic bodies can scarcely escape destruction by the fusion. It is probable that much of the nitrate of ammonia is also destroyed, for although the temperature at which it is resolved into nitrous oxide and aqueous vapour is a few degrees higher than the fusing point of nitrate of silver (219° C.), yet the temperature of the fused mass would quickly rise to the necessary point.

The nitrate of cadmium, with which the bath becomes more and more charged, is not got rid of by fusing.

As the nitrates of ammonia and of cadmium both fuse at temperatures considerably lower than nitrate of silver, they tend to act as fluxes, and to facilitate the fusion of the silver salt.

After fusion, the cake of nitrate is a radiated translucent mass, dissolving easily in water, and leaving behind a considerable quantity of impurities rendered insoluble, and thus eliminated by the fusion.

PHOTOGRAPHY FOR THE UNINITIATED.

BY CHAS. WAGER HULL.*

In my last letter you had just finished the exposure of your first plate, and we will suppose it to be now safely lodged within the shield beside you in your dark room.

Development.—Before removing the plate from the shield, pour into a small tumbler, or wide-mouthed bottle, enough of the developing solution to cover the plate, and have at hand some vessel containing water. These preliminary steps taken, you will now proceed to remove the plate from the shield, and place upon a holder (hereafter to be described), or hold by one corner, as you prefer. Now take the portion of developer, and with one steady even flow cover the plate, being careful to cover it evenly, and careful as well not to flow on so much as to have it overflow. If you flow too little developer upon the plate, thereby failing to evenly cover it, and subsequently add more to overcome this defect in your manipulation, you will have a negative stained and ruined, for the action of the developer will have been uneven. If too much is flowed upon the plate, so that any considerable portion runs off, it will have washed away the surface silver, and you will have greater difficulty in securing sufficient intensity.

I will suppose you have succeeded in covering the plate with the proper amount. Now so move the plate as to cause the developer to flow two or three times from side to side and from end to end. By this time the picture has appeared, first the sky or high-lights, and other objects strongly lighted. Hold it still, avoid movement so far as you can,

and as you watch you will see the details and dimly lighted objects appear, slowly, gradually. Up to this point you have seen the picture quite distinctly. Gradually its changes are less noticeable; it changes but little; rather loses distinctness, becoming of a somewhat uniform dullish grey colour. Lift it carefully, so as not to spill from its surface the developer, and examine it as to detail and intensity. If lacking in detail, yet brilliant and free from a veil of haze or fog, as photographers term it, you can allow the developer to have longer action. Examine again in a few seconds, and if you cannot notice any increase of detail, and the intensity appears sufficient, you may pour off the developer.

As soon as drained, pour over the surface the water you have at hand, and wash until all appearance of greasy lines has disappeared. Six ounces of water will answer for the plate you are working; four serves my wants when working in a tent in the field, but at home, with water plenty, you can use all you please.

As soon as the greasy lines have disappeared, carry the plate into the other room, and place it in the tray, into which you have previously poured enough of the hyposulphite of soda fixing solution to nicely cover it; allow it to remain therein until all the yellowish body of iodide and bromide of silver upon which the light has not acted shall have dissolved; this you will know by looking through it from time to time, and by its presenting an even appearance and being absolutely free from any yellowish tint as you examined it by transmitted light.

The next operation is to thoroughly wash with plenty of water, to remove every trace of the fixing solution.

After washing you can examine fully, to determine wherein it is at fault. If it is very intense in the high-lights and deficient in detail, it has been under-exposed or under-developed. This you can determine by remembering how it acted under the developer: if the image flashed out quickly, then it will be fair to presume it to have been fully exposed, and that your trouble was in not continuing the developer long enough. If it is full of detail, yet lacking in intensity, contrast, or vigour, then you have over-exposed.

A good negative, while still wet from the water of washing, will, when viewed by reflected light with a dark background, always present an appearance somewhat like an over-exposed ambrotype or positive—a fair picture, but a little lacking in some of the finer details. If by such light it presents a dull, uniform tint, and little or none of the more marked features of the view appears, then it has been over-exposed, or over-developed, most probably the last; this must be determined by the rule already given. Should a spot quite large appear upon the side where the developer was applied, which is more transparent than the balance of the plate, it will doubtless be due to an uneven pouring on of the solution; give it a more sweeping flow next time. If the whole plate is veiled, fogged, and you are confident of having given sufficient time, and not over-developed, then it may be that your dark room or camera is not light-tight.

I cannot proceed any further at present in considering all the difficulties which may arise, or I should fill the current number of the *Times*.

In your many troubles and failures, I cannot do better than to refer you to Dr. Vogel's "Hand-Book of Photography," published by Beneruan and Wilson, Philadelphia, and Piper and Carter in London.

Re-development.—If the negative is weak, needing body and intensity, it may be given it in many ways. This should not be the case. Few negatives are too weak. A negative may be weak, yet brilliant; it may have sufficient contrast without being opaque in the high-lights. Re-development is more a habit than a necessity; as a rule, it makes but poor work, and is only a poor way of patching up a half-made negative. Dr. Vogel's book is full and excellent in its chapters on re-development and intensification;

* Continued from p. 512.

to them I refer you, as I do not wish to go into a branch of the art which I rarely or ever practise. My negatives are all thin, but all are carefully printed in diffused light, or under tissue-paper if in the sun. Should you have at any time to resort to re-development, I strongly recommend that of citric acid and silver, which you will find fully described in most all works in our art.

Varnishing.—After your plate shall have fully dried, you will varnish by flowing over the face any of the varnishes recommended by respectable dealers, exactly as you flowed over the collodion. Most varnishes have bleached lac as the base, dissolved in alcohol. I advise you to buy rather than make it; it is a dirty, sticky job, and will not pay you for the trouble you will have.

I stated at the commencement of this letter that I would explain as to a holder for the plate while developing; this little sketch will convey the idea without much explanation,



tion, so that you can easily make your own:—Procure a piece of one-eighth brass wire thirty inches long; draw over it a piece of rubber tubing of the smallest size; bend the wire the shape as drawn, and where it meets at A wrap it well with eord. It is light, cheap, effective, saves the hands, and holds the plate well, as can be seen by the cut.

Correspondence.

NON-ACTINIC PAPER.

SIR,—I have tried several kinds of non-actinic varnish, and also various shades of yellow glass in my dark room, but I find that the "Cornhill Paper," of which I enclose a specimen, is far better than any of them. One thickness only is required pasted on the window, and a flood of illumination is obtained without the chemical property of light.

I believe it is called the "Cornhill Paper" because the *Cornhill Magazine* is covered with it, at least, so the stationer I bought the paper of told me, but I have not had an opportunity of comparing them.

This paper would also be very useful for wrapping up dry plates.—I am sir, your obedient servant.

Wootton Bassett, Wilts.

WILLIAM R. CHURCH.

PS.—If any of your readers would like a specimen, I will send it on receipt of a stamped directed envelope.

COL. WORTLEY'S COLLODIO-BROMIDE PROCESS.

DEAR SIR,—I have for some time past been experimenting with the collodio-bromide process, both according to the formula of Mr. Carey Lea, and that of Mr. Cooper, Jun.

The former, with excess of silver, has given me the best results, and I therefore read with much interest in the *News* the paper of Col. S. Wortley, No. 665, Vol. 15, promising, as it seems to do, a great accession of sensitiveness.

But as one at least of the passages in that article appears to me to be rather obscure, and that upon a point of vital importance to the process, may I trouble you, if possible, to explain its meaning? It is said at page 293, left-hand column, that to sensitize 1 ounce of the collodion 16 grains silver dissolved in 3 drachms alcohol must be added. Now, what I wish to know is whether the 3 drachms of alcoholic solution of silver are to be added to 1 ounce or to 5 drachms of the normal collodion. If the former, then the sensitized collodion will contain only 11 2/3 grains for 1 ounce, and that would be no stronger than Mr. C. Lea's; if the latter is intended, it would make the collodion very thin.

Again, I might refer to the apparent discrepancy in the direction regarding the proportion of acid. It is directed that 9 minims of the nitrate hydrochloric acid are to be added to 10 1/2 ounces. Now, if the proper proportion is 3 minims to

2 ounces, this quantity of collodion would require at least 15 minims. A word or two from Col. Wortley in reply, in your Correspondents' Column, would greatly oblige yours respectfully,

J. C. BURRELL.

Sydney, N. S. W., 6th September, 1871.

[We have before replied in "Answers to Correspondents" to similar queries. Perhaps, as the doubt has occurred to others, Col. Wortley will give an authoritative explanation.—ED.]

Talk in the Studio.

DESTRUCTIVE OUTRAGE IN MAYALL'S STUDIO, AND SUICIDE.

—We find in the daily papers of Monday last the following paragraph:—"For about twenty years past Messrs. Mayall, the well-known photographers, of Regent Street, have had a man named Henry Newman in their employ, but as he had latterly become very neglectful in his duties, he received notice to leave, the notice expiring on Saturday last; but he was informed that if he wished to go into business on his own account out of London, Messrs. Mayall would assist him. On Sunday Newman went to Messrs. Mayall's studio, being admitted by the housekeeper, and, no doubt, through revenge at being dismissed, with a hammer smashed the whole of the valuable lenses attached to the different cameras, and, with a knife, cut about and destroyed all the valuable backgrounds, the damage done not amounting to less than £500, and the loss, as far as the lenses were concerned, being irreparable, the manufacturer of some of them being now deceased, and one of them being celebrated in the photographic world. In one of the rooms some cyanide of potassium had been found to have been removed from the place where it had been deposited, and a hammer was also found, with which, no doubt, the lenses had been destroyed. On examination of the place, and a suspicion crossing Mr. Mayall's mind that the damage had been done by Newman, he went to Newman's residence in Buckingham Street, Great Portland Street, and found that Newman, shortly after leaving his studio, had committed suicide, no doubt having taken some of the cyanide of potassium. The matter is in the hands of the police, who will further investigate it." Disastrous as such a misfortune is, the writer of the paragraph here seems to have exaggerated one point a little. The loss in lenses can scarcely be irreparable. Fortunately for Messrs. Mayall and their sisters, the progress in photographic optics gives the lenses of the present day superiority in many points over any manufactured years ago." Mr. Mayall has, since this paragraph appeared in the daily press, written to point out that the statement in regard to the lenses was exaggerated. At the inquest since held, from the evidence of Mr. John Mayall and other witnesses, it appeared that deceased had been in their employ twenty years, and had latterly been very unpunctual to his time. About eighteen months back he was attended by Dr. J. Hogg, of Bedford Square, who found his illness was occasioned by drink. After that he became morose and sullen, and worse in attending his duties, and Mr. Edwin Mayall gave him notice to leave, which expired on Saturday last, and he left saying he had got a berth of £2 a week. On Monday morning on going into the glass room several of the backgrounds and photographic apparatus were found ripped up as if with a knife. A bottle which had contained four or five pounds of cyanide of potassium was found with the cork out, and one of their men named Charles said deceased must have taken the cyanide. After searching, two of the lenses were found smashed—one worth £80, and the other worth £110. On going to the deceased's address, 14, Buckingham Street, Marylebone, and to his apartments, he was found lying on the bed dead, several bottles being on the floor, and a cup which had contained cyanide of potassium. Mr. J. B. Shephard, surgeon, stated he was called to see deceased on Monday morning, and found him exceedingly pale and quite insensible, and he believed he had been taking cyanide of potassium. He died shortly afterwards, and on making a post-mortem examination, he found the state of the stomach and intestines such that there was no doubt the deceased had died from the effects of poisoning by the cyanide of potassium. The jury returned a verdict that the deceased had destroyed himself, being at the time in an unsound state of mind.

NEGATIVE RETOUCHING.—We have received from Mr. C. Halpen a box of his "Retouching Medium," which consists of a powder, to be applied with the end of the finger to the glossy

varnished surface of the negative. By means of a little gentle friction a dead surface is secured, upon which a lead pencil bites admirably. The retouching medium appears to serve the purpose for which it is intended very efficiently.

SIXPENNY PHOTOGRAPHS.—"What do you look on as the greatest boon that has been conferred on the poorer classes in later years?" said a friend one day after expatiating on the rival claims of schools, missions, shoe black brigades, and a host of other philanthropic efforts for their assistance. I am afraid I sunk in his estimation when I answered, "Sixpenny photographs." But any one who knows what the worth of family affection is among the lower classes, and who has seen the array of little photographs stuck over a labourer's fireplace, still gathering together into one the "home" that life is always parting—the boy that has "gone to Canada," the "girl out at service," the little one with the golden hair, that sleeps under the daisies, the old grandfather in the country—will perhaps feel with me that in counteracting the tendencies, social and industrial, which every day are sapping the healthier family affections, the sixpenny photograph is doing more for the poor than all the philanthropists in the world.—*Macmillan's Magazine.*

CLEANING GLASS VESSELS IN WHICH PETROLEUM HAS BEEN KEPT.—In Dingler's *Polytechnisches Journal* the following method is given for this purpose:—"Wash the vessel with thin milk of lime, which forms an emulsion with the petroleum, and removes every trace of it, and, by washing a second time with milk of lime and a small quantity of chloride of lime, even the smell may be so completely removed as to render the vessel thus cleansed fit for keeping beer in. If the milk of lime be used warm, instead of cold, the operation is rendered much shorter."

TO DYE PAPER WITH ANILINE COLOURS.—"A German chemist recommends for dyeing paper with aniline colour," says the *Chemical Review*, "to change the same, before using, into aniline pigments, for which purpose he recommends the use of such aniline dyes only as are soluble in water. To dye about 100 lbs. of stuff a pink shade, dissolve about 1½ ozs. of magenta in one quart (we think two quarts would be better) of boiling water; then filter, and add about 1½ ozs. of spirits of salts to 20 lbs. of China clay; mix well together until the whole has been evenly dyed, then add this dyed China clay to the pulp. He mentions the use of starch together with the China clay, but as far as we know, for common papers, where the chief consumption of magenta lies, starch is not employed. For tinting paper he states that violet, especially where much wood pulp is used, exceeds most of the aniline dyes in producing a bright, white tint. He recommends also, as very useful colours for dyeing paper, magenta, blues, Bismarck brown, &c.; but all the yellow dyes and cartholic colours—as, for instance, coraline, &c.—are not adapted for these purposes. Iodine green and aniline black have been tried in this country, but, to our knowledge, no satisfactory results have been obtained by the paper manufacturers up to the present time."

To Correspondents.

HYDROCHLORIC.—The exhibition in Conduit Street will be free to the public from the 15th of this month every day except Saturdays, on which days one shilling admission will be charged.

H. GREGSON.—Mr. George's stoves are manufactured and sold by Farwig and Co., 36, Queen Street, Cheapside.

FRANCIS GUY.—A description of the working details of photo-lithography, by a practical man, appeared in our YEAR-BOOK for 1857; and a very full account of photo-lithography and photo-zincography appeared in a series of articles in our 12th volume. There is no practical work on the subject. Sir Henry James's work is the only separate volume on the subject; but it does not contain definite practical information. The price is 12s. 6d.

W. W.—You may use the paper without risk. Arsenic is only used in producing bright greens.

HONESTY.—It is not safe to use any kind of gas stove without a flue in the printing room, as the products of combustion would be decidedly injurious. The only gas stove we know which is altogether suitable for the studio or operating room is the Calorigen, which has been recently referred to in our pages. 2. Most of the toning baths, when used too soon after mixing, tend to bleach the print a little. When a toning bath is first mixed a trace of free chlorine is often liberated, and this tends to bleach the image.

CENTRA.—The black spots to which you refer, and of which you send us an example, are undoubtedly in the paper, and are probably due to minute particles of iron entering the paper pulp at the time of its manufacture. Occasionally similar metallic spots will arise from other causes. Mr. Bovey has pointed out that spots of reduced iron on the negative, probably derived from the developer, and not isolated by the varnish, will produce similar spots; but in such case the black spot is on the surface of the print, whereas these in your example are as visible at the back as on the face of the print, and are clearly *in* the paper. 2. Mr. Bruce is very successful with the Obernetter paper. With care it may be "spotted out successfully." A little gum should be added to the colour. 3. We quite agree with you as to the common cause of streaks. They usually appear in autumn, when the weather is getting colder, and are due to immersing the plate in the bath just as soon as in warmer weather, instead of allowing more time for the film to set. In the case in question our correspondent stated he was certain that his trouble was due to the bath.

MAYER.—In our experience a cadmium collodion used before it has acquired ripeness by age tends to the production of fogged pictures; but we have not verified in our own practice the notion that the bath was injured by the use of a collodion containing cadmium salts. 2. Of course there will be appreciable loss of definition if a lens of larger diameter but the same focus be employed; but it may be that the loss of definition will not be found very serious. If a large lens stopped down to the aperture of the small lens be employed, nothing will be gained in illumination, but, possibly, improved definition may be secured. Illumination always bears a definite relation to aperture and focus; definition depends on these and on the construction of the lens. We have looked with interest for a communication you promised some time ago.

ASHTHEAD.—It is, we believe, generally a home-made affair, and consists of a piece of swan's-down flannel tied to the end of a strip of glass.

LAMB AND Co.—Pepper's "Cyclopædic Science Simplified," published by Warne and Co., contains some details of the mode of producing the ghost illusion.

EXCELSIOR.—The use of your cabinet lens for card pictures would ensure excellent definition, the only drawback consisting in the fact that, when a great distance is necessary between sitter and lens, it is sometimes difficult to obtain perfect brilliancy, the amount of illuminated atmosphere between sitter and lens producing, in most states of the weather, a misty effect analogous to fog. This may be overcome to some extent by judicious management; and you need scarcely fear this in using a lens of eight inches focus; and we should, therefore, prefer this to the use of a lens of six inches focus. 2. You will find nine feet at the eaves, and thirteen feet or fourteen feet at the ridge of a studio of twelve feet wide, give capital proportions. The width is quite sufficient. 3. The D lens is more rapid than the rapid rectilinear; but some portrait lenses of the latter construction, of which we have recently heard, are very valuable. Enquire of the maker. 4. A sitting of twenty seconds is not long at this season of the year. 5. We regret that our engagements do not permit us to assume the responsibility of examining and reporting on articles offered for sale in our columns. The maker of the lens will verify it for you.

M. R. D.—There are various modes of removing silver stains from cotton tissues; that to which you refer, with chloride of copper, is as follows:—The tissue is to be afterwards washed with a solution of hyposulphite of soda, and next thoroughly washed with water. From white cotton and linen tissues nitrate of silver stains are more readily and effectively removed by applying dilute solutions of permanganate of potassa and hydrochloric acid, followed by washing with hyposulphite of soda solution, and rinsing in plenty of fresh water. By these means the use of cyanide of potassium is rendered unnecessary.

J. L.—Ammonia sulphate of iron is less liable to oxidation than the ordinary salt. It is said that protosulphate of iron is absolutely preserved, and kept from even the very least trace of oxidation, by placing with it a piece of camphor wrapped in clean and dry paper.

GAMMA DELTA.—There is nothing unprofessional in producing and selling enlarged portraits of a popular candidate during an election, or at any other time when circumstances bring such portraits into demand. 2. We cannot tell you the cost of producing lithographs. 3. A lithographic copy of a copyright portrait is a piracy, and its production illegal. 4. The value of a negative entirely depends on circumstances, and may vary from one guinea to fifty or more. The process of photo-mechanical printing conducted at the Auto-type Company's establishment is very excellent, one of the best processes of the kind we know.

W. T. W.—Thanks. Either "Hints on Landscape," or "Experiences with Albumen Coatings."

(Several Correspondents in our next.)

THE PHOTOGRAPHIC NEWS.

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THE PHOTOGRAPHIC EXHIBITION.

THE exhibition of the Photographic Society opened with the usual conversazione on the evening of Tuesday, November 14th, in the Architectural Gallery, Conduit Street, where, notwithstanding the unfavourable state of the weather, a large gathering of lovers of the art assembled to see the photographs and each other. The social, informal character of the reunion, the excellence of the arrangements, and the fine character of the display, all tended to make the evening an unusually pleasant one.

It would, perhaps, be unreasonable to expect at this period of the history of photography a marked advance in each year's exhibition. Definite steps of improvement, challenging recognition at once by their striking and decisive character, can scarcely be expected in each year's display in Conduit Street. In many respects, the general impression conveyed by a cursory examination of this exhibition is that it is very like that of last year, but somewhat larger: no better, and no worse. A more careful inspection, however, renders very definite progress apparent. Whilst nowhere and in no respect are the contributions inferior to those of last year, there are many which are decidedly better. The best men probably have not much exceeded themselves—or rather, their former work—because it is difficult, it was difficult, to go further; but in many cases second-class photographers have come distinctly forward into the highest ranks. Some who were before distinguished by high mechanical excellence have acquired the higher graces of good art; some whose work displayed fine artistic feeling, but slovenly manipulation, have acquired more technical perfection. The issue is that whilst on this occasion there are fewer pictures standing out boldly from the rest, claiming unquestioned pre-eminence, and acquiring what may be termed a sensational popularity, there is a higher level of general excellence than at any former exhibition. We missed some names from the catalogue which, in former years, have been associated with high-class work, but, *en revanche*, we have new names in connection with pictures which could not be well spared without injuring the exhibition. There are upwards of one hundred and thirty contributors, of whom not more than about one-third are members of the Society, a fact which suggests, on the one hand, that members are remiss in contributing, and, on the other, that the Society and its operations prove a boon to a large number who have not yet joined its ranks. The work of the hanging committee, always a thankless task, has been done with much discretion, and will, we think, give general satisfaction.

One of the first features in the exhibition which strikes us is the illustration of high ambition and rare skill in amateur portraiture. As a rule, landscape photography

is the favourite pursuit of the amateur; portraiture is generally left to professional hands, few amateurs caring for such work, and still fewer excelling in this branch of the art. With the exception of Dr. Diamond, who has excelled in every phase of photography, and whose portraiture used to compare favourably with the work of most professional photographers, we do not remember any examples of importance produced by that important section of photographers who pursue the art as a labour of love only. Lake Price, Roger Fenton, Col. Wortley, Mrs. Cameron, and some others who have devoted themselves considerably to portraiture and figure studies, by the publication and sale of their works assumed at least a quasi-professional position. In the present exhibition, occupying the place of honour, and commencing the catalogue, are a score of figure subjects by Mr. Crawshaw, of Cyfarthfa Castle, some of whose works we recently noticed. These vary from whole-plate size to super-life-sized heads on plates twenty by sixteen. In all cases the technical qualities are admirably perfect, and in many the art qualities are of very high order indeed. Even in the heads of life-size taken direct, which, as we have before remarked, are rather examples of what can be done than of what it is desirable to do, there are singularly fine qualities. The modelling is perfect, and the texture soft and delicate, quite free from the rugose coarseness which we are accustomed to see in heads of such a size: the hair does not look like wire or strands of hempen rope, as we have often seen it in similar pictures. And these qualities are due quite as much to the perfection of the photography as to retouching upon the negative. The figures of less proportions, however, have the highest pictorial qualities, and please us best. All these combine varied excellences of a technical kind, varied forms of art excellence. Very brilliant, they are, at the same time, exquisitely delicate, soft, and perfectly modelled; perfectly solid and round, and full of true texture. "As Clear as Morning Roses newly washed with Dew" (No. 20) is a perfect gem, both in conception and execution. "Disdain" (No. 2) is a charming picture, admirably conceived and arranged; the expression is finely rendered, as far as such a sweet face is capable of the hardness of disdain. "The Smuggler" (No. 10), and "The Keeper" (No. 15), are admirable renderings of character, and capitally vigorous photography. The series throughout, to which we shall return again—for in this notice we can only glance at the work present—forms a valuable contribution to the exhibition, and will well repay a very careful study.

Mr. Robinson's "Bridesmaid," which we have already described, forms another centre of attraction on the same wall. Mr. Blanchard, who would find it hard to surpass his contributions to the last two years, sends half-a-dozen 16 by 12 portraits, which show that he has striven, and

not unsuccessfully, to go beyond his former work: his noble portrait of Mons. Adam-Salomon will be seen by many photographers with much interest. Mr. Slingsby, of Lincoln, contributes half-a-dozen splendid portraits of very large size, in which, notwithstanding the excellence of former contributions, he quite eclipses himself. Mr. Marshall Wane contributes some exceedingly charming 10 by 8 portraits possessing unusually fine qualities. Mr. Burgess, of Norwich, sends some very fine photo-crayons, and Messrs. Bullock Brothers, of Leamington, some fine portraits in porcelain. Mr. Faulkner's studies of children seem more charming and more full of variety than ever. Some very large cameo-medallion portraits by Mr. Prestwich are well worthy of attention. A series of 10 by 8 Salomoneseque portraits of dramatists, actors, and others in public life, by Messrs. Fradelle and Leach, will attract attention: they possess many good qualities, but somewhat lack repose. Some exceedingly fine examples of portraiture are exhibited by two ladies—Misses J. and M. Davison. We hail with pleasure the contributions of ladies to the Exhibition, especially when their work may safely challenge comparison with much of the best in the Exhibition. We find, also, some work of very high excellence in every way by another lady—Miss Pritchard—whose charming studies of children photographers are already familiar with. Mr. Lombardi, of Brighton, sends some very delicate and pleasing portraiture. Dr. Wallich has fine portrait studies. Messrs. Downey, Vandyke and Brown, Fox, Ashdown, Elwell, Knight, and others, send fine portraiture, to which we shall refer in detail at another time.

Genre subjects and character studies are not so numerous as on some former occasions. Mr. Rejlander sends some capital examples in which he maintains his high position as *facile princeps* in the photographic rendering of a thought. Mr. A. Diston has some capital little compositions. Two large hop-picking scenes, by A. and J. Bool, are as excellent as they are novel; and it is difficult to say whether their merit as landscapes or as groups of figures is most worthy of admiration.

In landscape the exhibition is very rich. Messrs. Robinson and Cherrill contribute a series of 16 by 12 pictures, which contain some of the finest poetical landscapes we have ever met with. The sky in every picture is a charming study in itself; and it in all instances composes so perfectly with the landscape that it is difficult to conceive—what is, nevertheless, probably the fact—that the harmony is due to the artist's selection of the sky, and not to the arrangement of nature. "A Quiet Evening" (42), and "Repose" (47), are gems to which we commend special attention. A series of charming landscapes with well-known characteristics are at once recognized as those of Mr. Bedford; and on examination are found to bear the name, not of Francis Bedford, but of William Bedford: a pleasant fact, suggesting how admirably and perfectly the son preserves the specific excellence by which the works of the father have attained such a high and lasting reputation. Mr. Earl, of Worcester, again exhibits some very large and fine combination landscapes, consisting of good scenery admirably treated. Mr. W. D. Sanderson exhibits some very large views in the lake district, by the collodio-albunum process, which challenge universal admiration. Mr. R. Manners Gordon exhibits four cabinets of Devonshire scenery (311-14), which are perfect gems. Mr. Sydney Smyth has four landscapes, which are admirably perfect in every way. Mr. R. Mitchell has many fine landscapes; one on a dry plate, "Sunrise in Winter" (145), is full of colour and poetry. Frank Good has a number of architectural and landscape subjects which fully maintain his well known reputation for excellence. The fine landscapes by Lieut. Abney, H. Baden Pritchard, Vernon Heath, H. Cooper, F. Hudson, M. Whiting, F. R. Elwell, W. J. Stillman, F. Beasley, J. W. Price, E. C. Buxton, W. J. A. Grant, R. Tudor Williams, T. M. Brownrigg, W. G. Coote, and many

others demand a detailed notice, which must be reserved for another week.

A fine display of coloured work and reproductions will attract much attention, but we must delay our notice for the present. The fine collection of carbon prints by the Autotype Company; the photo-mechanical prints of Woodbury, Sawyer and Bird, and the Heliochrome Company; the engravings of Henderson, Barnes, Bailey, and others; the photographs of Paris after the savage attempts to destroy it by foreign and domestic foes; the noble views in Moscow and other parts of Russia; the sketches of Chinese life and manners, by Mr. Sanders, together with various foreign contributions, transparencies, specialties, and apparatus, must stand over for attention in future articles.

PHOTOGRAPHY IN THE TICHBORNE CASE.

IN the great Tichborne trial photography has played an unusually prominent part, and the value of photography as a means of identification has been the subject of amusingly varied, and, for the most part, uncomplimentary, opinions. Some witnesses confess themselves unable to see likenesses in photographs at all, and others hold their value for such purposes as very trifling indeed. Notwithstanding this professed low estimate on the part of witnesses and counsel, much is made at times to depend upon the evidence of camera pictures, and upon such occasions a lamentably imperfect acquaintance with their characteristics is frequently manifest. The other day a witness was closely questioned by the Court, as well as by counsel, as to the discrepancy in two Daguerreotypes of the claimant, alleged to have been taken at the same time in South America. On producing the portraits, an apparent difference in costume existed. In one, the sitter had on a waistcoat, whilst no waistcoat was visible in the other; and in one, the shirt apparently possessed small stripes, whilst in the other no stripes could be seen. The conclusion which seemed to follow from these discrepancies was that the portraits had been taken at different times, notwithstanding the unwavering evidence of the witness to the effect that they were both produced at the same sitting. The judge, jury, and advocates commented upon, and endeavoured to elicit a satisfactory explanation of, the enigma. The witness himself saw the alleged variations, and thought the apparent absence of a waistcoat in one was probably due to the waistcoat having been unbuttoned and turned back. The *Daily Telegraph* communication on the subject suggests the importance of calling in photographic experts in such cases, and thinks that some light might have been thrown on the subject by an experienced photographer, who might have referred the discrepancy to the process of fading too common in photography, by which delicate shadows in Daguerreotypes vanish altogether. We fully agree with the suggestion of our contemporary that it is probable an experienced photographer might have cleared up the difficulty—not, however, by explaining the process of fading. Daguerreotypes do not fade, although they become, at times, covered with a tarnished film, which may be removed, although it presents to the unlearned all the effect of fading. The probable explanation of the discrepancy between the two pictures is, however, a technical one. Without having seen the pictures, but judging from the published evidence and comments, we think it likely that the difference in appearance of the portraits, although taken at the same sitting, always existed. The witness explains that the waistcoat was a white one. Practical Daguerreotypists will at once see the probability of all definition having been destroyed by "solarization," an excessive action of light, which readily buries out all trace of fold or detail in white drapery. This would easily merge the light waistcoat and shirt in one blank mass of white, and suggest the absence of any waistcoat at all. The same process would obliterate the fine lines in the shirt, and make it one unbroken patch of white, without

line, crease, or fold. If, in one of the portraits, the sitting were correctly timed, the fine lines and other detail in the shirt would be perfectly rendered, and the white waistcoat would be perfectly made out as distinct from the shirt. If the other were a little over-exposed, the white drapery, such as shirt or waistcoat, would suffer first, and become solarized, although darker draperies might be very little injured. The glaring light from a South American sun would very considerably conduce to the production of solarization, and an experienced Daguerreotypist would have been able to determine at once whether such were the fact or not. The somewhat lighter tint and fuller detail of dark draperies, and the bluish white of the lighter tones generally, without much detail, and sometimes burnt into one chalky mass, without half-tone or variation of texture of any kind, would furnish unmistakable evidence to the educated eye of the Daguerreotypist—though not necessarily to that of the modern photographer—of the existence of solarization. The fact admitted by the witness, that one of the portraits was considered by the artist an imperfect one, and, as such, given to the servant of the sitter, gives increased probability to the supposition we have indicated, a solarized picture being rarely sent out voluntarily as a perfect portrait. In any case, the possibility of such an explanation of a discrepancy which excited much interest in Court is sufficient to suggest the importance of the suggestion made by our contemporary as to the necessity for employing technical experts to elucidate such questions.

COLLODION WITH IODIDE OF POTASSIUM.

For a variety of reasons the iodide of potassium has been a favourite salt with the manufacturers and users of collodion. It aids the securing of intensity and brilliancy without interfering with sensitiveness or with delicacy of result, and retards the drying of the excited plate. Its difficulty of solubility in collodion has been its chief drawback. The *Photographische Correspondenz* recently devotes an article to the fact, well known to some collodion makers, that the double iodide of potassium and cadmium formed by triturating the potassium salt with a cadmium salt in preparing the iodizer materially removes the difficulty of using iodide of potassium. The writer observes that although the iodide of potassium possesses many advantages in connection with collodion, its admixture as a sensitizer takes place but in a limited degree only. Its tardiness to dissolve is generally the reason why other iodine salts are preferred to that of potassium, a large addition of water, or the employment of weaker alcohol, being necessary to effect its perfect solution, although, no doubt, the tendency of the collodion film to dry too slowly is the more important drawback; for this latter defect leads to the existence of dry spots upon the plate and the repulsion of the silver solution in the first instance, and of the developing liquid subsequently, if an appreciable admixture of alcohol has not been made to the developer. In summer a collodion of this kind is comparatively easy of application, but for winter employment it is almost useless, as it is impossible to obtain really first-rate results therewith; it is then necessary to mix it with another collodion, exceedingly rich in ether, and in doing this one often runs the risk of rendering the liquid turbid by the separation of iodide of potassium.

There is, however, one simple way of overcoming all these difficulties, so that those who may not have already worked with iodide of potassium collodion will soon learn to like it, all its advantageous properties being fully brought out. Leaving out of consideration the fact that a collodion of this kind may be preserved for six months together, and withstands decomposition even in the hottest weather better than others, it affords a means of imparting to the most delicate negatives deep shadows of

a clear and uncovered nature—a by no means to be undervalued quality. Another advantage may be named: when a sensitizing bath begins to present indications of fog, the disposition to do so always shows itself least with an iodide of potassium collodion.

To return to the subject, however, and to show in what a surprisingly simple manner the difficulty of readily dissolving iodide of potassium may be overcome without the employment of a weaker alcohol or a larger dose of water, it is recommended that the following experiment be made.

In the first place, take 8 grammes of iodide of potassium, 16 grammes of iodide of cadmium, and 8 grammes of bromide of cadmium, and try to dissolve them in the strongest alcohol; for this purpose 600 to 650 grammes of liquid will always be found necessary, if the least trace of iodide of potassium is required to be dissolved, and this indifferently whether the iodide of potassium is used alone or with the other salts. Afterwards take another quantity of 8 grammes of iodide of potassium, and after rubbing it down in a mortar, add only 120 grammes of alcohol; rub round with the pestle, and then allow the liquid to settle; pour off the clear liquid presently into a narrow-mouthed cylindrical vessel, and then put into the mortar the bromide and iodide of cadmium, adding them to the residue, and the whole will then be found capable of dissolution in 140 grammes of alcohol. Before, however, the second solution is added to the first, it is well to put into the vessel another 10 grammes of absolute alcohol to act as medium, and to prevent the precipitation of any of the salt held in solution.

In this way only 270 grammes of alcohol are employed in the solution of 32 grammes of salts, instead of 650 grammes as heretofore; there remains, therefore, sufficient alcohol for the preparation of the normal collodion, and to allow of any desirable variation being made in its composition. Thus, if an excess of alcohol or ether is desired, the same is easily secured, and in this way a collodion prepared suitable for hot, as for cold, temperatures—a condition scarcely capable of fulfilment when the 32 grammes of sensitizing salts require as much as 650 grammes of alcohol for their perfect dissolution.

It is worthy of remark how different the first quantity of iodide of potassium behaves to the residue. The 120 grammes of alcohol dissolved about one half of the 8 grammes in the first instance, and, therefore, 240 grammes would seem to be required to dissolve the whole. Such is, however, not the case, for the second half requires almost double the amount of liquid for its dissolution, and it is only upon the addition of the other salts that the difficulty is removed.

In reference to the above remarks the editor of the *Correspondenz* points out that the improved solubility of the iodide of potassium in the presence of iodide of cadmium is due to the formation of the double compounds, and refers to Dr. Van Monckhoven's article on the subject, which appeared some time since in the PHOTOGRAPHIC NEWS.

ON THE KEEPING OF SENSITIZED PAPER.

WE have recently published one or two articles proposing methods of preparing sensitized paper for keeping by using a large proportion of citric acid in the silver solution. The *Photographic Bulletin* says:—

"This plan was first suggested by Mr. M. C. Lea, who advised the use of tartaric acid.* Upon trial we find that the paper kept well and printed finely, but toned excessively slowly.

"It is seldom that a new fact observed and published does not bring in its train diverse applications, and that the subsequent uses of it have a more extended and

* Citric acid for the same purpose was tried by Mr. Hannaford a dozen years ago.—ED. PHOTO. NEWS.

important interest than the original discovery. Now, in this method of keeping paper after silvering, all the modes of preparation hitherto published are superseded by a new mode of using the alum.

"While Mr. Hull was making experiments on the use of alum in the silver bath, he suggested to Mr. O'Neil that floating the paper upon a solution of alum after silvering might be productive of better results, as far as keeping was concerned. I am not advised whether Mr. O'Neil adopted this suggestion, but he did what is better. Having some paper left, after printing for the day had ceased, he passed it through a strong solution of alum. Finding this treatment to be effective, he continued its practice, and informs me that he has kept paper perfectly well in hot weather for twenty days. I took an early occasion to try the experiment, and must record here my opinion that it is the best mode of treatment. The paper is silvered and dried, and then immersed for a moment in a saturated solution of alum in cold water, and dried again.

"The great advantage obtained by this process is, that it is not necessary to print the paper in an atmosphere of ammonia. Simply fusing with ammonia is alone necessary. As secondary considerations, it may be mentioned that the paper prints very quickly, and tones with perfect ease."

FRENCH CORRESPONDENCE.

THE Photographic Society of Marseilles recommenced its sittings on the 8th inst., and will now meet regularly on the first Wednesday of each month. It is truly gratifying to see this active Society again in working order, for the valuable services it has from time to time rendered are indisputable. Its indefatigable founder and secretary, M. Leon Vidal, is exceedingly sanguine of the progress which will be made during the present year, and already, during the short space of time that has elapsed since our disasters, much has been done in forwarding the new art; and, thanks to the zeal and energy of M. Vidal, photography has received at Marseilles a very happy impulse. The exhibition opened in the Hall of *Cercle des Arts* has been very numerously attended, and the address delivered by M. Vidal proved a great success. In the presence of these good tidings, it is to be hoped that increased vitality may be infused among photographers, and that we shall receive some interesting communications tending towards the general improvement of the art.

The official photographic establishment, which has existed now in Paris for some years, and which has been frequently called upon by the Tribunals of Commerce to arbitrate special litigations, has recommenced its regular duties. Composed for the most part of manufacturers, this syndicate can play a most important role in reference to the industrial interests of photography, and it is anticipated that this year its duties will be more defined and even better discharged than heretofore. Finally, the French Photographic Society has recommenced work, and held their first meeting this session under the presidency of M. Davanne.

M. Puech exhibited the wide-angle rectilinear lens of M. Dallmeyer, well known, doubtless, to the readers of the PHOTOGRAPHIC NEWS, but which, owing to recent events, has remained unknown to us at Paris. Several very conclusive and favourable experiments were made by M. Davanne, who placed the results thereof before the eyes of the Society. Thus he showed a picture obtained with one of these instruments with a focus of eighteen centimetres, the smallest stop but one—a very small aperture, therefore—being used for the purpose. The clearness of the image was very marked, and equally distributed, while the lines were throughout perfectly straight. The print measured twenty-seven centimetres long, and the original drawing was placed two metres from the front of the lens.

M. Davanne pointed out the very great advantages of an instrument of this kind, especially in the depiction of panoramas.

MM. Leon and Levy presented the Society with a collection of views taken in Egypt, a series that may be deemed one of the finest and most complete works yet produced by the camera. These pictures, which are of passable dimensions, and of artistic *format*, were executed by MM. Bisson jeune and Edouard upon dry plates prepared beforehand by MM. Leon and Levy according to a special process of their own. They form but a portion of the photographic souvenirs collected on the banks of the Nile by these two clever operators. The voyage was not completed under nine months, and one may form some idea of the expenses of such a journey when it is stated that the charge for boats, crew, and transport of baggage during the whole of that period amounted to 15,000*f*. But then it should be remembered that the collection represents a veritable monument of artistic value: it consists of many hundreds of negatives, some of large dimensions, others of *carte-de-visite* size, and others, again, in the stereoscopic form; and notwithstanding the very great difficulties that necessarily stood in the way of pursuing a work like this, the success which has attended the efforts of these gentlemen has been as complete as could possibly be imagined, and the unanimous sentiments expressed by the members of the Society the other night was to the effect that a more perfect photographic work had never been completed.

Doubtless the success here achieved will encourage photographers on every hand to adopt more extensively the use of dry plates. Not one negative is there in the collection of an inferior kind, and, nevertheless, the plates employed towards the end of the voyage had been prepared some nine months previously, and had, moreover, been exposed to the vicissitudes of an exceptionally trying climate. The result is certainly worthy the attention of all, and one can scarcely understand why it is that a process of this kind is so little practised in France. When, at the commencement of the siege of Paris, I undertook some photographic duties which I believed to be of use in connection with the defence, the working staff which I directed were in despair, from the fact that not one of the operators was capable of working a dry process of this kind. M. Berthaud fils, who gave me his kindly assistance, operated only with wet plates, and when, by experience, he began to learn the necessity, under the circumstances, of operating without dark tent and laboratory, he had no alternative but to study the preparation of dry collodion plates. I may mention that it took him but little time to make himself master of the process, and so satisfied was he with his results that, I believe, in future he will be loth to practise any other outside the studio. I hold, therefore, that I have rendered him an excellent service in return for the aid he gave me with so much zeal and intelligence.

M. Geymet has continued his experiments in colouring photographs, commenced some time ago, and he has arrived at some very satisfactory results. At the last meeting of the French Photographic Society he placed before the members a series of prints upon collodion chloride paper, coloured by chemical means, to which he has given the name *aquarelles photographiques*. By modifying the nature of the toning solution, he obtains tints of a very varied character, suitable for sky, trees, architecture, and foregrounds, so characteristic of those in nature as to produce a very agreeable effect to the eye. The pictures resemble very much chromo-lithographs, which just now are so eminently successful in commerce, and they will be able to contend advantageously with these from an artistic point of view. M. Geymet believes—and, I think, with reason—that there is here an industrial application of the art capable of fruitful development.

A propos the retouching of negatives, M. Geymet has shown me a method of preparing the film for working upon which succeeds perfectly. It consists in spreading upon the cliché a little gum mixed with borax; retouching may then be proceeded with in a very facile manner by means of a pencil of any description, even a hard one being suitable, which may be moistened to render it more black. The negative is subsequently varnished in the ordinary manner. In reference to the same subject, M. Davanne called to mind the circumstance that by taking a drop of alcohol upon the tip of the finger and rubbing therewith the varnished film lightly, the same will be rendered suitable for retouching.

I may again remind the readers of the PHOTOGRAPHIC NEWS of the subscription now being made for the purpose of rendering homage to the memory of the late Niece de St. Victor. Among the works of our unfortunate friend, the most successful, perhaps, were those destined to complete the work commenced by his uncle, Nicéphore Nicpce, in connection with helio-engraving. But yesterday a distinguished experimenter exhibited to me some attempts at engraving with bitumen of Judea, which may possibly definitely solve the problem so long before us. To testify to the worth of the nephew would be to render homage to the uncle, and after the unjust suppression of his name by M. Legouve, in that gentleman's recent circumstantial and solemn address, to which I referred in my last letter, it is but right that photographers should themselves protest against such a flagrant wrong. The whole world would profit by such a proceeding. ERNEST LACAN.

PHOTOGRAPHY IN GERMANY.

BY DR. H. VOGEL.

WOODBURY PRINTS IN GERMANY—AMMONIA LIQUOR FOR CLEANING PLATES—ON FUMING WASHED SENSITIZED PAPER WITH CARBONATE OF AMMONIA.

I RECEIVED two weeks ago a series of excellent Woodbury prints, and showed them to our Society. All the members were very much pleased with them, and Mr. Petsch, our celebrated photographer, asserted that of all the new mechanical photographic printing processes the Woodbury process gives by far the best results, only the difficulty of making fine vignettes with a quite white background is an objection. It is a curious fact that the Albert-type process gives such vignettes very easily, but even this process does not give the excellent rich shadows of the Woodbury prints. I must add that we see now in the shop windows of our art dealers a great many of Woodbury prints of the excellent drawings by Gustave Doré, the "Marseillaise," "Le Rhin Allemand," and "Le Chant de Depart." These drawings are very much admired and sold here, although the latter are painted only in praise of the French nation. If the French nation had had as good strategists as artists they certainly would not have been vanquished. I am constantly asked whether Mr. Woodbury would not set up a printing establishment here; I am sure he would succeed.

The last month I was in the Carpathian Mountains—a very uncultivated but picturesque region, in some parts similar to Switzerland, but not yet photographed—I was not fitted sufficiently with photographic materials, and as I experienced great difficulty in cleaning plates, I tried ammonia, and found that it was a first rate cleaning material—better than all others I have ever tried. The most dirty plate, moistened with some drops of ammonia liquor, and rubbed with a linen cloth, becomes clean in the space of a few minutes. Sometimes old plates with developed, and even varnished, pictures on them I have treated with ammonia, and cleaned them without any application of acid, in a short time. One advantage is that the ammonia entirely volatilizes.

I read with very great interest the article of your excellent contributor Mr. Baden Pritchard on the employment of washed silvered albumen paper, and that he has suc-

ceeded with my manner of fuming, which is by introducing a bag with carbonate of ammonia into the printing-frame. I have followed this plan some time for combination printing, and find it answer better than the ordinary way, because the paper never turns yellow. A very important point in this process is the good quality of the carbonate. It is, in general, a combination of single and double carbonates of ammonia. If the mixture is not kept in closed vessels the single carbonate goes away, and the residue (the double carbonate) will not act on the washed sensitized paper; therefore the powdered carbonate of ammonia used in this process must be as fresh as possible. The prints made in this way with fresh salt are the best I have ever obtained, and the tone is far superior to any I have produced on ordinary paper.

Berlin, November 1, 1871.

NOTES ON DURABLE SILVER PAPER.

BY FRITZ HAUGK.*

ALTHOUGH washed silver paper, whose employment I was the first to recommend in the *Photographische Zeitung*, has been received by many with much favour, still there have, nevertheless, been several complaints made respecting it. In the first place, it was hinted that the prints thus produced would only last but a limited period, owing to the minute quantity of reduced silver contained in them. This reproach was, however, soon withdrawn, for my paper did not, certainly, deserve it. Another complaint that was advanced, and with more reason, was to the effect that a yellow margin was observable round the outline of a vignetted picture. This margin does not occur in all papers, but, when present, imparts to the picture, it must be admitted, a very disagreeable effect, especially when the background is of a somewhat dark character. This defect it is that has caused many a photographer who has adopted the process to throw it up again, and to revert to the old method of printing.

Although the cause of this defect is to be sought in the paper itself, its appearance depends also, in great measure, upon the nature of the toning bath used, and this fact, I think, has hitherto been lost sight of. Papers that possess a tendency to develop the discoloured margin to which I have referred, are materially aided in this respect by the employment of strongly alkaline or acid baths, and the same paper treated in a neutral, or but slightly alkaline, solution, yields but slight traces of the fault, which, under some circumstances, disappears, in truth, altogether. In the preparation of the bath it is, however, by no means of indifference what kind of substance is employed for the neutralization of the solution, for some bodies are by far more instrumental in the removal of the defect than others. As the one most suitable for the purpose, magnesia alba should be employed,—the carbonate of magnesia of commerce—and I may say that since I have used this compound as an element of my toning bath I have been but rarely plagued with the troublesome phenomenon in question. The magnesia alba has often been cited as a suitable constituent of gold toning baths, but has, nevertheless, despite its valuable properties, received but very limited attention by photographers. The toning bath may, with its aid, be employed in a very dilute form; the solution tones quickly and surely, and the tint of the pictures is, moreover, not greatly affected by the action of the hyposulphite bath. Those gentlemen who are desirous of employing the magnesia toning bath in connection with washed paper prints should bear in mind not to over-tone the pictures, but to take them from the toning bath too soon, rather than too late, especially when they wish to secure brown tones.

As a rule, I prepare my gold bath according to the following formula:—

Double chloride of gold and sodim	...	24	centigrammes
Magnesia alba	...	24	"
Water	...	300 to 360	grammes

* De Narorscher.

After continued agitation for some time, the turbid liquid is filtered, and is then ready for use.

Considerable discussion has arisen in regard to the strength of the silver bath in which the washed paper is sensitized. I have for some time past employed a solution of 1 to 16 strength, and obtain results quite as good as those secured with a 1 to 10 bath. If one works with thinly albumenized paper, it may, indeed, happen, under these circumstances, that the film lacks brilliancy, but this is only the case, I find, when the paper has been floated upon the liquid for too long a period, as can easily be proved by experiment; a period varying from thirty seconds to one minute is amply sufficient to sensitize the albumenized surface. Addition of any foreign matter to the silver solution is quite unnecessary, as a bath of 1 to 16 is fully strong enough to coagulate the albumen.

As regards the fuming of the paper, I am of a different opinion to most gentlemen who have written on the subject. It has been said, for instance, that one can never fume too highly, or, in other words, that the treatment of the paper with intense fumes is better than the use of a weaker vapour. This I can only agree to conditionally. If delicacy and softness be required in pictures, then one must fume less in proportion, for by the emanation of too much ammonia hardness is easily produced. A practised eye will at once tell the difference between a strongly or weakly fumed print, and this difference is yet more apparent after fixing. For this reason I have given up to some extent the use of carbonate of ammonia in the printing pads. For reproductions, and occasionally for landscape pictures, the powdered carbonate of ammonia may be employed, but for portraiture, on the other hand, it cannot be generally used.

Recently the preparation of durable silver paper according to M. Ost's method has been again recommended, the mode of production consisting, as is well known, in floating the albumenized paper upon a silver bath strongly treated with citric acid. The original receipt for the composition of the bath was—

Nitrate of silver	...	...	...	1 ounce
Citric acid	...	...	...	1 "
Alcohol	...	...	...	1 "
Distilled water	...	...	...	12 ounces

Afterwards it was recommended to double the amount of ingredients, so that the solution should be twice as strong (the original quantity of water only being used), and paper treated in this bath does certainly remain white for a very long time, although it cannot compete, as regards its keeping qualities, in any way with washed paper. An apparent advantage possessed by this paper is the fact that it does not require fuming during the process of printing. This advantage is, however, but illusory, for, as M. Julius Kruger has only lately shown by his experiments, the fuming of paper, let it be prepared how you like, contributes in a marked degree to the permanence of the print.

M. Kruger remarks on the subject as follows:—"Several quarter sheets of albumenized paper from various makers were silvered in the ordinary manner, dried carefully in darkness, and exposed to pure ammonia vapour for the space of fifteen minutes. The whole number of papers were then put into clean water and well washed, and subsequently fixed, being immersed for ten minutes in a fresh hyposulphite bath of the strength of one to four. After they had been well washed, they were allowed to dry, and when perfectly desiccated were burnt separately in different saucers. The carboniferous residue of each sheet was then heated to redness, and the ash thrown into a test-tube, and finally treated with dilute nitric acid. The result was that in none of the ashes was the presence of silver to be detected, for the nitrate solution of the same remained in the nitric acid, as was proven by the addition of a few drops of bichromate of potash."

These experiments also prove that in the fumed and fixed albumenized prints no trace of albuminate of silver is present; this fact is of extraordinary weight as regards the

durability of the print, as it is just the presence of a trace of this compound in ordinary silver prints that forms one of the principal causes of the gradual bleaching and decay of most photographs.

HYPO OR CYANIDE FOR FIXING.

BY SAMUEL FRY.*

At various times, and with different degrees of authority, we have been advised to invariably use, or as invariably avoid, both the above agents, which are the only available ones for the fixation of photographic negatives.

Hypo is, undoubtedly, difficult to eliminate from any structural substance; and, when once absorbed into a collodion film, requires not only a large quantity of water, but very judicious application, to ensure its removal.

Also, the use of hypo repeated for fixation of negatives, whereby it is impregnated with the dissolved iodide of silver, as well as organic matter, render it even more difficult to remove. I remember a few years ago having occasion to use a number of negatives stowed in boxes some years before; it was discovered that a considerable number exhibited those too well-known cracks and reticulations for which no satisfactory explanation has ever been given; but this much is quite certain, that only those fixed with hypo exhibited these peculiarities, although the circumstances of their keeping and storage were identical.

But it is said that hypo-fixed negatives possess higher qualities of intermediate tone, and a greater range of delicate details, than when cyanide is used; but a very careful examination, extending over a great length of time, leads me to the belief that proper fixation with cyanide is not attended with any injury whatever, and that if two equal negatives are taken, and one fixed in hypo, and the other in cyanide, no one not previously informed could point out which was which. Repeated trials of their nature, extending over a great length of time, have led me, contrary to my previous view, to believe that cyanide is the right thing. It should be used as a bath, and the plates dipped in, and the strength recruited by addition of cyanide in lumps, for as the plates go in wet, no loss of quantity is found.

By all means avoid the practice of pouring on cyanide from a bottle or jug. The bath plan prevents the smell so often observable in places where it is used. I know right well it may be thought heterodox, to say nothing of retrogressive, to go to cyanide and abandon hypo, but I believe a careful inquiry into the matter will lead to the discovery that we have been entertaining a number of errors regarding the comparative value of hypo and cyanide. Many sum up the qualities of cyanide thus: It fixes at once, and, being very soluble, is removed with equal ease from the plate. It does not affect the quality of the picture, as may be proved by fixing one-half in cyanide, and the other in hypo. No difference can be detected in prints from such negatives. Of course cyanide is poisonous, but scarcely more so than our other chemicals—nitrate of silver, pyrogallie acid, bichloride of mercury, and, indeed, almost all the chemicals we use. As a rule, all chemicals employed in commerce are poisonous, and should be used with the care due to all such substances.

NOTES ON LANDSCAPE PHOTOGRAPHY.

BY DR. H. VOGEL†.

IN my previous notes (see PHOTOGRAPHIC NEWS, October 20), there was a printer's error in regard to the quantity of intensifying solution required for negatives; the amount used must, of course, always depend upon the character of the plate, for there are some pictures, obviously, which require no treatment at all in this respect. As an intensifier, the

* Read before the South London Photographic Society, November 9th.
† Photographische Notizen.

acetic acid silver solution is to be preferred to one containing citric acid, for the latter is decomposed much more quickly than the former, and blends with difficulty only, with the developer still clinging to the plate, if one desires to intensify without washing. The acetic acid solution flows very smoothly and easily over the plate. My formula for the intensifying solution is as follows:—

Nitrate of silver	...	...	...	2 parts
Acetic acid	...	...	...	8 "
Water	...	...	...	100 "

In regard to the silver bath, I find that for every square foot of collodionized surface, a quarter of an ounce of liquid is consumed, or about eight grammes, and in this is included loss from pouring, spilling, filtering, &c. For washing after intensifying there is required for every square foot about four pounds, or two litres, of water. Of varnish less is used than many operators may think. The expenditure per square foot is but 7½ cubic centimetres. And, finally, of albumen solution, for the preliminary coating of the glass plates, about 25 cubic centimetres are used.

It will, perhaps, be asked by some, why, in these mountain excursions, I do not prefer to employ dry plates, which recently have been so much improved. I frankly admit that the preparation of a series of dry plates according to Stuart Wortley's process is a very simple operation, and that the plates answer very well, although much depends upon the choice of a suitable normal collodion; but there is always a drawback connected with all dry processes, let them be as simple as you like, and this defect is one which cannot be obviated.

Wet plates we are accustomed to develop at once, and therefore the original can be compared with the picture; or, at any rate, we possess sufficient remembrance of the landscape to be able to judge how far the negative must be developed and intensified to bring out the details in accordance with the actual scene. If, however, the development is postponed for some time after the exposure, one has forgotten long ago the appearance of the original view. The possibility of judging of the natural truth of the picture has gone, and what would be accepted as a success in subsequent development would, possibly, be altogether condemned if an opportunity had been afforded to institute a comparison. It can, of course, be urged that dry plates may also be developed on the spot if desired. This is, of course, correct; but in this case, as much baggage and impedimenta are necessary as for the practice of the wet process, and the great advantage of employing dry plates vanishes at once. These are the reasons why I have not yet availed myself of the use of dry plates.

A few more remarks I must make in respect to the indispensable supply of water. In my last communication I praised the purity of the water at Tatra, which was, indeed, almost entirely free from chlorine. In some parts of the Carpathians, however, where there are chalk strata, the spring water is very full of chalk—so much so, indeed, that the citric acid and silver intensifier furnished a white precipitate, which attached itself to the plate and could not be removed. This circumstance formed an additional reason for the preference of an acetic acid intensifier. In many localities in the mountains there were points where no water was obtainable at all, and the same had to be fetched miles away. In cases of this kind it is my rule not to finish off the negative, but only to develop and intensify, without fixing. It is under these circumstances that four pounds of water per square foot will suffice, otherwise four or five times this quantity is necessary to fully finish the plate.

One very important condition of success in landscape photography is the correct duration of the pose. Where the contrasts of light and shade are very marked, the question of exposure plays a much more important role than in the studio, where the light can be modified at will, and where the contrasts may be rendered as delicately as it may be desired. Unfortunately, in this matter, no general rules can be laid down, for experience is the only true guide; but

even this is apt to lead one astray in a strange land, or at an unusual season, or with a new lens. It is always a matter of importance to know the capabilities of one's instrument intimately, and I make it a rule to be fully cognisant of the dimensions of the various stops with which the lens is furnished. If I have found out the requisite amount of exposure for one stop, I am then able easily to calculate the period for any other diaphragm. The exposures are in inverse proportion to the square of the diameter of the stop; that is to say, a second stop, half the size of the first, requires a period of four times as long for exposure, or, if but a third the size of the first, then nine times the length of exposure is necessary, the intensity of the light being the same under both conditions. In this way I have avoided many an error in regard to my exposures.

But it must be remembered that the intensity of the light varies with the time of day and with the season, as also with the weather; happily, however, in this respect, science does not altogether leave us in the lurch. My photographic manual contains, as an appendix, a table of the intensity of the blue sky for different days in the year, and for different periods of the day. This little table, to which but very few have paid attention, was to me of particular use in the estimation of exposures. For instance, it is set down in the table that the chemical intensity of light during July for three hours previously to and three hours after noon—that is to say, from nine a.m. to three p.m.—is almost the same, sinking only from 38° to 36°, so that the duration of exposures during the whole six hours would be about the same. Further, the table tells us that in September the difference is already much greater: the intensity is at noon 35°, at three p.m. 29°, at four p.m., or eight a.m., only 23°, but two-thirds only, therefore, that of noon; at five p.m. we have 14°, or rather less than half the intensity. It was in accordance, then, with these tables that I fixed my exposures. In the middle of September, at four p.m., for instance, I gave a pose one and a-half times as long as between eleven o'clock and noon; and at five o'clock, again, two and a-half times as long, and so on.

This simple tabulated statement proved, therefore, of great use, and those who establish data by means of well-exposed negatives in conjunction with the table will spare themselves many failures. Of course, the nature of the locality must always be taken into consideration at the same time. A forest landscape lighted only from the scanty rays that penetrate through the foliage necessitates, of course, a much longer period of exposure than a free and open scene. Thus, to quote a recent instance, I obtained in thirty seconds a well-exposed picture over the forest in the Dunajec Valley, while immediately afterwards a waterfall surrounded by wooded scenery was found to give an under-exposed picture after a pose of two minutes.

ON COLLODIO-BROMIDE DRY PLATES.*

BY ST. VINCENT BEECHER, M.A.

I AM almost sorry that I so hastily promised a paper on the above subject, for, although I had already done a good deal in the matter, I had never yet made all the experiments I desired; but I trusted to "time enough" for their completion, and, unfortunately, my professional duties have been so unusually severe as to leave me no single day at my disposal till the present week, and in that the weather has been as bad as November proverbially has it. I must ask you, therefore, to let this be only a first paper, trusting to bring hereafter before you my more mature experience.

In considering the desiderata in a dry-plate process I think they should take place as follow:—

1. Excellence in the final result. No good photographer would sacrifice this to a little greater rapidity in the plate, or ease in its preparation; but this must include certainty and good keeping properties.

* Read at a meeting of the Manchester Photographic Society, Nov. 9, 1871.

2. Subject to excellence, ease in the preparation and development of a plate is a property which, for ordinary work, I consider takes precedence of rapidity.

3. For many purposes, however, rapidity is absolutely necessary, and for all a very great desideratum. I cannot agree with many of our friends who say, "When you are out it matters very little whether you give an exposure of five minutes or fifteen." In very many cases it amounts to taking, or not taking, a picture. In interiors it is of vital consequence. With wide-angle lenses, where small stops are necessary, rapidity is of great importance; and from what we all know of the number of under-exposures we frequently bring home, I do think rapidity, even for ordinary landscape work, is a most valuable property in a dry plate.

Still, I desire to impress upon this meeting the fact that two kinds of dry plate may be very desirable, namely:—

1. A generally useful plate, not, perhaps, very rapid, but very certain, easy to make and develop, and a good keeper.

2. A very rapid plate for occasional use, even if it require special care in making and developing—which rapid plates generally do require.

Now, it appears to me that bromide plates possess, in an eminent degree, all the good properties above referred to. Excellent results can be got from them, they are very easily made, and are easily developed; they are very certain, and keep capitally; and, above all, they are susceptible of very great modification, from a slow and sure, to an extremely rapid, plate.

Then, again: every dry plate depends for its properties upon two elements—(a) the deposit of silver salt on its surface, and (b) the so-called preservative with which it is covered. In the case of bromide plates both these elements require to be well considered, for they modify one another a good deal. We will speak first of the deposit of silver.

It is a great advantage in collodio-bromide plates that the deposit is made from an emulsion, which is simply poured on to the plate exactly like common collodion, and that no silver bath is required in its production.

The emulsion is thus produced:—Into an ounce of good powdery collodion is poured from six to ten grains of bromide (generally a mixture of cadmium and ammonium, in the proportion of five to one or eight to two) dissolved in the smallest quantity of alcohol—say one to two drachms. This is now bromized collodion, and will keep any length of time.

It is sensitized by pouring into it certain proportions of nitrate of silver, also dissolved in the smallest quantity of alcohol (.820). Both the bromide and the silver are best dissolved by simmering over a spirit-lamp, as in the figure. No shaking is necessary; the motion of the fluid and the rapid ascent of countless bubbles are better than any shaking, and the salt at the bottom of the test tube speedily diminishes and soon disappears.* It should then be poured hot into the collodion, stirring it rapidly with a glass rod all the while.

The silver thus introduced into the collodion now forms an emulsion, which should stand not less than from twelve to sixteen hours before it is used. You will be surprised to see

how much thicker the emulsion becomes after standing than when first made, showing that perfect assimilation has not taken place between the bromide and silver until that time.

Now it is on the different proportions of bromide and silver in this emulsion that the several kinds of bromide

* I this morning dissolved fifty grains in an ounce of alcohol in five minutes without shaking or touching it.

plates depend, in the first instance, for their respective characteristics. Some contend for a small excess of bromide; some for a small excess of silver; others, with Mr. M. Carey Lea, for a considerable excess of silver; and others, again, with Colonel Stuart Wortley, for a very large excess. I wished, therefore, in the first instance, to try at least three varieties. I will give you each variety, with its characteristic properties, in turn.

My first emulsion contained bromide, six grains; silver, six grains. From the chemical equivalents of the two salts this gave a small excess of bromide. The emulsion was very thin—the plate very transparent. I expected a slow plate, very difficult to intensify. I was right in the one and wrong in the other respect. These plates, in this November sickly sunshine, required seven and eight minutes' exposure in a stereo camera (Grubb's six-inch lenses, quarter-inch stop); but they were very easy to develop, beautifully clear, would bear any amount of ammonia in the developer, and were intensified without silver. I send you round a specimen.

My second emulsion I wished to have thicker, so I made it thus:—Bromide, ten grains; silver, twelve grains. This should contain a very small excess of silver. The emulsion was much thicker, the plate far more opaque, the sensitiveness a little greater, and the picture more easily intensified and less liable to be black and white. With a good preservative I consider this proportion will make a really good plate—more rapid than collodio-albumen, and of excellent keeping qualities for general use; but not, certainly, a very rapid plate. I hand round a specimen.

My third emulsion was made with bromide, ten grains; silver, eighteen grains.

But here I must make a few general remarks. Before Mr. Carey Lea's addition of aqua regia (two drops to the ounce) to the bromized collodion, it was well known that any considerable excess of silver in the emulsion was certain to cause fogging. When he announced this addition, and its certain effect in preventing fogging, even with a large excess of silver, my first doubt was whether this valuable modification was the result of an acid film or of a chloride becoming mixed with the bromides. I believe that Colonel Wortley has ceased to use the acid, as injuring the film (a result I have not found), and that he uses instead some chloride which I do not know. If this be so, the clearness is the result, not of the acid, which is certainly not otherwise beneficial, but of the chloride, produced by the hydrochloric acid on some portion of the excess of nitrate.

But the great question which divides the photographic world seems to be as to the real excess of silver after this addition; not in the emulsion—for that is admitted—but in the washed film, when the preservative has been upon it; and the general opinion appears in favour of there being but a small excess after all. The hydrochloric acid converts a little (a grain or so), the water is said to wash out another portion, and the preservative to remove the last trace of free nitrate from the plate.

With all due deference to such great authorities as the editor of *The British Journal*, Mr. Carey Lea, and others, I venture to think that much less is removed by the two latter agents than is generally supposed. I find but a small trace of silver in my washing water. As a preservative I sometimes employ a simple wash of pyrogallic acid, one grain to the ounce, and it never discolours the film. I think, therefore, that only the silver in the extreme surface is removed, and that the excess is locked up, as it were, by the collodion.

I feel confirmed in this view by the fact that, whenever in consequence of a strong gum preservative being used large blisters are formed in developing, I have often found black, radiating crystals in the centres of the blisters, which I believe to be metallic silver. But, on the other hand, I do think that some portion of the excess of silver is removed in another way, viz.:—When the bromide and silver are nearly equal, the emulsion, after standing, is a beautifully

smooth cream, has no sediment, and does not require filtering, but may be used to nearly the last drop without leaving a speck upon the plate. But when there is a large excess of silver, if a plate be coated without filtering it will be covered with small white spots, which turn to black dots and comets in developing; hence the collodion must be filtered.

But what are these spots? I believe them to be small crystals of nitrate of silver, which form again and float a little while covered with bromide till they sink to the bottom or are filtered out. Having apparently nothing to do, the free nitrate gets here and there into idle corners, and combines in sufficient particles to crystallize and become a nuisance. I am, therefore, of opinion that the truth lies between the opposite views, viz., that there is a decided excess of silver floating in extreme division amongst the emulsion, and left by it in the film, although some portion of that excess may recrystallize and be filtered out. But be this as it may, there can be no doubt of the truth of Colonel Wortley's assertion that extreme sensitiveness is the result of a large excess of silver in the emulsion; and, I believe, the sensitiveness arises from its being in the film, exactly as it is and as it acts on the surface of a wet plate.

I very much regret that I have only had time to make one trial with my third and most sensitive emulsion; and in that I find that in consequence of not adding a sufficiency of aqua regia the plates would not intensify without fogging. But I send you round a specimen. It was taken in thirty seconds, with the same camera and at the same

time as the accompanying ^{Br. Sil.} 10 + 12 plate, which was exposed for eight minutes, or sixteen times as long. I think the result will bear a favourable comparison. But with this I also send you two halves of one of Colonel Wortley's new plates, which he had the kindness and courtesy to send me yesterday. These were exposed for only fifteen seconds, and they are, to my mind, although a little under-exposed, all but perfect.

Colonel Wortley has now adopted a new preservative, which is quite free from blistering; and whether it be owing to this, or to his other modification of the emulsion, I cannot say, but I must bear witness to the fact that his new plates will stand an amount of working up in the development and doses of ammonia quite as great as the slowest bromide plates. Indeed, these plates of Colonel Wortley's entirely disprove Mr. Carey Lea's statement in *The British Journal* of October 13th, page 486, that it is the pyro., and not the ammonia, which brings out the detail. I invariably pour the pyrogallie solution over the film before adding the ammonia, not only at the first wetting, but as often as I change the developer; but I am quite certain it is the ammonia which brings out the detail. By whatever means Colonel Wortley has been able to do this, I am obliged to confess it as the peculiar characteristic of his rapid plates that, whilst they require only a few seconds' exposure, they will stand bringing out with such quantities of ammonia as even the slowest bromide plates will hardly bear.

I have been hitherto a silent observer of the contest as to the strict correctness of the title, "Wortley's Bromo-Chloride Plates;" but if to have succeeded, so as no other person that I know of has succeeded, in making rapid, clear, clean, and easily-intensified dry plates be the point at which the photographic world will look, then I, for one, can only admit that I subscribe to the just claim, and say, "Palmam qui meruit ferat."

I must reserve the subject of preservatives and any further observations for another paper.

THE STEREOGRAPH.*

BY PROF. J. TOWLER, M.D.

I BELIEVE I remarked in the article preceding this that a stereograph of a landscape may be constructed by the

* Continued from page 524.

artist; but the contrary of this has been asserted by other writers on this subject. I mean by this expression that the stereographic construction is a possibility, although I may admit the difficulty of the operation. With any lens whatever, with which the stereograph may be taken, the differences of distance between the corresponding points on either picture of the stereograph vary exactly according to certain circular functions as the distances of the real objects from the centre of either lens. If, therefore, these distances (and of course they can be obtained by absolute measurement) are known, then by the application of the trigonometrical formulæ, on which they depend, the differences of distance of the corresponding points on either picture can be computed to most refined accuracy, and then from the computations the distance thus determined can be located on the sheet on which the construction is to be effected.

This knowledge enables us to construct with great facility stereographs of geometrical solids, or of regularly shaped figures; in fact, artificially constructed stereographs preceded the photographic stereograph, and at the time of their first appearance such stereographs excited the admiration of all lovers of science. It seems wonderful, when we look at two sets of two circles each, one within the other, either strabonically or with the aid of lenses, to find that they represent a frustrum of a cone, standing either on its broad base, or on its smaller base, in accordance with the condition of the construction or the observation of the phenomenon either with the naked eye alone, or with the stereograph. Let us make such a construction in order to illustrate the subject in question:—



The distance between the centres of the two inner circles is 2.355 inches, whereas the distance between the centres of the outer circles is 2.5 inches; the difference of these two quantities gives 0.145 parts of an inch. Now, this quantity is sufficient to produce considerable depth, and consequently a great amount of solidity, when the two sets of circles are superimposed strabonically. When so viewed, they give us the perception of a deep tumbler standing on its narrow base. If you will take the pains to understand what I said in the last article on this subject, you will inevitably comprehend the reason of this wonderful phenomenon; for, inasmuch as the distance between the centres of the outer circles is greater than that between the centres of the inner circles, the rays of light from the centres of the two outer circles, as they proceed to each eye obliquely, will cross or intersect each other at a point nearer to the eyes than the intersection produced by the rays from the centres of the inner circles; and so of the rays proceeding from corresponding points on any part of the larger circles, they will cross nearer to the eyes than those proceeding from the smaller circles. This being the case, then, the whole of the large circle will stand nearer to the eyes than the small circle, and thus give the perception of solidity. The amount of solidity depends entirely on the quantity 0.145, or whatever this concrete quantity may be; if we increase the amount we increase the depth of the tumbler, and vice versa. When the two centres of the two circles coincide, the intersections of the rays will coincide, and consequently the picture produced by superimposition will be quite flat.

Supposing, now, we were to superimpose the two sets of circles by means of a stereoscope, the phenomenon perceived would be a tumbler standing wrong side up. How is this?

It is simply the result produced by an astronomical telescope, which inverts the image of every object regarded through it; the stereoscope is, in reality, nothing more than the object glass of such a telescope; and all that is required to make the analogy complete is to supply the stereoscope with an erector.

The two following figures give a beautiful illustration of

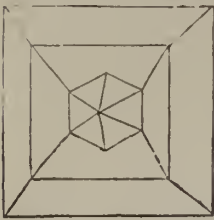
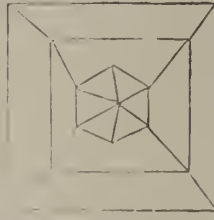


Fig. 1.



that which can be effected by artificial construction. Let us suppose that we observe them strabonically; then the first one represents by superimposition, first, a large or outer frustum of a quadrilateral pyramid standing on its larger base; secondly, an inner frustum of a quadrilateral pyramid standing on its smaller base, whilst its upper base coincides with the smaller base of the preceding frustum; finally, an hexagonal pyramid stands within the smaller frustum on its base; that is, the apex is nearest to the eye.

In the second figure the order of every part in the pre-

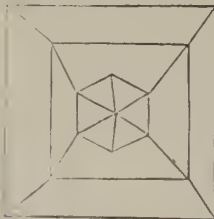
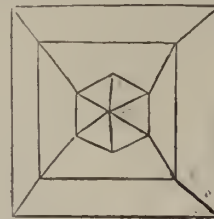


Fig. 2.



ceding is inverted, thus giving the perception of the phenomenon produced by the stereoscope on the first.

The amusement to be derived from the artificial construction of stereographs is very great; and the variety depends on the originality and imagination of the artist.

STEREOSCOPIC PRINTING.

If the reader thoroughly comprehends the subject already explained, he will have no difficulty of conceiving what is meant by stereoscopic printing. This is an interesting branch of stereoscopia, and affords a fund of amusement to the amateur, as well as to the practical printer. The following is an example of such printing.

THE GUARDS ON THE RHINE.

A sound is heard from door to door,
Like clatt'ring sword and cannon roar;
The German Rhine calls loud for aid:
What man will swing the helping blade?
Be unconcerned, dear Fatherland,
The Rhine with Guards is strongly manned!

A hundred thousand hear the cry;
And lightnings flash from ev'ry eye;
The German youth gird on the glaive,
Their country from the foe to save.
Be unconcerned, dear Fatherland,
The Rhine with Guards is strongly manned!

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The preceding is a stereograph, and the following is a description of its appearance when viewed by the naked eye: The distance between the A and the A, as also between the L and the L of the first two lines, is equal, but greater than that between the T and the T, as also between the W and the W of the next two lines; and this latter distance is greater than the distance between the next two lines in succession. Now the consequence will be that the first two lines will stand out and up from the paper, when superimposed, quite above the next two lines, which, in their turn, stand out above the next two and the title. The printer will observe that there is a difference of an en quad between the distances above-mentioned. In spacing between the words the greatest caution is required, in order to preserve regularity, not to mix the spaces; that is, if you start with 3-em spaces, not to use any 4-em or 5-em spaces amongst them, for the slightest irregularity in this respect (an irregularity which is not at all, or scarcely, perceptible to the naked eye) is magnified to a great extent by superimposition; even spaces that are new, when mixed with those that have been used, and are slightly oxidized, make the difference perceptible.

This slight difference in spacing shows so distinctly a difference in the superimposition, that we may correctly assert that the eyes can detect a deviation from parallelism by superimposing two lines that appear to be parallel, and which without superimposition cannot be determined to be otherwise by simple inspection. This property is so refined and so easy of application as to become the most certain, the quickest, and most reliable means of detecting counterfeit bank notes, forged names, &c. For if the corresponding halves of two bills from the same plate be inspected in the stereoscope, the picture will be perfectly flat; whereas if a counterfeit bill be placed side by side with a good bill, the picture will not be flat; on the contrary, the greatest irregularity will become visible after a while, some parts standing up here, and being depressed there. Notwithstanding the great facility in making this diagnosis, it is necessary to state that some practice is required; for those who have had to deal with such operations know well the difficulty which the untutored experience even in obtaining relief when viewing an ordinary stereograph. After a little practice the banker would find this method his never-failing bank-detector.

Correspondence.

LOW PRICES AND PAYING PRICES.

SIR,—Every trade and profession is now trying to improve the position of its members, by seeking an advance in the price of their work, and I wish that I could ask all photographers whether those customers who are willing to pay a little more to have their cartes well taken are not of the working and middle classes? and also whether those who screw them down and want the cheap ones, this time, as they say, are not generally of the class who can afford to pay a higher price?

A photographer who can execute average good work must feel an inward dissatisfaction at being obliged to receive from some four or five shillings for a dozen cartes which he knows are worth eight shillings, or more, if he is to take into account those dull days when, even if he would take them for nothing, he will be obliged to be idle. We hear of photographers breaking down in health and spirits; is it to be wondered at that their health should suffer when they feel that they are ill paid and their work is slighted?

I do not complain of the photographer with small capital who asks a moderate price, but of the man with average talent and a well appointed studio, who will work at low prices rather than let a close-fisted customer go to a lower-class shop. In my town I have had some experience, and the result, moderate prices and as good work as you can achieve under the circumstances, will pay you better than cutting down the prices to endeavour to get all the trade from your neighbours.—I am, dear sir, yours truly,

J. HARRISON.

Leeds, November 8th, 1871.

COLLOGRAPHIC PRINTING PROCESSES.

SIR,—As a paragraph in the jottings of "An Old Photographer" in your columns of last week invite discussion of the rival claims of photo-mechanical printing processes, you will perhaps allow us, as a private firm, to point out distinctly where our difference with Mr. Edwards exists. As he has thought it prudent to drop his threatening notices, and quite declines the challenge given by Mr. J. R. Sawyer in the journals some weeks ago, probably some new light has reached his mind on the subject.

Mr. Edwards claims in the hohotype process several distinct operations for the production of photographic prints; the three most important of these are:—

First. The hardening of the film with alum or some compound of alum.

Second. The use of two or more inks in succession on the same plate.

Third. The use of a mask of thin paper to produce clean margins.

With respect to the first claim (the use of alum) we have at present no contention, simply because we harden our film in a different and, as we fancy, a more effectual manner by the use of a spirituous solution of certain resinous gums. But we are advised by very competent authority that alum and its compounds having been patented by Swan, of Newcastle, for a strictly analogous process, the hohotype patent could not be sustained even on this head.

In regard to the second claim (the use of two or more inks), a lithographer of great experience and extensive business writes us in this fashion:—"It may be a new thing to Mr. Edwards, but the use of two inks, and more, if necessary, to the same stone has been my practice ever since 1843, and I have always so instructed my apprentices; we always use a *stiff* ink to obtain vigour in the foregrounds and shadows, and a weaker ink for distances." The abundance of evidence on this point makes a claim for "double inking" as an *original* idea of last year almost grotesque. If Mr. Edwards is incredulous, we shall be happy to introduce him to a lithographic printer in London who has always used varieties of ink in this manner.

In respect to claim No. 3. The use of a mask of thin paper, of silk, or of thin metal, is of the commonest occurrence in both lithographic and typographic printing; in fact, the frisket of the letter press printer is nothing more than a mechanical mask to secure a clean margin, and the specific means claimed by Mr. Edwards is daily used by lithographic printers when they wish to "mask out" any portion of their matter or design.

These two last claims we are advised, by very eminent counsel, entirely to disregard; that beyond a doubt we are entitled to use them to films prepared in the manner specified in the patent under which we work, the publication of which was some months prior to that of Mr. Edwards.

Double inking and masking being common property, we can have no objection to Mr. Edwards using these means to his own plates, but his claim to these processes as *original* we entirely dispute, and any attempt on his part to gain the exclusive right to use them over all collographic printing surfaces we shall certainly resist.—Yours obediently,

SAWYER AND BIRD.

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held on the 9th inst. in the City of London College, the Rev. F. F. STATHAM in the chair.

The minutes of a former meeting were read and approved, and Mr. T. Hawkins was elected a member of the Society.

Mr. HENDERSON exhibited a very convenient copying and enlarging camera with varied appliances for producing medallion images by apertures of different sizes and shapes.

Mr. SAMUEL FRY then read a paper on the relative value of cyanide of potassium and hyposulphite of soda for fixing negatives (see p. 546).

A conversational discussion ensued, in the course of which nearly evenly divided opinions were expressed in favour of each of the fixing agents, and some who preferred hypo for home use

employing cyanide in the field because of its easy removal by washing. Cracks in the film having been alleged to be a result of hypo fixing.

Mr. MAYLAND said he had never been able to trace cracks to the use of hypo for fixing. He had long since banished cyanide from his studio, and would recommend the banishment of such a deadly poison from all studios.

Mr. BROOKS had lost negatives from cracks, which he attributed to hypo.

After some further conversation,

Mr. FOXLEE said he preferred cyanide, which, if used sufficiently weak, did not attack the half-tones of the negative. For photo crayons he found it especially useful.

Mr. HENDERSON said that although it had some advantages for that purpose, it rendered toning absolutely necessary.

A conversation on the use of albumen for preserving the film from leaving the glass, and rendering the cleaning of glass less important, followed.

Mr. FRY spoke highly in favour of albumen for preliminary coating, and explained its application by the "Blanchard brush." He had iodized as well as plain albumen, but found no difference in result.

A conversation on the cleaning of glasses followed, after which, returning to the subject,

Mr. BLANCHARD said he had now for some years used hypo only, having found cyanide very injurious to health, and as he was assured by a medical man its effects were accumulative in the system, he gave it up. He had used cyanide for ten or a dozen years, and then abandoned it; but on one occasion, whilst taking some street views, using a cab for a dark room, and employing cyanide, he was suddenly seized with illness solely through breathing the fumes. He had now given it up for years, and used hypo under all circumstances. The negatives were unquestionably a better colour and more vigorous when fixed with hypo. If hypo were left in the film, of course it would make the film leave the glass, and also make the varnish brittle.

Mr. FOXLEE had used cyanide for many years and suffered no ill effects.

Mr. GALE had nearly lost a finger through using cyanide.

Mr. WHARTON SIMPSON said Mr. H. P. Robinson did lose part of a finger by its use. He thought that the serious risks incurred in using cyanide far more than counterbalanced its supposed advantages. He should certainly recommend its banishment from ordinary use in the dark room.

After some further conversation, in which Mr. Dunmore, Mr. Howard, Mr. Henderson, Mr. Foxlee, Mr. Brooks, Mr. Taylor, Mr. Fry, and others took part, the subject dropped.

Officers for election at the annual meeting in December having been nominated, and the annual dinner of the Society appointed for Saturday the 2nd of December, the proceedings terminated.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE monthly meeting of this Society was held in the Memorial Hall on Thursday, the 9th inst., the Rev. CANON BEECHY, M.A., President, in the chair.

The minutes of the previous meeting were read and passed, and the following resolutions of the Council confirmed:—

1. "That on the occasion of Mr. Brothers' lecture on the moon, to be delivered at the December meeting, the Lecture Hall be hired, and that the lecture be supplemented by an exhibition of photographs on the screen. That members be allowed to admit three friends, and that a sub-committee be appointed to make other regulations relative to the December meeting."

2. "That invitation cards be printed and presented to the scientific and other gentlemen in and about the city."

Mr. Alfred Brothers was unanimously elected a member of the Society.

THOS. HAYWOOD, Esq., Vice-President, then took the chair, and the President read a paper "On Collodio-Bromide Dry Plates" (see p. 547). During the reading of his paper the President handed round a number of negatives of varying quality, including two prepared by Col. Wortley. These were the best of the negatives shown, being very clean and bright.

A short discussion followed the reading of the paper.

Mr. MABLEY said he found that collodio-albumen plates developed by the alkaline method were usually of a greyish colour.

Mr. WRIGHT had observed that gum preservatives would conduce to a red colour in the negative.

The PRESIDENT, speaking of cochineal, said its presence was fatal to the least forcing in the development.

Some conversation followed upon the quantity of silver left in collodion films after washing.

Mr. MABLEY held that it was of small importance whether the collodion film contained free silver or bromide, the result after washing would be the same. There was no difficulty in washing haloid salts from a collodion film. Many years ago it was the practice of some of the old members of the Society to prepare a modified form of collodio-albumen plates for printing transparencies upon. The process was first to coat a plate with iodized collodion, and, instead of putting it into the silver bath, to wash it with water, and then proceed as usual in the collodio-albumen process. He had frequently found that the whole of the iodide was washed out. He did not believe it possible to wash a sensitized collodion film without removing the whole of the free silver salt. He said a washed film of plain collodion was the very best cushion for an iodized albumen film, and recommended it to those who had a fancy for albumen plates.

The PRESIDENT prepared a collodio-bromide plate to show the simplicity of the process.

The usual votes were passed, and the meeting was then adjourned.

Talk in the Studio.

PHOTOGRAPHY IN THE WITNESS BOX.—The *Daily Telegraph* says:—"Without desiring to say one word as to the value of any legal evidence adduced either way in the Tichborne case, we may yet be permitted to make a few remarks respecting photographs and their exhibition in courts of justice. Two large portraits, which were termed photographs or Daguerreotypes—the productions, as it is well known, integrally differing—were brought into court recently, and examined in a most untechnical manner. A discrepancy as to the costume of the person whose portrait had been taken in duplicate, on one and the same occasion, was pointed out. In one picture a waistcoat was plainly manifest; in the other no vest at all was distinguishable. Many pros and cons were discussed between the judge and the counsel, the witnesses and the jury, as to the visible and the invisible waistcoat. It was a 'white drill or canvas waistcoat.' Could it have been unbuttoned or thrown back when either of the portraits was taken? How came it that in one picture certain lines or figuring on the shirt were visible, while in the other no such lines could be made out? We do not very strongly advocate the system of accepting the evidence of professional 'experts' in technical matters; but we cannot help thinking the waistcoat case one in which an experienced photographer might have been asked to enlighten the learned and unlearned disputants as to the process of 'fading' in photography. As for Daguerreotypes, the delicate shadows on white drapery, and even on flesh, tend to vanish altogether; and while a white waistcoat or shirt stands out a staring blank, the hands become mere colourless dabs, and a nominally expressive face assumes the similitude of a 'lily-white muffin.' A sensible exposition of 'fading' might have very much simplified the waistcoat controversy." As we point out on another page, our contemporary is in error as to the fading of Daguerreotypes.

To Correspondents.

BLAIR TESTIMONIAL FUND.—*Additional Contributions.*—A Friend, 7s. 6d.; Mons. A. Davanne, £1.

C. W. H.—The question whether it is or is not piracy to photograph and publish a copy of an engraving depends entirely on whether the engraving is copyright or not. If it be a copyright engraving, of course it is piracy to copy it; but if non-copyright, you may copy it without impropriety.

A. A. H.—There are many elementary works on chemistry. One in "Chambers' Educational" course you will find useful. "Fowne's Manual of Chemistry" is very excellent. "Bloxam's Elementary Chemistry" is also very useful.

G. SYMONDS.—Transparencies for the magic lantern do not require ground glass. The film towards the screen.

A. G. G.—The usual mode, and the best mode, of transferring the image formed in enamel powder colours to the tablet for burning-in is by means of a film of collodion. The glass plate is coated with collodion, which is suffered to dry, and then coated with the syrup and bichromate. After exposure and the application of ceramic powder, the plate is placed in acidulated water, which loosens the film of collodion, permitting it to be removed with the image in powder attached. We do not know of any method of employing india-rubber paper to transport the image from the glass upon which it is produced; but we do not think it would be difficult. We should proceed as follows: damp a piece of paper and stretch it over a piece of glass, turning over the edges, and attaching them to the glass. When dry, coat this with a solution of india-rubber. When this is dry apply the syrup and bichromate to the india-rubber coating, and proceed as usual.

R. P. S.—The result of adding the sulphide of potassium to old used developing solution is the production of a black precipitate containing sulphide of silver and sulphide of iron. This precipitate when reduced in the crucible will yield metallic silver.

A. D. (Cuckfield).—The lighting of A is much too harsh and abrupt. The lighting of the others is better in character, but there is too little light, hence the shadows in the hair and drapery are heavy, black, and opaque, and the flesh is so low in tone as to appear almost dirty. The definition, especially in 310, is not sufficiently perfect. The background is much too dark for vigneted pictures. In all cases where vignettes are required a very light background should be employed, the gradation from which into the white margin of the print should be scarcely perceptible. The irregularity of tint and somewhat stained background in 262 may be avoided by more careful manipulation. The feeling in the pictures suggests that you will improve with experience.

DOUBT.—The question entirely depends upon the existence of a copyright in the engravings in question. Whether they are copyright or not we cannot say. You may ascertain by examining whether they possess the publication line or not. The publication line consists in the name and address of the publisher and date of publication immediately below the picture. If the copyright have expired, or have never been preserved, you may copy the prints without doing any wrong.

B. L. M.—As a rule, the best plan is to convert the black precipitate of gold obtained by adding sulphate of iron to old toning solutions, into chloride of gold by means of aqua regia. If, however, you have a sufficient quantity to make the operation worth the trouble, you may convert it into a button of pure metallic gold. Wash it well and dry, then add to each ounce six or seven drachms of sulphate, and place in a crucible, taking care to only half fill the crucible, to avoid risk of loss. Expose to a bright red heat, which will melt the gold into a button, the iron present being oxidized and taken up by the flux.

M. F.—The Exhibition will remain open until the 9th of December. It is closed at dusk, but the last three evenings it will be kept open until nine o'clock. Members and their friends on presenting members' tickets are admitted free on Saturdays; the public pay one shilling on that day. Photographs are not sold in the Exhibition.

THE NICKEL PLATING COMPANY.—We are requested to correct an error in our notice of this company, in which the name of Mr. A. C. Channer appears as manager. It should have been Mr. H. J. Dorrien.

AN INDIAN PHOTOGRAPH.—A correspondent writes as follows:—"Mr. R. H. Jones would be much obliged to the Editor of the PHOTOGRAPHIC NEWS if, in the answers to correspondents in his valuable paper, he can give him any information as to where or how a photograph is to be obtained. The history of the photograph referred to is this: a photographer in the back woods of America wished to take a friendly tribe, but whenever he put his head under the cloth the natives ran away, thinking it was some murderous implement of the mitrailleuse description. The photographer persuaded the chief of the tribe to look through the instrument, and the chief then saw his tribe, only they appeared to him inverted or standing on their heads. He then concluded this was some new method of rendering the poor Indian ridiculous, and, in order to defeat any such designs, he allowed himself to be taken, but he stood on his head with two of his tribe, who each held up one heel. The result is extant, but where, or how, it is to be obtained, or what is a fair price to give for it, is what the writer would gladly obtain some information about. Perhaps some of your numerous correspondents may be better informed." Can any of our readers afford any information? Several Correspondents in our next.

PHOTOGRAPHS REGISTERED.

Mr. J. J. JONES, Southampton,

Photograph of R. M. S. *Moselle*.

Mr. R. T. WILLIAMS, Monmouth,

Photograph of Duchess of Beaufort.

Mr. H. KNIGHT, St. Leonard's,

Photograph of Miss M. Trevelyan.

THE PHOTOGRAPHIC NEWS.

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THE BLANCHARD BRUSH FOR APPLYING SOLUTIONS.

ILLUSION has been made recently in various articles, letters, and reports, to a useful little instrument which has been designated the "Blanchard brush." This contrivance, which combines in an eminent degree simplicity and efficiency, is of very great value in applying various kinds of photographic solutions. It was originally employed by Mr. Valentine Blanchard in applying both silver solutions and developing solutions to enlargements on paper. Besides its general convenience in evenly spreading the solution, it was found of special value in the process of development, as it gave to the operator a kind of local power in controlling the action of the developer. Where a mass of shadow required great depth to give force to the picture, the energy of the development could be increased by a little manipulation, and a little nitrate of silver added with the brush. Its latest use has been in connection with the application of preliminary coating of dilute albumen to glass plates. All difficulty in spreading the albumen solution, usually a troublesome operation, vanishes when this brush is employed. One sweep of the brush, which may be made of any width, covers the plate evenly, without irregularity, bubbles, or any kind of drawback.

Although it has been described before, and is very simple in construction, we have reason to think that it is not so generally known as it might be. Mr. Blanchard has, therefore, favoured us with a brief description, which we subjoin, together with a diagram, making the matter quite clear. Mr. Blanchard says:—

"A short time ago Lieut. Abney, in speaking of my method of albumenizing plates, spoke of the simple contrivance I employed, as the 'Blanchard brush.' Since then I have had several applications from wholesale houses, who have imagined it an article manufactured for sale, and so many letters asking for further particulars, that in self-defence (for I hate lengthened correspondence), I have sent



a little sketch which will explain at once this very simple contrivance. All that is needed is a strip of glass two or

three inches broad, and four or five inches long. On one end is fastened a loop of swans'-down calico—a cotton material, twilled on one side, and with a long plush-like nap on the other. It is to be obtained at any large draper's. The nap side must be outwards; two thicknesses will be found better than one; and the loop can be readily fastened to the end of the glass by a small elastic band.

"This brush will be found much more useful in the calotype process for enlargements than the 'Buckle brush,' for it can be made of any width, and the silver and gallic acid solutions can be spread with the most perfect uniformity by its aid."

SURREPTITIOUS PORTRAITS.

AMONGST the many sins for which photography has been made answerable, not the least, we fear, will be that series in which it is charged with giving birth to that green-eyed monster which separates loving hearts, desolates homes, and fills the divorce court. The surreptitious possession of photographs has already at divers times led to lovers' quarrels, and occasionally to domestic broils, and it has been alleged by wicked persons that it is not an uncommon thing on race courses for itinerant photographers to secure positives of groups in carriages, and sell them at a high price to those concerned in destroying the evidence they furnish. A case recently came before the Lambeth Police Court in which the itinerant photographer appears as the author of dire mischief, by photographing a group in the street, who had met and incidentally stopped for a few moments to speak. Here is the narrative as we find it in the daily press.

LAMBETH.—A PHOTOGRAPHIC DIFFICULTY.—Ann Tasker summoned her husband for using threatening language towards her.

From the statement of the solicitor for the complainant, it appeared the parties had been married some six years, the woman being twenty-five years younger than defendant. A few weeks ago she went to the Borough in company with a young girl who was in her service. The girl entered a shop to purchase a hat, leaving Mrs. Tasker outside, when a young man named Blowers came up, and, knowing plaintiff, stopped for a few moments to speak. During this period an itinerant photographic artist came along with his apparatus, and before plaintiff and Blowers were aware of it they had their photographs taken. The artist then came up, and so delighted was Blowers with the likenesses that he purchased a copy, and gave the same to plaintiff. She took it home and put it in a drawer, where her husband found it, and declared it had been done at Margate or Ramsgate on the sands, where he accused her of having gone with Blowers. Ever since that he had shown a very jealous disposition, and had threatened to dash out her brains with a poker.

The legal gentlemen on both sides, after a consultation

agreed that the case should be adjourned, in order to see if some arrangement for a separation could not be made.

Mr. Ellison decided to adjourn the case.

Henceforward it would seem to be dangerous to walk the street on any business, and especially so to stop to look at a shop window, or to speak to a friend. The photographer, stealthy as the pestilence which walketh in darkness, may lay in wait to depict the unwary wayfarer in the strange company with which the London street inevitably renders him familiar, and bring the damning evidence against him as the companion of thieves and others against whom society shuts its doors. And if photography can render the background furnished by a shop front in London like the sands of Margate or Ramsgate, there is no knowing in what *imbroglio* the unfortunate sitter, *malgre lui*, may be plunged. We may fairly hope, however, that this is a display of photographic activity and peculiar skill as unusual as it is undesirable and improbable.

THE PHOTOGRAPHIC EXHIBITION.

PORTRAITURE.

HOWEVER extensive the applications of photography may become when regarded as an industry, its achievements as a pictorial art will always find most favour in exhibitions, and of its pictorial results portraiture will ever concentrate the most universal interest. In the present exhibition the palm of excellence is as nearly as possible equally deserved by landscape and portraiture, whilst in point of quantity the former unquestionably claims precedence. Yet, despite of this, the portraits interest the most, and prove the most attractive to visitors. Following the leading thus indicated, we shall very briefly first notice the contributions in portraiture and figure studies.

We have before referred to the high level of excellence, but we should also remark that the meritorious claim is not without its alleged drawbacks. A pessimist friend, examining the portraits in our company, appeared much depressed by the examination, and indulged in the gloomiest vaticinations as to the future of photography. "This prettiness, this smoothness, this finish, upon which photographers seem to plume themselves," he remarked, "is all due to retouching, which promises to ruin the reputation of photography as the truthful art in just about the same ratio which it fills the pockets of photographers who thus condescend to flatter their sitters. A photographic portrait will soon come to be regarded as of less authority as a likeness than a painting; of less authority, because when it is once found that they 'lie like truth,' all trust in their veraciousness will vanish." We quote our friend's remarks, not because of the *soupeon* of truth they contain, but because we think it fair to vindicate the pictures at the present exhibition from the imputation of owing their excellence in any essential degree to retouching. Doubtless a large number of the portraits are from retouched negatives; but, in the majority of the cases, the retouching is slight, judicious, and justifiable. We overheard a remark that the noble pictures exhibited by Mr. Crawshaw owed much of their charms to retouching, and that amateur work ought not to be retouched, whatever professional portraitists might feel compelled to do. In reference also to professional work—such as that of Blanchard, of Slingsby, of Wane, and others—we heard the remarks: "Very fine; but how much is photography, and how much retouching, and who knows that any likeness remains?" As we have repeatedly condemned in strong terms the dangerous tendency of excess of touching, we vindicate here its legitimate and judicious use. Of many of the likenesses we can speak, from personal knowledge, as surpassingly perfect. In the contributions of Mr. Blanchard is a portrait (No. 60) of a personal friend of our own, well-known in London literary circles as a musical composer. We have no hesitation in describing it as one of

the most striking, if not the most striking, likeness we have ever seen. A noble photograph, its pictorial claims, great as they are, sink before its excellence as life-like portraiture. In the same collection many English photographers will recognize the grand portrait of Mons. Adam-Salomon, admirably true, but with a dignity we have seen in no other portrait of the great French artist. Among Mr. Slingsby's portraits, in one of the most artistic pictures, we recognize a most admirable likeness. In more than one of Mr. Crawshaw's contributions we recognize likeness as satisfactory as the photography is perfect; and in referring to these pictures we may add that, whilst some judicious retouching is employed, we are in a position to state that in most cases it is very trifling, and of the same amateur character as the photography.

Apart, however, from testimony derived from the critic's knowledge of certain facts, we must vindicate the claims of much of the portraiture here as of a far higher nature than could possibly attach to the utmost skill in retouching. Pose, composition, chiaroscuro, character, expression, all belong to art qualities, and not to mechanical excellence. As illustrative of the power of photography to render character and expression, take Mr. Blanchard's portrait of Miss Furtado as Esmeralda. Apart from the subtly chosen severity of the composition, the pathos, the sense of heart-broken humiliation in the ill-fated gipsy girl—not simply in the face, but in the pose and arrangement of every line—is admirably perfect. In Mr. Slingsby's portraiture the composition of lines and tones far exceeds in real value the delicacy and finish also present, due in greater or less degree to touching. So also in the examples of Mr. Marshall Wane—touched, doubtless, with great care and skill—the higher qualities of pose, arrangement, and all that belongs to the conception of the artist rather than his manipulation, are the first characteristics of his pictures. Of this "A Study" (84) is a very charming example. The microscopic eye which sees minute items and overlooks greater qualities in these and other contributions is dangerously misleading; and if the minute qualities possess novelty they are too apt to catch the eye and to blind honest observers to the whole truth.

With these preliminary remarks, we proceed briefly to notice the most important portrait contributions. Of Mr. Crawshaw's character portraits we have already spoken: the only example of simple portraiture he exhibits is that of the Marquis of Bute, a dignified, manly likeness, and very fine photograph. Of Mr. Blanchard's and Mr. Wane's contributions we need not say more now. Of Mr. Slingsby's contributions it is important to remark that they challenge and meet difficulties generally avoided. They are chiefly full-length portraits on twenty by sixteen plates, and, notwithstanding their large size, they compete with *cartes-de-visite* in all points of technical perfection—such as definition, delicacy, and brilliancy. The rendering of masses of light drapery is singularly perfect; pose, accessory, light and shade, expression and character, are all fine. The perfection of definition and modelling, and the manifest rapidity with which they have been exposed, from the easy naturalness of expression, render it interesting to remark that these, as well as the large portraits of Mr. Crawshaw, with similar qualities, are produced by a new large portrait lens of the D series by Mr. Dallmeyer. Dr. Wallich, whose portraiture is always good, exhibits a fine series with more vigour than his former contributions. His "Catch a Copper, Sir," (92) is a capital character picture. Mr. Burgess's work has always good qualities. He sends "Edith and Her Pet" (a clever composition), some fine photo-crayons, and other portraits this year. A frame of cabinets by Mr. H. Gregson is good; the large portrait by the same gentleman possesses character, but is somewhat coarse. Mr. Rejlander's portraits and character pictures, both in portfolio and on the walls, are as full of interest as ever. No one has ever excelled him, few ever touched him, indeed, in the power of expressing a thought

by photography. The *gamin* of London streets has an especial attraction for him, both in his phases of fun and of pathos, and we have him here again in both aspects. The examples of portraiture he sends this year possess very fine character. Mr. Croughton's examples of the result of retouching on negatives are hung too high for minute comparison, but they seem to be as excellent as other work we have seen from the same hands.

The next portrait frames (210 and 211) contain a treat for long and careful study. They contain many scores of baby portraits taken instantaneously, and printed in carbon, by Mr. Faulkner. No frames in the exhibition give us more genuine pleasure than these. The variety of treatment, always charming; the freshness, brightness, and child-like naturalness; the perfect delicacy, modelling, and solidity, all give especial interest and value to the pictures; and, being worthy of preservation, it is a source of especial satisfaction to see such portraits printed by a permanent process. To our taste the especial quality thus gained is very precious: the assurance that the pictures will not fade cannot be too highly prized; and the more artistic texture obtained in this method of printing is very effective. If in some cases the garish brilliancy of albumenized prints is absent, there is a quiet, unobtrusive solidity, suggestive of the rich texture of a mezzotint engraving. We commend for imitation the conscientiousness of the artist who, aiming to do high class work, feels it worth giving it the durability which should attach to works of art. Some photo-crayons by W. Fox are good, as are also the fine enlargements of M. Bondonnean. Messrs. Bullock Brothers' large vignettéd portraits on porcelain are rich and delicate. Some whole-plate cameo-medallions by Mr. Prestwich are good photography, and rendered very effective by the cameo treatment. The portrait of Mr. Abraham Bogardus, president of the United States Photographic Association, will interest many, both for its subject, and as an example of the illustrations of our esteemed contemporary the *Philadelphia Photographer*. The bright, genial, keen, and intelligent countenance of Mr. Bogardus is well rendered in the excellent photograph. Mr. Ashdown exhibits half-a-dozen effective portraits, some of which are just a little wanting in delicacy. Mr. W. E. Debenham sends a frame containing "six portraits in shadow;" they are a little hard and black; prevalence of shadow demands very tender treatment to secure success. Mr. F. R. Elwell has some very fine portraits of children, rendered very effective by landscape backgrounds. Mr. Hubbard's card portraits are fine, rich, vigorous photographs, but they do not compensate us for the absence of any of his pictorial studies. The portraits by Mr. Henry Cooper possess all the delicacy, taste, and fine feeling which have characterized his former works, both in figure studies and landscape. Mr. H. Knight's card and cabinet portraits are delicate, brilliant, and effective. The studies from life and the portraiture by Mr. E. H. Cox possess very high qualities. The frame of cabinet portraits by the brothers Downey attract considerable attention by containing various royal portraits, but are well worthy of examination for the very high pictorial character of the work. Lombardi, of Brighton, sends a number of exceedingly fine examples of portraiture, especially distinguished by delicacy and fine taste. Mr. J. Bowens' medallion portraits are brilliant and fine; he also exhibits some good large portraits. Of Messrs. Fradelle and Leach's large series of literary and dramatic portraits we have already spoken. They are brilliant and dashing, and have many good qualities. A little too much straining after action and effect, and a tendency to what may be termed "loudness," is their drawback. To the work of the Messrs. J. and M. Davison we have before referred, and now repeat with pleasure our former commendation; "The Last Touch" (435), printed in a red chalk tint in carbon, is very fine indeed, as are all their contributions. The cameos and other portraits by Messrs. Vandyke and

Brown are very good. There are a few other portraits, but we have referred to the majority of those which seemed to claim our attention, with the exception of some foreign contributions, and the coloured work, to which we shall return in a future issue.

THE ALUM SILVER BATH.

The printing bath containing alum, as prepared by Mr. H. T. Anthony, appears to be a success, judging from the correspondence of the *Bulletin*. One correspondent, Mr. Cramer, gives a clear and useful statement of his printing operations. He says:—"The alum silver bath for albumenized paper gives us the best results in printing which we ever had, and with equal success up to the present day. I hereby give our process of toning, and shall be glad if any of my fellow photographers may be benefited by it. We do not over-print very much, as the strength of the print loses little in toning and fixing. We wash our prints in two or three waters (which we save), then pour off the water, and pour on water one gallon, to which is added four fluid ounces of saturated solution of pure table salt. In this diluted salt solution we leave the prints one-quarter of an hour, whilst they are moved around and turned over to secure an equal action of the solution. The object of the salt water is to turn the prints all one red colour, so that the effect of the subsequent toning is more even and better to be observed. After this treatment the salt solution is poured off, and replaced by water, and the toning is commenced.

The *Toning Bath* we make as follows:—

Water	...	..	...	...	½ gallon
Acetate of soda	...	...	...	...	2 ounces
Gold solution (prepared as below)	...	...	...	...	4 fl. "

Gold Solution.

Chloride of gold (containing 60 grains chloride of gold or 120 grains chloride of gold and sodium)	...	...	...	4 bottles
Water	...	...	...	16 ounces
Acetate of soda	...	...	...	6 drachms

are put in an evaporating dish and boiled until the solution becomes a little turbid (no longer, or the gold will be precipitated). After it has cooled off, fill up with water to sixty-four ounces.

"Boiling the gold with acetate of soda in this manner puts it in an excellent condition for toning, and such a gold solution will keep without decomposing, and be always ready for use. Although the boiling leaves the gold very slightly acid, it should not be neutralized with bicarbonate of soda. The addition of bicarbonate of soda to the gold solution makes it decompose very quickly, and it is apt to get out of order even while toning if much bicarbonate has been added. The toning bath is always used over again; but a fresh supply of prepared gold solution has to be added in proportion to the quantity of prints to be toned, counting one ounce of the prepared gold solution (containing one grain chloride of gold) to two sheets of albumenized paper.

"Photographers who have not put their prints in salt water before toning will have to be careful not to tone them too much. The toning is completed as soon as the colour of the prints is changed, which is best seen if the colour of the untuned prints is compared with them. The real tone shows after the prints are fixed, washed, and dried. It should then be a warm brown or purple, but never bluish or grey.

"If any one has a better way of toning, we should like to know it."

LANTERN HINTS.—No. 2.

BY JAMES MARTIN.

A FEW words about the various methods of lighting the magic lantern, and the substances used, will form the most

appropriate sequence to my last hint. At present, I do not know of anything new that can be considered reliable; whether any of the new methods of producing oxygen will prove available has yet to be proved. We may, therefore, consider lamp oils, the oxycalcium, and hydro-oxygen lights the most legitimate and trustworthy. Of the former, pure sperm, properly managed, has, in my hands, proved most satisfactory, and its light is improved by the addition of a small quantity of gum camphor powdered, which may be easily effected in a Wedgwood mortar after sprinkling the gum over with a few drops of absolute alcohol. When the camphor is added to the oil it should be well shaken. Too much should not be used. All oils should be warmed before they are lighted; this renders them more limpid, thus favouring the capillary action of the cotton wick, and avoiding the incrustation frequently formed on the top of it, causing a smoky light. A new wick, when first lighted, should not be cut, but burnt down to a level with the top of the lamp, and then the scoræ removed. Old hands at exhibiting frequently use a piece of velvet tied round the wick-holder with thread, so arranged that the ribs of the pile run vertically. A fresh wick should always be used for each evening's exhibition, and when the cup argand lamp is used it should be kept constantly full.

There being a great difference in the viscosity of various oils, it is a mistake to expect that one lamp will serve equally well for all, and thus arises a great discrepancy of opinion as to their use. In fountain lamps their efficiency entirely depends upon the nicety of their adjustment as to the supply and consumption of the burning oil. Should the former be too scanty, a ring of scoræ will form on the top of the cotton, and the light will be dull and smoky; if, on the other hand, it is too free, the light will be weak, there will be an overflow, and an awful mess ensue. The proper height and shape of the glass chimney to suit the lamp is most essential, as also the quality of the glass of which they are made. They should be gradually heated by a low flame to prevent breakage, and a spare chimney should always be at hand in case of accidents. In fact, a lamp should not be considered as merely a brass pot with a tuft of cotton stuck in it, surrounded by grease, but as a small furnace made to burn certain substances in a scientific manner, for the purpose of producing a certain quality and quantity of light, and therefore require to be treated in an intelligent manner; above all things, they should be kept perfectly clean. A good lamp, with proper oil, well managed, will give a well-lighted picture six feet in diameter with three and a-half inch condensers. When oil is to be used the lantern body should be larger, the means of ventilation more copious, and the lantern chimney longer than when intended for gas only.

There is no comparison can be made between the light produced by oil with that of the gases; their great drawback is the trouble and danger of manufacture; but, with proper precautions, these are but trifling; the expense is somewhat greater, but the greatly increased brilliancy and beauty of effect fully compensates for this. There are two methods of using oxygen gas, either in the form of the oxycalcium or hydro-oxygen light; the former, being produced by a stream of oxygen blown through the flame of a spirit-lamp, requires only one gas bag and pressure board, and is therefore more portable than the latter, and in places where no coal gas can be obtained is more convenient; it will, with proper management, give a brilliantly lighted picture up to ten feet diameter, which is quite large enough for school or country exhibitions. Care must be taken to remove scoræ which will form on the top of the cotton of the spirit-lamp. This latter must be placed outside the back of the lantern. The hydro-oxygen light is the most powerful; it is produced by the burning of the mixed gases in certain proportions.

I have shown, in the microscope, a flea enlarged to the size of an elephant, and a landscape sixteen feet in diameter, with condensers of four inches diameter; but it is not well

to enlarge to such a size; the outlines become blurred, and the effect of the picture becomes poor and thin, while any defects in drawing become so exaggerated as to be ridiculous; indeed, there are but few rooms that would admit of such large pictures, for as the bottom of the picture should generally be three feet from the floor, and it is hardly possible to show quite to the ceiling, it will thus require a room to be about fourteen feet high to exhibit a ten-feet picture properly.

In both of the above lights the gases impinge upon a cylinder of lime. This, in its caustic state, is hard to cut, and acts very detrimentally upon the hands and clothes. Common carpenters' chalk, being a carbonate of lime, and of a soft nature, can be worked easily when burnt in a common fire for a couple of hours, and will serve the purpose just as well as if it had been burnt into lime beforehand; and the best method of preparing it will be to first cut the chalk into pieces of a convenient size with a saw, then drill a hole through them to receive the pin on which they are placed when used; shape them correctly with a wood rasp, which must now and then be cleared from the powdered chalk by a stiff brush; when finished, string them upon a wire, and contrive to heat them gradually until they at last are at a white heat; this must be kept up for some time. I have thus made my own for years, and find them answer well.

A NEW PHOTO-MECHANICAL PRINTING PROCESS.

BY CAPTAIN WATERHOUSE,

Assistant Surveyor-General of India.

I HAVE pleasure in forwarding to the PHOTOGRAPHIC NEWS a description of a new photo-collographic process I have recently worked out, and which I believe will be found to give as good results as any other if proper appliances are used. I have been obliged to work with whatever rough appliances I could make available, but I have succeeded in obtaining copies of line subjects exceedingly sharp and clear, and have also obtained some fair results in half-tone, though I have not worked so much in that direction. I am still experimenting on various forms of these processes, and hope soon to send you a paper recording my experiences.

The process is on the same principle as the processes of Tessie du Mothay, Albert, and Edwards, and may be applied to the reproduction of all kinds of subjects, whether in line or half tone. I have been practising it in Calcutta for some time past, and believe it will be found well suited for use in India, and at the same time simple and inexpensive.

The following apparatus and materials will be required:—

Thick plates of finely ground glass (looking-glass plates will do).

Levelling stands and level.

Water bath for heating gelatine (Clarke's or any other nursery lamp answers well).

Retort stand and evaporating dish for boiling the soap solution.

Spirit lamps.

Filtering jug.

Dishes for sensitizing and washing the plates.

A printing press furnished with vulcanized india-rubber pads on the bed and tympan, to prevent the plates being broken. In default of a better, a common copying press will answer very well.

Inking slabs and rollers.

Black and coloured printing ink.

Gelatine, tannin, honey soap (I have tried many kinds of soap, but have found this the best), bichromate of potash, distilled water.

To prepare the plates.

Having thoroughly cleaned the ground surfaces of the glass plates in the usual way, carefully level them and prepare a solution composed of—

Gelatine	...	...	...	1 ounce
Tannin	...	...	...	10 grains
Soap	...	...	...	30 "
Distilled water	...	...	...	8 ounces

First dissolve the gelatine in six ounces of the water, and having dissolved the soap and tannin each in one ounce of hot water, mix them, and add the mixture to the hot solution of gelatine very gradually, and stirring all the while. Filter through a course cloth into the jug, and pour while hot over the plates, so as just to cover them. Should there be any air-bubbles, they may be removed with the point of a penknife. The plates are now left till the gelatine has set, and care should be taken that as little dust as possible falls on the plates, or holes will be formed in the film.

As soon as the gelatine is quite set, the plates are turned upside down and supported on little blocks of wood at the four corners, and left for about twelve hours to dry; the plates are then sensitized in a bath of bichromate of potash.

Bichromate of potash	...	...	1 ounce
Distilled water	...	...	20 ounces

They may remain in this for about five minutes, and are then placed in a dark box or room, and dried with the aid of a gentle heat; when dry, they are ready to be exposed under a reversed negative. The time of exposure varies from about five minutes in the sun, for clear line subjects, and fifteen minutes for thin half-tone negatives, to fifteen and thirty minutes, or even longer, if the negatives are very intense. The exposure is difficult to regulate, and can only be learned from experience.

When the plate is judged to have been sufficiently exposed, the negative is removed from the frame, and the back of the sensitive plate is exposed to the sun for two or three minutes, to thoroughly harden the *under* surface of the gelatine, and prevent it from swelling up afterwards. The plate is then taken out of the frame and put into a dish of clean water, and thoroughly washed with many changes of water till all the yellow bichromate salt is removed. The superfluous water is wiped off, and the plate is then ready for printing. If the subject is in line the plate may be rolled in with tolerably stiff black ink, softened with a little olive oil, and not too much on the roller. After the plate is inked in, the superfluous ink is removed with a damp cloth, and the surface of the plate finally wiped with a clean damp cloth to remove all traces of scumminess. The paper is laid on, and the plate pulled through the press in the ordinary way. Before inking in again, the plate is wiped with the damping cloth. It is possible that some preparation of gum and glycerine would be a great help in keeping the plate clean in printing, but I have not found it necessary.

For prints in half-tone the process is slightly different. The plate is first rolled in tolerably stiff black or dark ink, to give depth to the shadows, and then with thinner and softer ink of the same or any different colour, to bring out the half-tones.

The above description embodies all the essential practical particulars of the process, but success can only be attained by practice.

There are many other substances which may be used in combination with gelatine and bichromate of potash to prepare similar printing plates, such as bichloride of mercury, permanganate of potash, chrome alum, &c. I have tried these, but on the whole I prefer the process I have given above, and believe it will give as good results as any other, and is not less simple and practical in working.

If desired, the gelatine films can be prepared so that they may be stripped off the glass and used as a tissue. This is done by using polished glass plates which have received a thin coating of wax dissolved in ether. After exposure to light under the negative, the tissue may be transferred and fastened to the surface of a stone or metal

plate, as I believe is practised in the heliotype process. I have tried this method, but finding the wet gelatine films rather unmanageable, I have abandoned it, as I consider the above gives as good results if proper precautions are taken, and is, perhaps, more convenient for amateurs.

ON THE EFFECT OF SENSITIZERS IN THE DRY PROCESS.

BY DR. SCHULTZ SELLAC.*

WHEN the sensitive negative film of iodide of silver is washed with water, so that the adherent solution of silver is perfectly removed, it may be dried without any remarkable change; but the sensibility of the plate is much impaired, and if, after exposure, the picture is developed on it, an impure picture results, as on an unclean plate. In the same manner a silver plate, iodized after Daguerre's process, becomes unserviceable after some time, and yields a fogged, impure picture. With the collodion process Spiller and Crookes proposed already in 1855 to prevent this inconvenience, which hindered to lengthen the time of exposure discretionally, by coating the film with deliquescent salts, nitrate of magnesia, zinc, &c., to keep it wet; afterwards they employed glycerine, sugar, and similar substances for the same end.

Various substances—albumen, tannin, extractive substances—have been since employed as so-called "sensitizers" in the dry processes; the film coated with these substances keeps its sensibility and yields a clean picture. The manner of working of the sensitizers has not been explained hitherto rightly; however, as so great a number of substances have been proposed for dry processes, it has not only theoretical, but eminently practical, interest, to know their proper destination and object.

Dr. Vogel has supposed that the effect of the sensitizers is a chemical one; he has stated that they further the decomposition of iodide of silver by light like all absorbents of iodine, and inferred that they increase the photographic sensibility. In a recent paper I have, indeed, proved undoubtedly that the photographic development requires chemical decomposition and the existence of a chemical image, the invisible image. Dr. Vogel has supposed that the decomposition of iodide of silver by light takes place only in presence of absorbents of iodine; but he is wrong in this. Pure iodide is decomposed by light in absence of free iodine or of other oxidizing substances, as chlorine, nitrous acid, &c., which would reoxidize the decomposed iodide; the decomposition is, indeed, very slight—a dissociation. Iodide of silver treated with an excess of a pure fresh solution of iodide of potassium, and washed with water, changes its colour scarcely in a remarkable degree by exposure, but the slight chemical decomposition which it endures notwithstanding, is sufficient to produce the invisible image capable of development. The sensibility of iodide of silver treated with an excess of iodide of potassium is much inferior to that of the iodide prepared in the ordinary manner with excess of solution of silver; the time required for the exposure of the former is manifold greater than that of the latter, as Carey Lea first has stated. By washing with a solution of silver, even very diluted, this less sensitive iodide regains the sensibility of the iodide originally prepared with excess of silver; but other absorbents of iodine, arsenious acid, nitrate of lead, tannin, do not increase its sensibility in any remarkable degree.† The fact is, that the first chemical impression of light on iodide of silver, which affects the photographic development, is much quickened by the presence of solution of silver, not in a remarkable degree by the presence of other substances. With the

* Philadelphia Photographer.

† It is well understood that the solution of iodide of potassium must be fresh, and pure of free iodine; every solution kept for some time, particularly when exposed to light, contains free iodine. When a solution containing free iodine is applied to the film, its sensibility is, after careful washing with water, very small; and by washing with solutions of absorbents of iodine is then increased, but no farther than it would have been when the solution of iodide of potassium was void of free iodine.

bromide and chloride of silver a similar difference cannot be stated, or it is slight, at least.

In the dry processes with iodide of silver, the plates are prepared with excess of silver salt, and, therefore, are in a sensitive state as long as they are wet. The particular relations of iodide of silver to light do not at all come in consideration here; not the most energetic absorbents of iodine are employed as "sensitizers." The "sensitizers" have the object to made the plate keep its properties while dry; their effect is essentially a physical one; they keep clean the surface of the film. Cleanness is the general requisite in all photographic processes, as every impurity or deposit of the atmosphere has particular developing properties; for a purely photographic development it is necessary that the substratum of the film, the glass plate, as well as the surface of the film itself, are clean.

A well wiped glass plate keeps its cleanness only for a short time. When coated with albumen, the plate may be used as a clean one for a discretionary time; the varnish surface of the ferrotype plates keeps clean likewise for an indefinite time. These same substances, albumen, and resinous matter, are employed as sensitizers in Taupenot's and Harnecker's dry processes. Tannin, sugar, extractive matters, which are employed in dry processes, are not equally applicable for the preservation of glass plates, as they would dissolve in the silver bath. However, glass plates coated with these substances have likewise the property to keep clean; when they are breathed upon, they show beautiful coloured concentric rings, a phenomenon which proves that the water of the breath has condensed in a coherent film. It is demonstrated in physics, that surfaces on which water condenses in a uniform layer are free of vaporous deposits of the atmosphere.

Keeping clean the surface of the film, the chief effect of sensitizers in dry processes, may not be the only one; the hygroscopic properties of the coating particularly will be of influence.

PHOTOGRAPHIC REPRODUCTIONS OF OIL PAINTINGS.

BY M. SCAMONI.*

From observations and Communications in Goupil's Reproducing Institution at Asnières.

New paintings are placed horizontally on a table and coated with a film of albumen, which is laid on very evenly with a badger's-hair brush.

The white of an egg has to be previously well beaten. Old and partially darkened pictures are coated with glycerine, which is applied with a piece of soft sponge.

The copy is best made in the open air, on a roomy terrace, or in an open court or garden.

Moderately large pictures are surrounded with a screen, S, of corresponding height, made of some dark material, which will exclude all reflected light. Opposite to the picture, B, an opening, O, is made in the screen, through which the objective of the camera is pushed.

Pictures with very bright sky are slightly inclined forward toward the apparatus, or they are placed upside down, the sky being lowest. A picture with few actinic colours requires sometimes a very long exposure—four to five minutes.†

To avoid the rapid drying of the film, it is advisable to place in front of the sensitive plate a clean glass plate at a distance of about one and a-half lines; the plate-holder must be arranged for this purpose.

* *Photographic World.*

† The kind of objective used is not mentioned, but a rapid working instrument will be necessary.—*Mittheilungen.*

Collodion.—Iodide of potassium (very finely powdered); iodide of cadmium; bromide of zinc; bromide of ammonium.

Nitrate Bath.

Nitrate of silver	...	...	7 parts
Distilled water	...	...	100 "
Crystallized nitrate of zinc	...	...	3 "

PHOTOGRAPHIC GEOPLASTY.*

Much attention has of late been bestowed upon the photographic "relief" maps, and it has even been suggested to prepare such maps, embracing a plastic picture of a whole state, for the use of schools.

We become used to the idea that nothing which is possible is too difficult to accomplish, but let us consider first the production of detailed maps and plans. This is the real field for geoplastic labours, and excellent results can be reached when science, art, and technical skill go hand in hand. Since the year 1865 we have had frequent opportunities to work in this branch of photography, and we are especially indebted to the scientific investigations and geological labours of Dr. Alphonse Stubel for this new application of photography. The Doctor is at present engaged in another voyage of discovery in Central America. First, there appeared a geoplastic map of the Island of Madeira; next, in constant succession, the monography of Dr. Stubel of the volcanic island group of Santori, with the central complex of craters of the Kaimeni Islands. As the last named island group changes constantly in consequence of volcanic action, maps of the islands were made before and during eruptions, and these representations showed at one time the basin of the sea filled with water, and again the basin was represented as empty, showing the formation of the bed of the ocean. These cartographs were also represented in the projection on the vertical, in a foreshortened perspective, and as landscape pictures in profile.

Dr. Stubel himself says:—"With a closer study of the surface of the earth, topographical and geological, showing more and more the constant connection between the qualities, the superficial shape, and the forces which produce changes in the form of the earth, it becomes necessary to find new methods which admit of plastic representations as nearly perfect as possible."

The number of geometrical constructions by which the curved surface of the earth was laid down on the flat surface of the paper was soon exhausted, and a method was sought for of representing inequalities of the surface in an easily understood manner. It is well known with what difficulties (some of them almost insurmountable) cartography has to contend, when it is necessary to reproduce the absolute and relative proportions of height, or the considerable vertical extent of mountains, which are sometimes so steep that only a line in the horizontal projection will indicate them.

PRESERVATION OF SENSITIZED PAPER.*

I MADE a silvering solution last September for a special purpose, that is, for the preparation of sensitized paper suitable for the development of paper priats. This solution has preserved its clear and limpid appearance to the present moment, quite unchanged in colour; and there is but little, almost an imperceptible, quantity of deposit at the bottom. The bottle containing the solution is of coloured glass, of a slightly greenish hue.

Furthermore, some plain paper, sensitized with this solution now six weeks ago, remains unchanged in colour. I recollected having sensitized the paper, but finding it so colourless, I had some doubts on the subject, and exposed it and produced a picture with it.

The paper is not albumenized.

Perhaps the result may be of service. I will see. In the

* *Photographic World.*

meanwhile, the salting and silvering solutions are as follows:—

Salting Solution.

Water (distilled)	20 ounces
Chloride of ammonium	100 grains
Gelatine	25 "
Citric acid... ..	100 "
Carbonate of soda... ..	100 "

Silvering Solution.

Water (distilled)	20 ounces
Nitrate of silver	10 drachms
Nitric acid	2½ "
Acid tartaric	1 drachm

ON PRINTING.

BY CHARLES WAGER HULL.*

THIS is a branch of photography to which I think there is not attention enough paid. It is equally important with the other two, although some photographers seem to think differently. I know there are those who think that if they get a nice negative that is about all that is required of them, and get a boy who has served the apprenticeship of three months at photographing, and who thinks himself perfect in everything pertaining to the art, to do the printing. The look of the mounted photograph has about as much to do with winning custom as the position and expression.

Who would take a badly over-toned, weak, and sickly looking photograph of a friend and be satisfied with it?

What contrast there is between a nicely toned, brilliant, and neatly mounted photograph, and one that is the reverse! Is it not more satisfaction to a photographer to turn out good work, and have his customers praise it as such, than to turn out bad work and have his customers tell him so to his face? In the former case the photographer has as much as he can do; in the latter, he is always complaining of hard times, and nothing to do. In the case of the good photographer, his customers always come back to him, and he reaps a good return for his labours; and in the case of the bad photographer, his customers never come back, and he reaps nothing. Now about all of the difference between these two, is the care and time they spend upon their labours. Some spend a great deal of pains at every little thing they do, and are very careful to do the very best they can, and so, of course, turn out good work; while in the case of the bad photographer, he is careless and does not take any pains with what he does, and so turns out bad work; and so long as he shoves them off to his customers and gets his money, that is all he cares about. In fact, he is a "money photographer."

I here intended, however, rather than to moralise, to give a few hints in printing, which may not go amiss to some. The first thing necessary is a good silver bath for silvering paper. The one above all that I have used, and which I like best, is the one I am now using. It is made in the following manner:—

Nitrate of silver	1 ounce
Pure, filtered, rain or distilled water	4 ounces

When completely dissolved, add—

Nitric acid C.P.	5 drops
Aqua ammonia, conc.	8 "
Saturated solution of alum	2 drachms

Stir well, both while adding the acid, and the ammonia, and then add—

Water	8 ounces
Alcohol	½ ounce

When wanted for use, filter. The brand of paper which I like best is the "Berlin."

Silver, 50 to 70 grains, according to the temperature.

* Philadelphia Photographer.

On a very warm day 35 grains is sufficient, and on a very cold one, 70 grains is about right. But the best way is to increase the strength of the silver, and silver a less time. Thus you will get more brilliant prints. Dry thoroughly, and fume seven to twelve minutes.

The toning of the paper depends a great deal upon the time it is fumed. If fumed too short a time, it will print a yellowish-red colour, and if fumed too long a time it will print a bluish colour, and in either case it will refuse to red up as you want them to in the acidulated water, and so it will be hard work to get the tones you want. There is a happy medium between these two which I very much desire to obtain, and so I am very particular in silvering and fuming, and then the paper will tone all right. I like to have it print a warm chocolate colour, and then I can easily get the tones I want. You might think that I am very particular—more so than what is necessary—but I defy anybody to do nice work unless they are particular. As to printing from the negative, I first print a proof for a customer who is waiting for it. Now, we will suppose a young lady is waiting for the proof; and as all young ladies like to look well, both in a picture and out of it, I will proceed to improve this negative a little before proving it. You will see, by looking through it, that there is a frown upon her forehead, as well as a heavy line from each side of her nose to the corners of her mouth. I now proceed to take these out in the following way:—The negative is just varnished, and the varnish still being soft, I will take a "Faber No. 1" pencil and cover those parts of the negative with lead, and thus take them out. By this means I give a pleasant expression to the face of the lady, and thus save time and trouble in setting her over to obtain a pleasant one.

Now I print a proof from the negative and send it down to the customer, and in nine cases out of ten he or she will like it. I always make a practice of doing this before I make a proof, and the customer is generally satisfied. Now, as to making prints to tone, you must also examine every negative, and see if you can in any way improve it, and if you can, do so. A negative can be improved in a few instances in the following way:—If it is very intense, the most brilliant prints can be obtained by printing it face to the sun. If the negative is very weak, the most brilliant results can be obtained by printing it through tissue paper, increasing the number of thicknesses of paper according to its weakness. I have used as many as nine or ten pieces. English tissue is the best. If there are deep shadows under the eyes or in the checks, I find that the best way to soften or take them out is with Prussian blue. Take a brush and wet it, and take a little of the blue upon it, and stipple the back of the negative exactly behind the place where it is to be taken out, and print face to the sun through tissue paper. This is a very good dodge if nicely used. Great time, care, and no little skill, are required to do this nicely, for if you put it on too thick it will print too light, and if it is not put on even it will print patchy.

You may say that this stippling with blue paint is a bad thing, as you think it destroys the likeness. If carried to excess it certainly is, but in the generality of cases it is different. I will at some future time tell more about this. When ready to tone, cut and acid the prints as follows:—

Acetic acid, No. 8	2 ounces
Water	1 gallon

It will be seen from the above that I use once again as much acid as other photographers do, for when the acid water is strong they will red up more easily. When they are in the acid, move them about smartly, so that they will red evenly and nicely. Keep them in until they are red enough, and then take them out and let a running stream of water run through them for about fifteen or twenty minutes, or until the water is clear of that milky colour, which is the silver. Make up twenty-four hours before using the following stock toning solution:—

Stock Solution.

Citric acid (24 gr. strong to the oz.) 2½ ozs.
Saturated solution of bicarbonate of
soda, about 2 "

Or enough to make the solution slightly alkaline; then add

Chloride of gold 2 grains
Distilled water 64 ounces

Before toning add 1 ounce of chloride of gold solution (15 grains gold to 16 ounces water) to every 8 sheets of paper, and enough bicarbonate to make the gold alkaline. The pictures will tone in this bath in about five minutes, and, by careful attention, you can obtain any tones you desire. As you tone them put them in a tank of running water.

Fixing Solution.

Saturated solution of hyposulphite soda ... 16 ozs.
Water 80 "
Bicarbonate of soda ½ oz.

Fix six minutes, moving the prints smartly all the time while they are in the hypo, so that they will fix evenly and thoroughly; soak in salt water as usual, and let a stream of water run through them all night (plenty of water here), and then mount them in the morning. This is the formula that I am using. It is one which I do not hesitate to say you can always get nice pictures with if you are only careful. If this is acceptable to the fraternity they are welcome to it; and if it does any good towards elevating the average of their work, I will be richly repaid for my trouble.

PHOTOGRAPHS UNMOUNTED FOR BOOKS.

BY C. A. S.*

As it is almost impossible for me to tell any fact without giving it the accessories of a story, I beg the editor to excuse my throwing the bit of information and suggestion I am about to convey to the public in the form of an episode. The difficulty about photographic illustrations has always been the mounting; either the paper was thin, and it cockled, or it was thick and cumbersome.

Three young men sat in the upper room (which was the ground floor, the building being of but one story) and discussed this question. The young men were, technically speaking, "hard up," which is to say—allowing me to inform such of my readers, if ladies, who know not the meaning of the words—that young men out of employment, and with an amount of money in hand less than ten thousand dollars, are accustomed to call themselves "hard up."

Ezra Baldwin had come West as a land surveyor's assistant, and found himself out of a job by reason of better men being willing to do more work for less money. Gus Stebbins was a young jack-of-all-trades—engraver, photographer, printer, school-teacher, storekeeper, &c. Neither of these gentlemen had ever had a very large sum of money in their possession at any one time, and, hence, were comparatively jolly and undaunted. C. Danforth, the third, was a student, fresh from college life, with enough book learning to unfit him for practical conflict with the world, and with not enough education or wisdom to make his literary attainments remunerative. He had "struck" for the West with an immature desire "to do something for himself," and here he was doing it, sitting upon a box with his heels drumming a tune, with only five dollars in his clothes, and much too proud, as yet, to write home to his folks. The three were doing a small business in the retail commission produce business, but trade was uncommonly dull, and the profits most exasperatingly uncertain.

Gus had just returned from an unsuccessful attempt to hire out to a photographer in the place, as general assistant, printer, &c.; but the photographer, a mild and gentle man, had nothing to offer.

* Philadelphia Photographer.

"Now," said Gus, in conclusion, "if it wasn't for the mounting of photographs, I believe we might make a good thing by publishing a book of the country, illustrated. Baldy could write it, Danforth could paste the sheets together, and I could 'peddle her round.' I believe it can be done. Kenit says he has lots of negatives, and he would go in with us if we could only find a way of mounting them. I'll go down and see the bookseller."

The bookseller was a Mr. Riggs; quite a rich man, but his name was rarely spoken, the "bookseller" being his usual appellation. While Stebbins was absent, Baldwin also took it into his head to "visit," leaving Danforth in sole charge of the store.

As he sat there, musing upon the vicissitudes of life and the difficulty, not only of making a fortune, but even of earning a living, an elderly gentleman approached and inquired prices.

"What are these potatoes worth a hushel?"

Danforth, sitting on his box with his hands under his thighs, gave him the desired information. The elderly gent inquired of other articles, and Danforth answered in the same way.

"A pretty store-keeper you are," remarked the would-be customer; "I guess you are not long in the business?"

"Long enough to be sick of it," replied C.

"Indeed! What will you take for everything you have got?"

Danforth said he believed fifteen dollars would clean the ranche.

Just at this moment Gus returned, who no sooner perceived the elderly gentleman than he doffed his hat, and began in the most persuasive manner; "Why, Mr. Riggs, how do you do? I have such a fine investment for you; such a literary venture. We propose getting up a book among us—novel, unique, rich, varied, full of anecdotes and adventures, illustrated with pictures of the place, true photographs, with portraits of the leading men. It will make real estate go up immediately."

"Will it?" said the other. "I am sorry I have no money to invest; but I have just put all my fortune, fifteen dollars, into this produce, and cleaned this young man out. Why don't you ask him to aid you?"

"He? Why, he is one of us. We run this store among us. He's going to put in on it."

"Oh, he's your editor, is he? Well, he appears better suited to that than keeping store. But this photograph business is had. A photograph in a book always looks like the very —. Didn't you know that? First, because the picture is poor, and then they are so careless in the printing. Besides, who wants a pack of cards in their book; great thick pasteboard here and there?"

"Oh, we have obviated that, sir. I will tell you our plan. I propose to print my photographs on plain paper, cutting it off so as to get a good wide margin. These I intend to tone as usual, and allow to soak in water, and then to lay on a stone and become damp-dry. Then I shall take some light frames—two to a picture—like a drawing board, and push them over the picture thus, as my knife-blade shuts into the handle, making a strainer-frame, so that the picture will dry taut and smooth; then you can cut it out the size of the page and hind like any leaf. It will never cockle or wrinkle; it will be like an engraving. Why, sir, you can do the same way with albumen sheets. They look splendidly, and the cost is not much more, for I silver through an opening, a square place, the size of the print only being immersed. Did you never dampen a sheet of paper and paste it to a drawing-board, and then dry mount an engraving upon it? Even that way will answer, if the first does not suit."

Mr. Riggs answered doubtfully; but so enthusiastic was Stebbins that at last he was persuaded to accompany the young man to the photographers, and give his sanction to the printing of a number of photographs sufficient to illustrate an edition of one hundred copies. The reader can

imagine the exultant hopes and imaginations which filled the young men's thoughts and conversations that evening. Even their dreams must have been coloured by it; and they awoke thrilling with pride at sending to friends far off this evidence of their genius and industry.

My story ought to end here. Every literary production, as Dr. Johnson might have said, consists in stating in fervid words the golden harvest we hope to reap, or in excusing with mellowed tenderness why our success has not been greater.

If Danforth, in later life, was asked about the joint effort, he generally remarked that Baldwin had no literary talent, was no more fit to write a book than a stick; and as for Stebbins, he was always going in upon such a scale of magnificence that the first puff of wind lifted the sticks entirely out of his craft, and left the cock-boat he had rigged like a man-of-war adrift at the mercy of the sea. "Give Stebbins five cents," he was wont to remark, "and he would immediately hire a thousand dollar store, engage ten thousand dollar's worth of goods, and open an account with a livery stable for the best animals to be had."

When Stebbins was questioned, his reply would be something after this sort: "The photographer, you see, was one of those fellows who do things in a niggardly way. He had never had an order for a thousand pictures before in his life. He intended to rest upon this job, and live in luxurious retirement. The first shock to his nervous system was my telling him that they were not to be mounted in his way. I explained my way. I showed him how they were to be done. I made some prints, and then he set to work and made them just the other way. There was no use swearing at him; he was dazed by the magnitude of the order, and could not see the use of printing a 5 by 6 sheet with a two-inch border all white. Then, as for putting them between frames to dry, that he could not do, because he had no frames, and I could not be there all the time, having the shop to look out for."

Baldwin once alluded to the subject in a letter to a friend.

"I got up the book—that is, the literary part—in good shape. I had got a chance to draught, and worked hard during the day, but at night I 'did up' the anecdotes that were brought in. Every morning old Riggs looked over my work and cut it up. He totally mised the whole thing above fifty times. However, I stuck to it and got it done. There was no blame to be attached to me. Stebbins made a great ado over the pictures, and pretended to be working like a horse, but nothing came of it, unless he put the proceeds into his pocket. Danforth kicked his heels against our counter (a big box) till he kicked one side in, and then, some money coming from home, he 'dug out,' and never troubled his head about book or anything else so long as he was clear. The whole thing 'flunked out,' I believe, which taught me a lesson, never to depend upon another for getting anything done I could do myself."

A few volumes of a curious character were once shown me by Mr. Riggs, who had a comical story to tell concerning them. His version was somewhat different from the one given here. He implied that three young squirts, just from their mothers' apron-strings, had come to him "strapped," and wanted something to do, and he had advanced them money and set them to book-making.

"I had seventy-five copies struck off and bound," said he; "about thirty were illustrated. Look at that; that's me! Why, my own wife won't acknowledge any resemblance. See this view of my store. It looks like an old white hat with a gash in it. Some of the pictures were put in upside down, all in the wrong place, and more than half disfigured by stains. You might think this was the children of Israel in the Red Sea, but it isn't. That is the Sons of Temperance procession, and that which makes the sea was made, I am told, by an enthusiastic unmarried female waving her cambric to the Sons. That edition stood me in to the tune of twelve hundred dollars. I feel proud of my

experiment; I assure you that that, and not the difficulty of disposing of them, keeps my shelf thus laden.

There was a pathetic comicalness about the affair that made the volumes interesting, but there was also in them one element of success worthy of imitation and employment.

The leaves which held the photographs were as flexible and even, as smooth and undemonstrative, as the letter-press of the rest of the book. The heliotype process seems likely to make the illustrating of books by photography a cheap and valuable acquisition; but even when silver prints are used, as in small editions, it seems to me a careful manipulator might produce excellent results, avoiding both the thickness, and consequent brittleness, of thick boards and the curling and wrinkling of loose dried prints.

PERMANENT PHOTOGRAPHS ON GLASS.

We find the following in a contemporary. It will be seen that the so-called novelty, which has been patented, is, in reality, the well-known "conversion" method of enamelling first patented in this country by Herr Grune, whose patent was not maintained beyond the three years:—

"An important process for securing the permanency of photographs on glass, under almost any circumstances, has been patented in this country by Mr. E. A. Goodes, of Philadelphia, U.S. The inventor claims that photographs, either positive or negative, are rendered proof against the action of water, light, oils, and most of the known acids, by the application of heat, whereby the silver is, so to speak, amalgamated with the glass. The photograph is taken upon glass in the usual way by coating the plate with bromo-iodized collodion, and exciting it in the silver bath, after which the picture is taken by the camera or other means, and is developed by proto-sulphate of iron or pyrogallic acid, the latter being preferable. It is then fixed by immersion in a solution of cyanide of potassium or hyposulphite of soda, after which it is well washed and thoroughly dried. The picture is then ready for the staining process, which is as follows:—The glass plate is placed in an airtight kiln, or otherwise subjected to a strong heat, until every part of the photograph becomes a deep brown, care being taken that every part of the picture is equally heated. It is then gradually cooled, after which it may be placed in water, and a dark brown powder formed on its surface will easily wash off, leaving a perfect copy of the photograph permanently produced upon the glass plate in tints varying from a pale yellow to a deep red or brown. By this application of photography to the permanent staining of glass, the most intricate and elaborate designs can be instantly placed upon glass for shops, halls, churches, carriages, &c. Emblematic designs of a complicated nature can be stained on glass for windows, rooms, or halls; and monograms, names, portraits, or pictures can be produced permanently upon manufactured articles of glass.

The process can also be applied to ornamenting glass for lamp shades or gas fixtures, coach and carriage lanterns, and for glass signs for hotels, shops, and the like. It will also serve for permanently staining scale marks upon gauges for steam engines, pumps, and so forth, and for the manufacture of clock fronts and faces, and for other useful purposes, by writing or drawing with one of the salts of silver, and submitting the articles to heat.

The photographic pictures produced are perfectly weather-proof, and the invention can be applied with advantage for the general preservation of photographic negative and positive pictures and designs, and to the preservation of photographic copies of valuable public or private documents, plans, views, autographs, curiosities, and so forth. Also for the manufacture of water-and-heat-proof slides for magic lanterns, stereoscopes, and microscopes, which require occasional cleaning.

This process, which consists in subjecting a photographic picture taken in the usual way to various degrees of heat, produces the following results:—A clear picture of peculiar

whiteness, positive or negative. 2. A picture with metallic lustre, the silver being reduced to the metallic state. 3. A picture indelibly stained upon the glass. A photographic image on being exposed to strong heat soon becomes peculiarly white and clear, and if the process is stopped here the first result is obtained. If the heat is continued longer or suddenly increased, the silver is reduced to the metallic state, and the second result is produced. By continuing the heat still longer, the surface of the glass becomes stained on every part containing the slightest particles of silver, those parts containing the most producing the darkest stain, the various degrees of light and shade in the photograph producing corresponding degrees of tint in the stained copy. This is the third result of the process, and a picture is produced, proof against the action of light, heat, cold, water, or any other fluid, and all known acids with the exception of fluoric acid.

Correspondence.

THE CHLORO-BROMIDE PROCESS V. COL. WORTLEY.

SIR,—The defence published by Col. Wortley in answer to my observations reached me a fortnight or more since, and though desiring to reply to it earlier, a press of more important occupation has compelled me to postpone it. I may also remark here, that the unavoidable postal delay which attaches to correspondence from a distance is always accompanied with material disadvantage to the distant party to the argument, as the statements of the other side remain before the public for weeks unanswered. These I shall now reply to in brief succession.

Excess of Nitrate of Silver.—I showed in a very clear and unanswerable way in the *British Journal* for Sept. 15, p. 434, that every one of my formulae included an absolute excess of nitrate of silver. For each formula I gave the exactest calculation, showing that on the whole they averaged about three grains of nitrate of silver in absolute excess. These calculations (which cannot be impugned), Col. Wortley does not venture to attack, but replies by citing vague, various calculations by other parties, arguing from them in a manner which is only calculated to provoke a smile. I shall not waste your space nor your readers' time by replying to them seriously. If Col. Wortley is acquainted with the theory of chemical equivalents, let him point out where my calculations are wrong, and where I have over-stated by the smallest fraction the quantity of free nitrate required by any one of my formulae.

Next, Col. Wortley argues that I am not entitled to priority as respects the use of excess of nitrate of silver, because other gentlemen, whom he names, directed to use it in excess at an earlier date than I did so.

If this argument is seriously offered, it involves a total want of acquaintance with the history of collodio-bromide. Because, not only the experimenters whom he quotes, but many others, long believed that they used nitrate in excess, and so advised. But we all now know that they did not. They weighed out an excess and placed it in their collodion; much, but not an excess, dissolved, the rest remaining as an inert powder at the bottom, to be filtered out. Or if, by chance, an excess came in any instance into solution, all the plates fogged. And this happening occasionally explains precisely why the process came to be considered as uncertain. I aver most positively that until I introduced the use of chlorides and of aqua regia, no one had made a collodio-bromide plate with nitrate of silver in excess in actual solution, that did not fog in the development.

Curiously enough, Colonel Wortley recognizes this last fact, which so completely refutes his own position, by following most closely in the track which I pointed out. The whole matter can be put into a nutshell. If, as Colonel Wortley asserts, nitrate of silver was used in excess before I pointed out how to do it (viz., with chlorides or aqua regia), it can be so used still, and, if so, why does not Col. Wortley so use it, instead of adhering so tenaciously to my chlorides and aqua regia? His own practice confutes his argument. Whatever reasoning he may see fit to employ, he will most certainly continue to prepare his plates by my methods, which are the only known ones for preparing plates with collodio-bromides containing nitrate of silver in excess in actual solution, that will not fog in development. And I feel that if I were to write a dozen pages, I

could not answer Col. Wortley's reasoning with a completeness so thorough as does his own practice.

Use of Chlorides.—I next come to a point of capital importance. For many years I have made a speciality of the study of the influence of chlorides on development in all its branches. I was, I believe, the first to show that for developed positives on paper, chloride of silver gave the best results; this was as far back as 1864. In the *Philadelphia Photographer* for July of that year I said, at page 93, that I preferred, "contrary to the usual custom, to develop on chloride of silver without either iodide or bromide." This had reference to paper positives by development. I subsequently published a curious experiment in which an invisible image on common albumenized chloride paper, produced by a short exposure under a negative to magnesium light, was brought out with all its finest details. These experiments attracted a good deal of attention, and led many others to look into the subject.

Following up these investigations, I discovered the utility of chlorides in the collodio-bromide process. This appeared in the *British Journal* for December 31, 1869. I there referred to some of my previous experiments as having indicated the "unthought-of sensitiveness of chloride of silver" in respect to development; mentioned that these former experiments of mine had, I believed, led others to work in the same direction; and then went on to say (p. 624):—

"Nothing, however, of interest was elicited, nor was any stop made towards the discovery of the function of chloride of silver in connection with collodion negatives.

"This function, I believe, I have now succeeded in making out. The true use of chloride of silver is to be found in connection with bromide in the collodio-bromide process, and if I do not deceive myself, it will be found that the application of chloride of silver will be equal in importance, and not dissimilar in character, to the introduction of bromide of silver into the regular wet process.

"For, although excellent work was done with the iodide of silver process, yet the introduction of bromide gave a great certainty, ease, and freedom from fog. So, although capital work can be done with the collodio-bromide process, nevertheless, the introduction of chloride enables us with ease and certainty to get a bright vigorous image, coming up with facility to any degree of intensity desired." "Indeed, the addition of even a very small quantity of chloride so effectually destroys all tendency to fog, that the use of a soluble bromide in the development becomes very superfluous, even when the sensitive collodion has been prepared with a large relative excess of nitrate of silver. A liberal excess of nitrate of silver in the collodion tends to exalt the sensibility, but obliges great care to be taken in the development."

If it were necessary I might further strengthen the above by quoting other passages, but it seems needless to take up your space. The Editors were kind enough to say in their leader:—

"Let us congratulate our friend and correspondent, Mr. Lea, on having brought to such a successful issue his investigations in connection with the collodio-bromide of silver, resulting in the publication, in the present number, of a process which will, we believe, prove to be of great value," &c. I must apologise for these many citations, but they were necessary.

When Colonel Wortley very lately found it desirable for a second time to adopt a process of mine, the originality of which was entirely undisputed, and is proved by the foregoing extracts, it would naturally be anticipated that, anxious to avoid placing himself again in a false position by taking another's results without acknowledgment, he would hasten duly to make it. Let us see.

"Lest Mr. Lea should claim this as his process also, I beg leave to call attention to communications from Mr. W. H. Davies and Mr. W. H. Harrison," &c.

On referring to the places cited, I find that Mr. Davies refers only to the use of chlorides in the wet collodion process. Mr. Harrison's experiments were in the same direction, concluding, at the end of his article on the use of chloride in wet collodion, that it might prove to be useful in dry plate work. It is remarkable that even in saying this, he adds expressly, "without free nitrate," whereas the special value of chloride is with free nitrate. As neither of those gentlemen, both of whom have contributed to photography much that is interesting, and from whom, I regret, we do not hear oftener, has, during two years' time, given the slightest indication of claiming this process, it is easy to imagine their surprise at finding the honour suddenly thrust upon them by Col. Wortley.

It has attracted my attention that Col. Wortley, whilst attaching the very highest value to them, speaks in the most indefinite way of chlorides. Why does he not state what chloride he uses, and in what quantity? Would the correspondence with my formulæ have been too evident?

By these methods, then, by the use of chloride and of aqua regia, I have succeeded in rendering it possible to use nitrate of silver in excess in the collodio-bromido process. As to who is the discoverer of these principles I presume there can be no doubt in any one's mind. Even Col. Wortley does not pretend to claim these. Whether the use of a moderate excess of nitrate of silver, as I have recommended, or of a very large one, as advocated by Col. Wortley, shall become the favourite plan, does not in the least affect the rights of the case. I long since pointed out (long before Col. Wortley had made his first experiments with the process) that a large excess of nitrate of silver heightened the sensitiveness, saying in one place, as above cited, "A liberal excess of nitrate of silver in the collodion tends to exalt the sensibility." This undoubted advantage is purchased, however, by some disadvantages, and especially in the production of thinner images, and more difficult to intensify, a difficulty which, I judge by communications which I see in your columns, is found by those who use Col. Wortley's commercial plates.

I do not feel that I can take up more of your space, or consume more of my own time, with this controversy. There is much more that I might say, but it is unnecessary. I have the satisfaction of knowing, from private letters received from your side of the water, that the true bearing of this discussion is well understood there. I shall only add that as Col. Wortley, after taking, without acknowledgment, my aqua regia process, has now adopted, also without acknowledgment, my chloride process, still keeping always within the circle of my methods, I would suggest that his next appropriation be from some one else; it is becoming monotonous. M. CAREY LEA.

CAUTION TO PHOTOGRAPHERS.

SIR,—I have just been victimised in a manner which it is just possible may be brought to bear upon others in the profession; wherefore, you will only do an act of justice to publish the following.

Some few weeks ago, a respectably dressed individual (having a Jewish cast of features, and a slightly foreign accent) purchased from me plates of officers and soldiers in full military costume, which he required as specimens to be either coloured or otherwise made use of for an illustrated work. He paid for the same, and expressed so much (possibly undue) admiration, that I was induced to forward him, by order, two several packages to a London address (which I append for your private satisfaction only, being somewhat doubtful if the law will permit me to expose even a swindler).

My account for the plates was £2 13s., and all applications for the money have been futile, my victimiser having left the lodging to which my goods were sent, without paying me.

As I make little doubt the same trick will be played on others, I publish this caution for the benefit of all it may concern.—I am, sir, yours obediently, C. S. HERVE.

November 21st, 1871.

PHOTO-COLOGRAPHIC PRINTING.

SIR,—In further elucidation of our position in regard to photo-mechanical printing, and in reply to a foot-note appended to our letter by a contemporary last week, will you permit us to say that if Mr. Edwards' patent of a collographic printing surface is valid, doubtless his claim of double inking is good as applied to that surface. This we should be the last persons to dispute; but when he attempts to make good such a claim over collod printing surfaces generally, we are advised by the most eminent counsel in patent matters that such claims cannot be sustained.

We are in a position to publish, if necessary, the case submitted to Mr. Grove, Q.C., and his opinion thereupon. We may also state that the Autotype Fine Art Company, with which we are associated, have purchased of Herren Ohm and Grossman their patent right for this country, and will shortly be prepared to grant licenses and guarantee their licensees against any interruption in the free practice of such process.

SAWYER AND BIRD.

57, Regent Street, November 22nd, 1871.

Talk in the Studio.

ECLIPSE EXPEDITION.—The *Malta Times* says:—"An artist accompanies the expedition, and a photographer, the latter specially equipped with instruments, chemicals, &c., by Lord Lindsay. Much of the success of the expedition will depend on six good photographs being taken."

"A SKELETON IN THE PHOTOGRAPHER'S CLOSET."—*Fun* has always been a friend to the photographer. His suggestion in the following paragraph, that sitting for a portrait is an evidence of a good conscience, ought to give an amazing impulse to the art of the portraitist, and we shall expect henceforth to see *Fun* in the reception room of every photographer, as one of the good books intended to aid good expressions:—"Travelling backwards and forwards to the Exhibition by the ironically called Daylight Route, pleasure-goers must have noted over and over again a poster on the station walls, headed '£50 Reward,' and containing a copy of a carte, by the ubiquitous Charles Watkins, of an absconding bankrupt and defaulting diamond dealer. Who could help being struck by the smug smirk on the face of the sitter, who no doubt intended the picture for some nymph of his vows, and never dreamt of the use Dame Justice would make of the smiling portrait. However, we noted in the papers the other day that he was captured in Paris, thanks to the likeness! Henceforth to sit for your portrait will be the sign of a clean conscience, to avoid the lens an indication of inner guilt. Lot all of us, then, who are good, go and be photographed. If that is not a moral, perhaps Mr. Tupper will oblige with a better!"

PATENT LAWS AND PHOTOGRAPHY.—The European correspondent of *Anthony's Bulletin*, writing on the operation of Copyright and Patent laws in Europe, says:—"If the effect of either or both is to develop and elevate every department of art and industry by rewarding patient skill and successful experiment, then must they work good not only for a country at large, but to every guild and profession. I am informed that in Germany there is a growing indisposition to grant patents, and that the failure of Herr Albert, of Munich, to procure a patent at Berlin was owing to the prevalence of this feeling. I called some years ago on M. Poitevin, in Paris. During the conversation he remarked that his 'business' was 'experimenting.' But I think he would get on but slowly in Germany, where he could get only a complimentary vote for a valuable process. Copyright, too, is open in Germany; as to photography, on special law has been passed, and the courts have ruled that 'photographs are a manufacture,' and therefore they are not protected by existing laws. Some nice legal questions have been raised in England as to how far the privilege of the owner of a copyright portrait is qualified by the common law right of the sitter to forbid sale."

OBSCURING GLASS.—At a recent meeting of the Gorman Photographic Society in New York, Mr. Youngman suggested, as a means of slightly obscuring glass, to print through with weak negatives, to mix milk with gum arabic to a proper consistency, and to coat a glass plate with it. By elevating one end a little in letting it dry, it will possess the superior advantage over porcelain plates of being thicker on one end than on the other, which will enable you to have the weakest part of the negative covered more than the stronger one. A glass prepared this way can also be used as a focussing glass in the camera, a very desirable knowledge for a travelling photographer, in case of accident. Mr. Youngman stated further, that in short exposures he had tried, with pretty good results, to colour the negative by using a yellow or red aniline colour in the developer.

SINGULAR PROPERTY OF GUN-COTTON.—In consequence of some experiments on the inflammability of gun-cotton by an electric spark, Dr. Bleekrode tried also to wet this substance with a very combustible liquid, the bisulphide of carbon. The experiment proved that, in this case, only the liquid took fire, while the cotton, which was in the middle of the burning liquid, remained without alteration, resembling a block of snow slowly melting. The experiment was repeated by wetting the gun-cotton with ether, benzene, and alcohol, always with the same results, and without alteration in the cotton. According to Dr. Bleekrode, this is explained by the results said to be obtained by Professor Abel in his researches on the combustion of gunpowder and of gun-cotton. Experiments appear to indicate that if some obstacle should prevent the gases

generated by the first action of heat upon the cotton from surrounding entirely the lighted extremity of the cotton, the ignition of these gases cannot follow; and as the rapid and complete combustion of the cotton is due to the high temperature produced by such ignition, the momentary extinction of the gases, in conjunction with the great quantity of heat rendered latent at the moment in which they are formed, compels the gun-cotton to burn slowly, in an incomplete manner, similar to a destructive distillation. Dr. Bleekrode remarks, also, that a bottle filled with gun-cotton can be kept under a stratum of bisulphide of carbon or benzene without any danger of explosion in case of fire.—*Exchange.*

PREPARATION OF PURE CHROMIC ACID.—In a paper in *Poggendorf's Annalen*, E. Zettnow, after referring at length to the experiments on this subject made by Kuhlmann, Fritsche, Warrington, and Traube, describes a series of experiments made with the view to ascertain the best method to prepare chromic acid in the pure state, of which the following is an outline:—For 300 parts of the commercial bichromate 500 c.c. of water and 420 c.c. of strong sulphuric acid are taken; when, after about ten to twelve hours, the bisulphate of potassa has crystallized out, the liquor is decanted, and the crystalline mass washed with about 12 c.c. of water. The solution of chromic acid having been heated to 90°, there is added to it 150 c.c. of strong sulphuric acid, and next, just as much water as is sufficient to dissolve the chromic acid which has been precipitated in the flocculent state. The solution is then evaporated until a crystalline film appears on the surface of the liquid, which is then set aside to cool until, after some ten to twelve hours, a first crop of crystals has separated; by a further evaporation of the mother liquor more drops (two to three) of crystals may be obtained. Since the crystals of the chromic acid are very small, it is best to decant the liquid by filtration through a cone of platinum foil perforated with many small holes, in order to free the chromic acid completely from adhering sulphuric acid. The author washes the crystals with nitric acid, sp. gr. = 1.46, which acid ought to be pure. It dissolves hardly any chromic acid, but eliminates the sulphuric acid completely.—*Chemical News.*

ACTION OF LIGHT UPON CHLORINE AND BROMINE.—The *Journal für Chemie* contains a preliminary account of a series of experiments by E. Budde, made with the view of enquiring more accurately into the phenomena of combustion and catalysis. The following points deserve notice:—Light decomposes the molecules of chlorine; highly refrangible light has upon chlorine an effect not quite known by being converted into heat, giving rise to the expansion of this gas; the division of the spectrum, adopted by Seebeck and Melloni, into a heating and non-heating chemically active portion, is not correct, because there exist bodies which are far more heated by the violet than by the red coloured rays; in fact, the division alluded to only applies to surfaces covered with lamp-black. Bromine behaves as chlorine does.—*Ibid.*

ACTION OF SUNLIGHT UPON OLIVE OIL.—L. Moschini states that olive oil, in its natural state, contains in solution a yellowish coloured substance, which, when acted upon by sulphuric acid (sp. gr. 1.63), and by nitric acid (sp. gr. 1.33), gives rise to a greenish colouration, while, with caustic soda solution (sp. gr. 1.34), a bright yellowish colouration is produced. After exposure to sunlight, this coloured substance is so modified that the reagents alluded to do not produce the same reactions. Moreover, by the action of the sun the oleine of the oil is entirely altered, imparting to it many of the properties of elaidine, while if the action of the sun's rays is very prolonged, there are free acids formed, and the olive oil becomes rancid.—*Ibid.*

To Correspondents.

H. MARRICE.—Unless you tell us which process and what details you have tried, we cannot, with any certainty, suggest the cause of your failure. Read the articles on pages 89 and 97 in our YEAR-BOOK for 1870, carefully follow the instructions given, and you cannot fail. The collodion should be tough, and of good body. The addition of several grains of pyroxyline is generally necessary to ordinary commercial collodion. Ordinary albuminized paper should not be used, as it contains salt, which may injuriously affect the print.

J. JAMES.—You will obtain the cards you require of Dean and Son, of Ludgate Hill.

SEPTIMUS HENDERSON.—Our volume "On the Production of Photographs in Pigments" is, we fear, out of print. It was published by Messrs. Piper and Carter, of Gough Square. If any copies are now to be had, the only chance of their being obtained is by application to Messrs. Mawson and Swan, of Newcastle-on-Tyne. The price is 7s. 6d.

C. B. RIVERSDALE.—The use of Schlippe's salt for intensifying is valuable where very great vigour is required. It requires, however, a little care to secure regular action, and occasionally we have found the deposit crack and scale off the image. It may be applied in daylight, as may also permanganate of potash for a similar purpose. 2. It is very difficult, if not impossible, to get a plain print as vigorous as an albumenized print from the same negative. Try the amorphous albumenized paper. Failing that, use vigorous negatives, and a dull light to print in. 3. For mounting prints on the leaves of albums, we prefer india-rubber solution, making the adhesion at the corners only. 4. The method of reproducing negatives from prints described on page 95 of our last YEAR-BOOK might be rendered available. 5. Iodide of potassium may be obtained of any photographic chemist; collodion prepared with it is quickly fit for use. It has the reputation of being more conducive to pinholes than any other iodizer; but it will be interesting to try it again under your conditions. 6. We have not tried the collodion you name; it does not render any change in the bath, developers, &c. 7. We will make the selection when in that neighbourhood, but we fear it will be many weeks first, as our duties at the desk are at this season very pressing.

Wm. B.—A misprint occurred in our last which has misled you. The instructions we wrote were: to each ounce of the black precipitate add six or seven drachms of saltpetre, and place in a crucible. The word saltpetre was made by the printers into sulphate, which misled you. A red heat is sufficient for gold, which melts at a lower temperature than silver. The silver you obtained was from the chloride of silver always present in old toning baths. Treat the half melted iron with sulphuric acid, which will dissolve the iron, and leave any gold which may be mixed up with it. The crucibles are annealed when purchased. As a rule, they only serve one operation.

W. W.—The trace of carbonate of silver suspended in your bath would blacken under the action of light, and produce the blackness you describe. There is no reason to suppose that lead is present in your water. If even a trace were present, it would not be in any way seriously injurious. When the sunning is completed, and the precipitate subsided, the bath will, doubtless, be all right. 2. We should say that one drop would be quite sufficient. 3. No. 4. A stock solution of iron should be kept quite air-tight, otherwise it will soon become oxidized and useless. 5. Replenish the hypo bath for negatives with a stronger solution. 6. Many weeks, possibly months. 7. A long time: we have never tested how long. 8. No. 9. That strength will do well.

S. L.—The owner of the copyright in a portrait cannot proceed against any one copying the portrait until he has registered it, but he can register when he chooses, and can proceed against all persons copying or selling copies after he has so registered the photograph. We regret that our engagements do not permit us to write private letters in answer to questions of this kind.

A. W. W.—The theory of the Daguerreotype is not understood with certainty. It is known that the action of light on the bromo-iodized silver plate gives it an affinity for mercury which is precipitated from its vapour on the plate wherever light has acted, and in the ratio in which it has acted.

E. G. A.—Mealiness is generally the result of using a toning bath too soon after it is mixed. You do not state the character of the "nasty colour." Is it grey, or drab, or bluish, or brown? Slow toning and imperfect toning may proceed from some contamination of the bath—such as a trace of hypo—or it may proceed from a low temperature. If the latter, try slightly warming the toning bath, which is often a valuable aid in very cold weather. The best mode of doing this is to place the solution in a hot water dish.

X. H. W.—The only registry office of copyright for the United Kingdom is Stationers' Hall, London. The presence of the word "registered" upon a photograph is no certain indication that it is copyright, but you would run serious risk in making copies without knowing certainly that the picture was not copyright. The only mode of ascertaining consists in an examination of the Registrar's books at Stationers' Hall.

H. T. ANTHONY.—Many thanks; we will examine, compare, and report.

E. OGIER.—We will avail ourselves of the earliest leisure for calling and seeing the series you describe.

W. SAUNDERS.—We will make the necessary correction when noticing the specimens.

F. G. ELIOT.—Thanks.

F. R. WINDOW.—Thanks.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XV. No. 691.—December 1, 1871.

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A NOVEL CAUSE OF DISCOLOURATION.

A somewhat singular form of stain or discolouration on a photograph was brought under our attention recently. The print was a fine one, which had been produced some years, and was generally pure in the whites, and of excellent colour. It was framed carefully, the edges of the backboard being sealed up with strips of paper to keep out dust or impure air as far as possible. The defect appeared in the shape of patches of yellow, somewhat less than half an inch in diameter. The surface of the patches appeared as if varnish had been dropped or smeared on the print, or as if the albumen had been blistered or frizzled by heat. The stains appeared altogether inexplicable. We were assured that every care had been taken to secure perfect preservation of the picture. It had, it was true, stood upon the chimney-piece in a hot room, but there was no possibility of the frizzled-looking spots being due to burning. As we had not opportunity of removing the print from the frame, we were obliged for the time to leave the problem unsolved. More recently, we find an allusion in a report of one of the American photographic meetings which seems to afford a complete explanation, and at least suggests caution in regard to a possible serious source of injury to the print. Mr. Shoemaker, we are informed, being called upon for a paper, presented a piece of backboard, having a strip of sap on one edge, and a spot of balsam. He found the picture this board had been against, stained directly opposite the balsam. It had gone completely through the mounting board and the picture, taking the colour entirely out of it. He had seen another picture stained when there was a knot in the backboard. There can be little doubt, we think, that the cause here referred to was the source of the patches we have described; they were yellow and resinous, like smears of varnish. Whether the backboard contained knots, or was of a quality likely to contain much resinous matter, we do not know, but the class of wood generally used for backboards is commonly of the resinous character, and as the frame had stood on the chimney-piece, the heat would probably be quite sufficient to cause the exudation of such resin, and it oozing through the mount and picture, little room is left for doubt that the discolourations were due to resin. Of course, all framed pictures where a backboard comes into contact with paper, whether photographs, water-colour drawings, or engravings, are equally liable to injury from this cause, and a general caution might, with propriety, be urged here in the selection of suitable wood, or the interposition of a protective substance between pictures and backboards. But the caution comes with double force to the photographer. Such a misfortune would be equally, or more, disastrous to a valuable water-colour drawing, or to an engraving; but no one would

dream of charging the defect as a drawback against water-colour drawing, or against engraving; but any accident of this kind happening to a photograph, the result is at once set down to the inherent instability of photographs, and the discoloured patch is regarded as the first stage of the inevitable fading inseparably associated in the public mind with photography. Hence photographers are doubly concerned for their art's sake, and for their own reputation, as well as for the sake of the individual picture, to see that their pictures are at least protected from such easily preventible sources of injury.

THE PHOTOGRAPHIC EXHIBITION. SUBJECT PICTURES AND COLOURED PORTRAITS.

The number of *genre* pictures in the present exhibition is much less than at many former exhibitions, and there are no compositions of the kind claiming special attention by their daring or ambitious character. The chief form in which effort in this direction is found is in character portraiture, of which we have here many very excellent examples already referred to. Coming within this class, and most charming in their kind, are the studies of animals (138) by Mr. D. Hedges. This is a comparatively unworked branch of photography, and one which, whilst undoubtedly calling for the exercise of much patience and skill, would well repay attention and effort. The perfect naturalness of the cattle, the admirable foreshortening of some of the individual kine, and the fine grouping and good photography, combine to give the studies especial value. Messrs. W. W. Law and Son also exhibit a frame of the same character as examples of rapid photography; the handsome dog in the centre, taken in full sunlight, as shown by the well-marked and effective cast shadow, as well as the rest of the work, is very excellent indeed. Mr. Earl's large composition, the "Pride of the Home"—a little girl and rustic interior—has many excellent points, but is scarcely so harmonious as many of Mr. Earl's works. The large hop-picking scenes by Messrs. A. and J. Bool are rather reproductions of actual scenes in nature than subjects imagined by the artist, but they are of exceeding value pictorially, not less than as admirable photographic records of a phase of rural life and occupation. Of Mr. Rejlander's studies we have already spoken; we may here in passing, however, refer to the very perfect examples of enlargement which several of his contributions present. Some of the subjects familiar to the public in small size from the original negatives are here exhibited in a considerably enlarged size, and are singularly perfect in every detail. To Mr. E. H. Cox's studies from life we have already alluded as charming, simple, and natural rendering in character of a pretty and well trained little girl. Mr. A. Diston's compositions, already noticed in these pages,

are very excellent, and recall the quaint minuteness and fullness of detail of many of the best Dutch pictures. Mrs. Cameron's portrait studies present proof of considerable advancement in technical care and skill, without any loss of the artistic feeling which has always been a characteristic charm of her work. A series of studies entitled "Some Children" (499), by Mr. A. P. Chambers, has some capital examples well worthy of examination. A clever study of a child playing the carpenter, with his bench and tools complete, entitled "The Amateur" (488), is exhibited by Messrs. W. and D. Downey. The studies (368) by Mr. A. Ford Smith are very fine and interesting.

Amongst the foreign contributions in figure photography a frame of Herr Grasshoff, containing thirty card portraits of one young lady, is a most interesting study, which should be carefully examined by all portraitists. Slight differences in costume, and considerable differences in pose, modes of lighting, and distribution of shadow, combine to make these studies from one model in effect the portraits of nearly as many different ladies as there are pictures. A study of these portraits by those conducting and trying the Tichborne case would suggest some important reflections on the photographic evidence which has frequently given rise to so much discussion in court. The same artist's large pictures, and those of Herren Lœscher and Petsch, are magnificent examples of portrait photography.

The contributions of coloured work in this exhibition are not very extensive, but amongst them are many very fine examples. Mr. G. Croughton's coloured miniatures on a carbon base are very admirable, at once delicate and tender in colour and treatment, and, at the same time, brilliant and solid. The water-colour work by the Misses Davison is very good. The coloured enamels of Mr. J. W. Bailey are very fine, but, unless we are mistaken, these are examples of enamel used as a basis for miniature painting rather than enamels coloured and burnt in. Mr. Henderson's plain enamels are, in our estimation, finer than the coloured specimens. The coloured miniatures of E. G. B. Monti, of which, in the International Exhibition, we spoke very highly, here fully bear out our approval; they possess many essentially good qualities. Much of the coloured work of Vandyke and Brown is very fine indeed. An enlargement of a child's head from Mr. Rejlander's well-known picture "Do it again" is exceedingly charming. Mr. W. S. Laroche has some striking life-sized heads coloured in crayon; a portrait of a lady (486) is very fine in colour and drawing; some others (especially the late Charles Dickens) are somewhat coarse; the hair in the latter portrait is too dark. Some carbon prints on porcelain and photo-rays by Mr. W. T. Morgan, coloured by Mr. W. Dubisson, are exceedingly fine in colour and treatment. Messrs. Downey exhibit some good royal portraits coloured in oil, of which we prefer the group (492) most. Mr. Petty and Mr. R. C. Potter exhibit fine coloured examples. The carbon enamels of D. H. Cussons and Co., which are, we believe, carbon prints on opal glass very cleverly coloured, are exceedingly excellent and attractive. Some very fine miniatures by Mr. Dandin, an enlarged and coloured transferred collodion print by Mr. D. Shoosmith, and a few other coloured pictures, are worthy of examination.

IMPROVEMENTS IN PHOTO-COLOGRAPHIC PRINTING.

WE subjoin the specification of a patent obtained by Mr. Ernest Edwards for "improvements in photo-mechanical printing, and in apparatus to be used in such printing, parts of which apparatus are also applicable to other purposes." It is, we think, much to be regretted that the precise points claimed are not clearly indicated in the specification. The first part of the invention is said, for instance, to consist in making rollers for inking the forme of a com-

position of glue, treacle, glycerine, and other analogous bodies, some fatty or saponaceous body being also added. Now, the manufacture of printing rollers of a compound of glue, treacle, glycerine, and analogous bodies is no novelty whatever; the use of such substances in making rollers is as old as the hills. So far as we know to the contrary, however, the addition of a fatty or saponaceous body to the composition is a novelty, and may possibly be an improvement; but if the novelty consists in this addition, it should be so stated; or if the patented novelty consist in the special combination of the ingredients, it should be so stated. As the matter stands, the first point patented is left uncertain. The mode of tinting the paper by means of a colour in the water applied to the forme appears to be novel and ingenious. Whether the method of producing chromo-photo-colographs contains sufficient novelty for a patent, we are uncertain; but we may remark that an analogous method of producing chromotypes by photo-lithography was patented in 1868. The present specification runs as follows:—

In my previous patents, No. 3543, dated the 8th of December, 1869, and No. 2485, dated the 15th of September, 1870, I have described various improved methods of photo-mechanical printing, and improvements in other methods of such printing.

This invention relates to further improvements in carrying out the same methods described in those patents, to improvements in the materials and appliances for carrying out the same, part of which improvements are applicable to, and may be used in, other processes, and to a method of compound or colour photo-mechanical printing in two or more tints or colours.

First, I have not found any of the existing printing rollers used for spreading the ink upon the prepared gelatine surface from which impressions are to be taken (which surface I call the "forme") answer the purpose perfectly in inking the gelatine "formes."

The first part of this invention consists in making rollers for this purpose of a composition of glue, gelatine, albumen, or other analogous body, and treacle, glycerine, or other analogous body, to which is added a considerable proportion of oil or grease, or oil combined with an alkali. Any of the oils or greases may be used. Rollers made according to this part of my invention have a quality (of not tearing the gelatinous "forme") not possessed by any existing roller, and are specially suitable for inking the gelatine "forme." Other substances besides oil may be used, such as a solution of India-rubber or gutt-percha in a suitable solvent. I also sometimes add chrome alum or some substance tending to produce insolubility of gelatine, so as to render the composition of which the roller is formed tougher and more durable. The quantity of oil, grease, or qualifying substance may be varied to meet various cases, and I use rollers made in this way for the purpose of inking in ordinary and lithographic printing, as well as in the methods described, and other analogous methods of printing from gelatinous "formes."

The second part of my invention consists in producing a wash or stain over the surface of the picture by means of dyes or water colours. I add to the water which is used for dampening the gelatine "forme" sufficient of a dye or colour of a desired tint. The plate having been wetted with the water and colour as above, the surplus is removed by means of the "squeegee" and blotting-paper. Sufficient, however, has been absorbed by the gelatine to produce on the paper, when printed, a perfectly uniform tint upon the parts which are usually unaffected, whilst the parts which are inked with greasy inks are printed in the usual way.

The third part of my invention consists in methods of compound or colour photo-mechanical printing, for obtaining pictures coloured with several colours. This I effect in various ways:—

1. I produce in the usual way a number of photographic negatives from the same subject, exactly alike in size, the number of such negatives being the same as the number of colours in which the pictures are to be printed. I then paint out with an opaque substance, in the usual way in each negative, all except the part required to be printed in the particular colour to which the negative refers. A printing "forme" is then made from each negative, and each such "forme" is inked with a suitable colour. Pictures are obtained by printing each picture upon each "forme" in succession, and register (or the

proper adjustment of the picture) is obtained by marks on the "formes" or the press, or by marks on the negatives themselves, to which the picture is carefully adjusted. Two or more colours may be used with each "forme" by means of my invention of compound inking, described in my patent of December 8th, 1869, No. 3543; and tints also may be produced from each "forme" by means of the improvement described in the second part of my present invention. Sometimes the effect of colour produced by the photographic negative is the reverse of that desired; for instance, in the red of the cheeks in a portrait, where the negative gives high lights. To avoid this I produce a transparent positive from the negative, and exactly its size, and I use this to produce a printing "forme," painting out whatever parts are not required, as already described. Where only one photographic negative is obtainable, I attain the same end by using a series of masks, each mask covering all of the negative except that part which is intended to be printed of a particular colour. Opaque paper made transparent where required may be used for this purpose; or paper or thin metal cut out to the proper shape, or sheets of gelatine, collodion, talc, or other suitable substance, which may be interposed between the negative and the sensitive sheet or "forme," or may be placed behind the negative.

2. I also produce such compound and colour prints by making, in the first instance, a photographic negative of the subject to be printed, and producing therefrom (by means of a gelatinous "forme") a number of prints in a pigment of a colour the actinic effect of which is equal to that of the paper on which they are printed; for instance, light blue upon white paper. Certain portions of each of these are then worked up in black and white, the portions being those which are intended to be reproduced in the various colours. These prints are then photographed, and printing "formes" made from the negative upon which only the parts worked up in black and white are reproduced, and prints produced in the colours desired for each part.

3. Another method consists in masking out in the gelatine "forme" those parts of the picture not required for each particular colour or printing. Parts of each of the above methods may also be combined, and a basis of paper coloured or partly coloured by lithography, or other means may be used, as described in my patent of December 8th, 1869, No. 3543.

I intend these improvements to apply not only to the process of printing from gelatinous surfaces hardened with alum and known and practised as the "helio type" process, but to all analogous methods, and to all other methods of printing where they are available.

FRENCH CORRESPONDENCE.

It appears now certain that among the studies henceforth required to be undertaken by military students photography will find a place. It is really desirable that the officers educated at the special army colleges should be able to practise an art which, during peace, as likewise during war, is capable of so many valuable applications. It is not necessary for me in any way to explain to your readers the benefits and advantages that may accrue to an army conversant with a process of this kind, and therefore I confine myself to merely expressing my satisfaction at the announcement of the circumstance, which has so long been deferred. The resolution to adopt photography as an army science is just now all the more important, seeing that the manipulations have been rendered so very simple and facile, while the baggage and necessary requisites for the carrying on of the process have been reduced to a minimum.

I have just been perusing a little volume by M. J. Girard, which shows the value of photography in the field, and which has recently been published under the title of "Photography Applied to Geographical Research." The author treats more especially of the methods of levelling, of topography, and reproducing maps in relief by means of photography. As he very truly says, necessary apparatus actually exists, and processes are at our disposal which yield most certain and perfect results, and it only remains, therefore, for us to avail ourselves of, and to profit by, these advantages, by organizing in a prompt and economical manner a practical method of instruction in these services in the army.

Since I am talking of recent publications, allow me to mention another work that has just appeared, "Essai sur les Gravures Chimiques en Relief," from the pen of M. Motteroz. The author is a working printer or graver, and this fact alone imparts a value to the work. In fact, the data set down are drawn from his own individual experience, which he has collected together and published. In the presence of the improvements made in France for some time past in regard to engravings, the author has bethought himself of giving some account of the different methods brought forward to compete for public favour. His calling has enabled him to study in turn the many processes proposed, as likewise to put them into practice, and it was the observations made during the pursuit of this work that led him to think of publishing his experiences. Of course, the different processes of helio engraving occupy an important place in his work, and he passes them in review with great impartiality. "The past," he says, "has prepared for the development of modern industry, and has left a valuable legacy to us in the shape of artistic treasures, that only await in our museums and libraries a means for utilizing them. After a century of experiment, photography, aided by chemical engraving, has provided us with a means of reproducing in relief all the designs and manuscripts which it may be considered desirable to copy. More than this, the camera will permit us to reduce or enlarge the originals according to our fancy and desire, and thus it is possible for us to provide illustrations for publications of the most diminutive size. Publishers of books can now employ the process without seeking in any way the aid of the draughtsman or engraver. Not that these skilful artists are no longer required; on the contrary, by the increase of illustrations thus given to the public the natural taste for these will be more developed, and hence there will be greater demands for this description of work. Chemical engraving and photo-engraving can have no other effect than that of extending the scope of all graphic arts by putting within reach of a very large number those works which have hitherto served only for the artistic education of a few."

After having described the most practical photo-engraving processes based upon the employment of bitumen of Judea and upon bichromated gelatine, and having given examples of two specimens of photo-engraving in relief by the process of MM. Leffmann and Lourdel, M. Motteroz makes a very wise observation; he says that engravers and printers are very wrong in wishing to become accomplished photographers, in the same way as it would be unnecessary waste of time for photographers to learn to become printers. Let the operator use his experience in obtaining photographic plates of as perfect a character as possible, and let the printer study the best means of transferring the *cliche* of the photographer to copper or zinc, and treating it in such a manner as to give the best results. Then each one would have fulfilled his work.

The methods described by the author are treated in a very practical manner indeed, and he likewise gives an account of the processes of Niepce and Poitevin.

I sincerely recommend this chapter to the perusal of your readers, and regret very much that its length will not admit of its being reproduced in the present letter.

Apropos of the solubility of chloride of silver in acid liquids, M. T. Pierre has communicated to the *Academie des Sciences*, at the last meeting, the following observations, which photographers will do well to note:—

1. When one pours drop by drop a cold solution of nitrate of silver of a somewhat dilute character into concentrated hydrochloric acid, which is shaken up well during the experiment, the chloride of silver formed will be found to dissolve away immediately, and so quickly, indeed, at the commencement of the operation, that the newly formed compound is hardly to be seen. The amount of chloride of silver thus soluble in the air may exceed a half per cent. of the weight of the strong hydrochloric acid employed. On adding water to the solution, the latter becomes turbid,

and this turbidity becomes the more intense the greater is the amount of water added, but it is a difficult task, nevertheless, to precipitate by this way of proceeding the whole amount of chloride of silver contained in the solution.

2. When nitric acid is distilled with a small quantity of pulverized chloride of silver, the latter is seen gradually to disappear; but in this case it is not a case of simple dissolution, for you will find in the retort a quantity of crystallized nitrate of silver, instead of chloride, as soon as the operation approaches its termination. ERNEST LACAN.

AMERICAN CORRESPONDENCE.

"EYES"—PUT YOURSELF IN YOUR WORK—A NEW PICTURE, I BELIEVE—HOW BEST TO PROMOTE INTEREST IN ALL DEPARTMENTS.

"Eyes."—It would be a waste of your time to dilate upon the importance of securing a good expression of the eyes in photographic pictures. We are all aware how the least uprising or the slightest droop of the eyes changes the expression; how, as we place the dark slide in the camera, we catch a most benign expression on our subject, and exclaim, "There now, do not change your expression!" only to see the eyes drop from their sublime height to a disgustingly self-conscious look, or to the depths of despair and gloom. It is hard for one to put any feeling in his work when his subject treats him in that way. The only thing I can compare it to is to have a bead drawn on a duck fifty yards away from your boat, and, as you pull the trigger, to see his duckship dive out of your reach; or mayhap, after trolling after a flirting trout for an hour, you only bring him into the air to see him drop from your hook and show you his shiny side as he glides away from you. But, "my eyes!" how I am wandering away up into the mountains and the lakes. I started out to tell you of a few good hints on the subject of eyes, which I have gathered from the granary of my friend Mr. J. H. Kent, Rochester, N.Y. He says:—

"Perhaps the most frequent trial beneath the skylight is the management of staring and inexpressive eyes—eyes that will not look at anything, but are persistently fixed and vacant, and often blurred, thus inevitably giving to the picture a stupid, imbecile effect, however excellent it may be in other respects.

"From experience, I find no amount of talking, and showing, and explaining in any way helps the matter. Still the eye must be under control. To accomplish this, I have resorted to placing some object of interest before the sitter for a 'sight mark;' something which has an idea represented, and in size, say, from three to four inches square. Over this surface the eye can move without detracting at all from its sharpness. Thus, actually seeing something, the eye is kept engaged and brilliant, as well as prevented from watering or blurring. This also helps to support the whole expression of the face.

"Still another advantage accruing is, the sitter's attention being taken from the effort of holding still, he is more likely to be quiet from the consequent repose of his nerves.

"In place of the old meaningless mark may be substituted some attractive picture, or other object, which imparts a thought and holds the attention. Sometimes, by long exposure, however, the eye tires despite all this, in which case the mark can be moved; not, of course, up or down, nor to either side, but towards and from the sitter. This changes or relaxes the strain of sight, and does not interfere in any degree with the clearness and directness of it. In very extreme cases, we are obliged to hold the eye to the given object by constant watching and repeated urging; else, if left a second to himself, the sitter lapses away in forgetfulness and vacuity.

"Still, in other cases, if the management of light can be

responsibility in that regard, he can with good result make a mark of himself. Get the subject to look him fully in the face, and then use the time by saying something calculated to turn his thoughts away from optics altogether. In all cases, prudence teaches to keep the eyes as much as practicable turned from the light, and rested; never taxing them until the necessary moment arrives."

Put Yourself in Your Work.—It has often mystified me to understand how it is that in this day of photography, when we have the best of materials, the most improved construction of studios, books and magazines, giving all the instruction necessary, and in detail, pertaining to our art, that so much—so very much—bad work is made. The only way I can account for it is in the fact that some photographers work so mechanically and thoughtlessly; and until they work with more feeling and more thought, we cannot look for much improvement from them. When Cardinal Richelieu was attacked by his foes, who desired to subvert his authority and power "for the good of France," he answered, in tones which made them quail, "I am France!" So deep was his interest in the welfare of the country he loved, that he made all that concerned her so personal with him that his whole soul was thrown into his efforts in her behalf.

Just this sort of feeling is what photographers need to cultivate. "I am my work!" should be their one idea. "Find fault with my work, criticise it, deprecate it, laugh at it, and you do the same to me." This should be the feeling, and having that feeling you will be enabled to put more feeling in your work. Why is it, when we see a fine picture, that we can often tell who painted it, if we are familiar with the work of celebrated painters, without asking the question? Because we see the style of the master—aye, the master himself who did it—in his work. So should it be in photography, and it will be so if photographers will, as it were, get into their work and make it like them.

"It is hard to convey to you exactly what I mean, but perhaps you understand. How often we see it recommended by those generous ones of our craft who are willing to give us their ideas on practical subjects, to use brains. Now, there it is in a nutshell. Purpose, intention, feeling, thought, brains—all—all of these is what we want to see displayed in our work. They are all a part of us, and we want to see them in our management of the subject in the lighting, in the exposure and development, in the printing, and in the toning. We want to read our characters in our work. Critics can then see what our ideas are, and how far we have succeeded in accomplishing them.

"Some photographers have no idea of what they want to produce. Now, if there is any specimen of human nature more disagreeable than another, it is a man without any fixed principle, who is guided entirely by his impulses. One day he is pleasant, and the next, for some unaccountable reason, he is surly and sour; we never know how to take him, or to understand him. Just exactly so is the work of the photographer who has no rules to guide him in his practice, no fixed principles, and who does not think. Here is an illustration:—

A few days ago a photographer sent me prints from two negatives, one from each made before and after retouching, with the following note:—"I send you some examples of my retouched negative work. They are not my best work, but I think ahead of the average. If your opinion of them is favourable, let it be known through your journal. If not, say nothing." Now the moment I looked at his examples I said mentally, there is a poor fellow who can retouch a negative nicely, but, having no method in his work, has failed. He does not think what he is about, and until he does, although he is capable of doing good work, he cannot possibly do it. Why? Well, one of his pictures was of a lady with a thin face and prominent features; she was freckled also. Our friend had made a pretty good job of retouching her negative, preserving the half tones and the

likeness, and had it been the only one sent, I would have spoken favourably of him. But the other betrayed him. It was of a stout, full-faced, coarse man, and the original negative was fairly lighted. But the retouching had rendered it a complete absurdity. The shadows of the face had all been worked away with the pencil, so that there was no contrast in the face, and the whole was as elaborately done as if the subject had been a tender little infant. How wrong to do so in such a case!

"Now, by this irregularity or lack of uniformity in his work, it will be seen that the photographer had exercised no judgment. He had failed to put himself in his work, and hence his blunder. Now, good friends, let us come down, stoop over, and creep into our work. Make it bear the impress of our genius upon it. Let it be like us—let it be us."

A New Picture, I believe.—Mr. J. A. Wenderoth, of this city, has been in to see me since I wrote, with some examples of a new picture he is about introducing. It is, in short, a carbon print mounted on, or, rather, transferred upon, a metal plate. This carbon print is made in the usual way, and transferred to a silver plated piece or sheet of Britannia metal. It is then cemented with white wax to a plate of glass, and the result is a picture having all the charms and delicacy of the Daguerreotype, without the reflection. This latter objection is overcome by "ribbing" the metal plate vertically with sand, before the transfer is made upon it. In this way the whites of the picture are made by the metal, while the carbon makes up the shadows. The pictures are really very pretty, and, of course, must be finished in a case or frame. Mr. Wenderoth promises to instruct me in the details of the process, shortly after which I will send them to you with a specimen.

How Best to Promote Interest in all Departments.—Here is another idea from Mr. Kent, which, I think, cannot be too highly commended, for it must result in great good. He writes:—

"The benefit, both artistic and mechanical, resulting from a daily convocation of all the help, cannot be overestimated. The time chosen in our establishment for this meeting is after the main work of the day is over, and the routine of mounting prints is in order. As the pictures in their entirety concern each department and every person engaged, they can best be discussed and criticised at this time.

"We convene in a pleasant room, where everything about is cheerful and comfortable, and each one is expected to hear and tell some new thing while all are busy. The works in hand are the prints of the same day, which have been rapidly but thoroughly washed in warm water, passing through many changes. Then, while one applies the paste and another adjusts the picture to the mount, and still another presses it beneath the blotting-paper, and the next removes it for drying, we keep up a brisk discussion of the merits of all. The quality of the negative, the condition of the paper, the most artistic methods of printing, different formula for toning—in short, everything that pertains to or affects the picture—is open to criticism and suggestion.

"So swiftly passes the time, the business of mounting becomes more a recreation than a task, besides being the means of bringing into contact and activity the opinions of the entire house. It necessarily interests and incites each one to effort, develops skill in the operator, taste in the printer, improvements in posing; it cultivates the aesthetic's fine perceptions, accurate discriminations, and proves a stimulus to all.

"This reunion, being an established regulation, is always given a place by an expeditious closing up of business when the hour for it arrives, instead of a purposeless dragging. It creates an interest in the work that no amount of separate and individual instructing and recommending could compass during the busy hours of the day. It fixes direct responsibility, begets a pride, engenders a spirit of emula-

tion, and results in mutual improvement. Altogether it is one of the best methods for advancement in the art that I have ever fallen upon."

The advantages of such a plan are too obvious for comment.—Truly yours,
EDWARD L. WILSON.
Philadelphia, November 14th, 1871.

PHOTOGRAPHY AND JEALOUSY.

THE incident to which we referred in our last, in which photography seems to have added a new terror to the perils of the street, is the subject of some "delicious fooling" in a recent article in the *Morning Advertiser*:—

"*Othello* may be improved. Its great author could only use the resources of his own day, and as those were limited, his expedients are sometimes clumsy, and verge on ineffectiveness. Thus in *Othello*, that matter of the handkerchief is open to the objection that, like the marchioness's orange-peel wine, it requires a good deal of make-believe for its thorough appreciation. True, we are bidden to mark that jealousy is excited by the merest trifles; and it is the poet's art to explain that the handkerchief was enough to set the Moor on, since men 'are not ever jealous for the cause, but jealous for they're jealous.' Still, it is impossible not to feel that there is throughout a mighty pothor, because one gentleman sees another wipe his beard with the handkerchief of the wife of a third gentleman; and yet he might have picked up the trifle and used it unwittingly—ignorant, of course, of its Egyptian origin, magic web, and peculiar dye, "conserved of maidens' hearts." All this is vaguely poetical, whereas, had Shakespeare enjoyed the advantages of a scientific education of the modern sort, he might have rendered his drama thoroughly practical and acceptable to matter-of-fact minds. An incident which we report this week would, if interwoven with the thread of the story in place of the handkerchief business, render it far more consonant to the requirements of the modern drama; and we strongly recommend it to the attention of those distinguished dramatists, Messrs. Tom Taylor, Boucicault, and Halliday, who, by simply remodelling the piece and giving it a new title, such as "Twixt Bed and Bolster," "The Streets of Cyprus," or 'Emilia,' might bring it down to the meanest capacity. The incident is this. A Mrs. Tasker, a laundress, while waiting for a friend outside a shop in Holborn, was accosted by a young man named Blowers, whom she knew, and while they conversed together, an itinerant photographer came along with his apparatus, and, before they were aware of it, took their photographs. After the manner of his kind, he showed the photographs to the astonished couple, and Blowers was so delighted with it that he bought a copy and gave it to the lady, who took it home and put it in a drawer, where it was subsequently found by her husband, who thereupon became fiercely and violently jealous, accusing his wife of having gone secretly with Blowers to Ramsgate or Margate, on the sands of which charming retreats he supposed the likenesses to have been taken, repudiating altogether the idea of such a thing happening in Holborn. Threats of dashing out the wife's brains with a poker complete, thus far, the tragic story. The application of it to dramatic purposes is, of course, simple enough. Desdemona becomes Mrs. Tasker, Cassio is rechristened Blowers, Iago appears in disguise as the itinerant photographer, and *Othello* sustains his original role, but known henceforth as Tasker. As for Emilia, she would be the friend—say Emilie Stubbs—for whom the wife was waiting while she went in to purchase a hat, when the photographer practised his diabolical art. The advantage to be gained by the suggested alteration would be great. In the first place, the photograph of the wife and her supposed lover, taken in one carte, would be far more conclusive than a dozen of handkerchiefs of the most superior quality. It would not interfere with the rhythm of the play, as, for example,—

Des. You'll never meet a more sufficient man.
Oth. The photograph.
Des. I pray, talk we of Cassio.
Oth. The photograph.
Des. A man that all his time, &c.

A little alteration in the conduct of this and other scenes might be necessary; but what is that in comparison with the strength obtained, and the modern colouring which is said to be necessary to interest modern audiences, who, it is supposed, can only be moved by realism, imagination having quite gone out a century ago? Altered as we have suggested, *Othello* might have a run of several hundreds of nights; the 'country right' alone might keep the adapter's hrougham, and he might be remembered when his original is forgotten, just as—

'The aspiring youth that fired the Ephesian dome,
 Outlives in fame the pious fool that raised it.'

A WASHING MACHINE.

BY E. TREMBATH.

I ENCLOSE you a description of my washing machine:—
 A, frame work; BB, cog wheels, the smaller one 12,

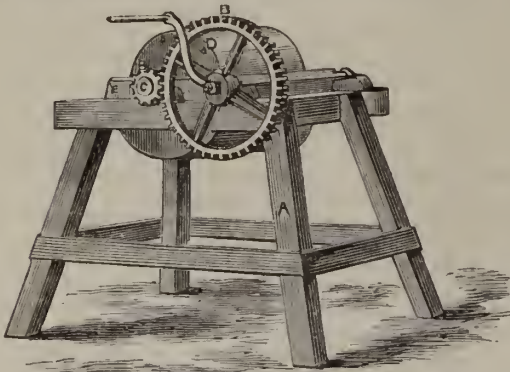


Fig. 1.

larger one 46 teeth; D, drum, the size of which is 1 foot 8 inches long, 1 foot 1 inch wide; F (fig. 2), laths, 3 inches wide, 1/2 inch thickness, 1 foot 8 inches long, let into two circular boards of 1 foot 1 inch diameter, forming the drum D. F in (fig. 2) shows the position of laths, and

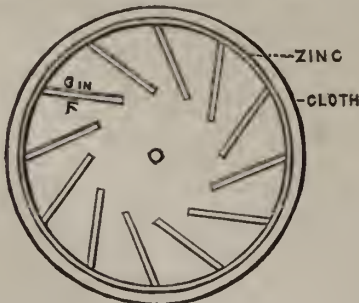


Fig. 2.

over the drum perforated zinc, G (fig. 2), and over the zinc very coarse straining cloth H (fig. 2), tacked to the drum upon one of the laths, and the other end drawn tight through rings with a cord. The pictures are placed between the cloth and zinc, with their face uppermost.

The size I have will wash about sixty or seventy cartes. I give three or four changes of water, which takes me about ten minutes to a quarter of an hour.

I hope this description will benefit your readers.

A RAPID METHOD OF PRODUCING LARGE PRINTS BY DEVELOPMENT.

BY J. H. HALLENBECK.*

In publishing the following process I have no intention of teaching a novelty to experienced operators, but do so, nevertheless, in the belief that there are many amateurs and others who are not familiar with the details of the method. The same is particularly susceptible of rendering important services in photo-wood engraving, and for printing with the camera in dull weather.

Obtain some ordinary salted paper, and float the same for a period of three minutes upon a bath of—

Water 2 1/2 litres

Saturated solution of bichloride of

mercury 125 grammes

The sheets are then suspended and dried in the ordinary way, and before being used are again floated in a bath made up of—

Nitrate of silver 1 1/2 grammes

Water 30 cubic cents.

After treatment in this solution the paper becomes excessively sensitive to light, and ought to be preserved sheltered from the action of light in the most perfect manner possible. The duration of exposure varies from ten to fifteen seconds, according to the intensity of the light at the time of performing the operation.

The development of the print is afterwards brought about by the aid of a solution of—

Water 2 1/2 litres

Protosulphate of iron 95 grammes

Glacial acetic acid 190 cubic cents.

When the image has been thoroughly developed, it is forthwith fixed with hyposulphite of soda (four parts of water to one part of hyposulphite), and finally washed well in several changes of water.

FREEZING—A NEW METHOD OF RENOVATING OLD SILVER BATHS.

BY HERMANN KRONE.†

OLD, over-worked silver baths are so impregnated with organic matter, that for purposes where long exposures are necessary—as, for instance, in the depiction of reproductions, the photographing of dull interiors, and generally when small apertures are employed—clean negatives are very difficult of production. On the lower side of the plate, where the silver liquid clings and runs together in patches, instead of draining off, large spots are formed on development, composed of thick scum of silver deposit, a compound formed of reduced silver and organic matter. These defects are darkened on the application of the intensifier, and are studded over the plate both upon and off the image just where the solution has collected in drops. If these spots are brushed away with water, either before or after fixing, the precipitate may be completely removed, it is true, but there is produced instead clear and perfectly transparent patches of collodion film, yielding, of course, in the picture, black spots. The negative under these circumstances is obviously of no value at all.

Whilst working in warm weather scum spots of this nature are more easily and frequently formed than when operating in cold weather or cool localities; not, however, because the heat has the effect of favouring the chemical combination, just spoken of, between the reducing silver and the foreign organic matter, but simply by reason of the quicker evaporation of the moisture upon the plate. The question arises, then, as to the best means of disposing of a bath of this kind; whether, namely, the liquid shall be doctored, or simply thrown into the waste utensil containing the residues.

* *Moniteur de la Photographie.*
 † *Helios.*

Permanganate of potash solution affords some assistance under these circumstances. As much permanganate solution is added by degrees to the silver bath as will impart to the latter a slightly reddish tint, such as will not disappear upon agitation of the liquid; afterwards the liquid is placed in bright sunshine to oxidise; in this way the organic matter therein contained, and the resulting product, falls to the bottom of the solution, and is easily removed on filtration. It remains then merely to acidify the bath slightly with nitric acid to render it again serviceable.

For the moment, when permanganate of potash is not actually at hand, one may sun the liquid straight off, and then add the nitric acid, filtering the bath, of course, previously. But this helps for a short time only, and even the permanganate does not evict the enemy entirely from the bath, but simply overcomes him for a short time. By evaporation the organic matter is not dissipated, for the scum still remains in the liquid.

There is, however, one method of rendering such baths again serviceable, but this involves a specific period of the year. What I would recommend is the preparation of a new bath, and instead of throwing the old one among the residues, to keep it until winter. The defective liquid is poured into sound champagne bottles until these are about four-fifths full, and then corked down; each bottle is, for precaution's sake, placed into an open glass, porcelain, or gutta-percha bath, and then the solution allowed to freeze hard and fast in the bottles. When this is completely effected, the bottles are carried, without disturbing them, into a moderately warmed apartment to be gradually thawed, but must on no account be taken into a heated room, otherwise the glass will forthwith crack. As the contents thaw, it is poured off until there remains in the bottle but a small ball of ice, about one-eighth or one-tenth of the original solution. This coagulated mass contains the whole of the injurious organic substances, the liquid which was thawed in the first instance being a pure solution capable of being employed without further treatment for the sensitizing of plates. The ice-ball still remaining in the bottle is not thrown away, but, after being likewise thawed, is poured into the residue receptacle.

If any are anxious to prove the truth of this statement, let them try the effect of adding to the serviceable silver liquid the solution emanating from the bottle after the last lump of frozen matter has been thawed; they will find that their old enemy has forthwith re-appeared, and the experiment must be again proceeded with, provided wintry weather is at hand to render the operation possible.

PHOTOGRAPHY IN THE WITNESS-BOX.*

SLOWLY and reluctantly the law is availing itself of the photographic art. A photographic criminal record is kept at our prisons; missing personages in whose movements their country suddenly betrays an unwonted interest are sought out by photographic hue-and-cry, while in criminal trials photography is sometimes admitted to the dignity of evidence. All this is done, but done very imperfectly, and with a want of method calculated to defeat the very objects intended to be furthered. Take, for example, the photographic evidence imported into the Tichborne trial. The other day two Daguerreotypes of the claimant, alleged to have been taken at the same time in South America, were produced in court. The effect was to raise a controversy, since such an apparent difference in the costume existed that it was doubted whether the statement as to the two being identical in point of time of production could be correct. In one the sitter had on a waistcoat, while in the other no waistcoat was visible. "Very good," it might be argued, "perhaps the day was hot and the waistcoat was removed." Unfortunately, the discrepancy does not end

here. In one of the photographs the shirt of the sitter was marked with small stripes, while in the other no trace of stripes was to be seen. In spite of these difficulties the witness adhered to the statement that the Daguerreotypes were both taken at a sitting, and the ingenuity of the Court was taxed to account for what appeared an impossibility. The Court being at fault, the *Daily Telegraph* rushed in to solve the enigma. Was it not obvious, it urged, that the whole matter might be accounted for upon the ground of the process of fading, too common in photography, by which delicate shadows vanish altogether? Ingenious, but—alas, for the theory!—Daguerreotypes do not fade. They change, and the change is brought about, not by fading, but by the plates becoming covered with a tarnished film, which may actually be removed, though it produces a fading effect to the unlearned. What is, then, the probable cause of the discrepancy? Mr. G. Wharton Simpson, who is thoroughly versed in these matters, suggests to us that it is a technical one of a very simple nature. The folds of the waistcoat and the lines on the shirt were in all probability lost by solarization or over-exposure to the intense light of the South American day. In the one case the portrait was properly timed and came out perfect; in the other too much exposure took place, and the portrait was practically destroyed—a fact of which the photographer himself was aware, since, as it transpired, he gave away the spoiled picture to a servant. The moral of all this is, that if photography is to be admitted to play its part in courts of law or justice, it must be under the control of experts capable of dealing with and explaining it, otherwise it is simply misleading the judgment, instead of aiding the ends of those who have a perfect right to make use of it for legal purposes. And while on this subject, let us advert to another photographic exploit of the week. The telegraph informed us the other morning that a wealthy citizen of Exeter, who mysteriously disappeared some time since, had been captured in Paris on a warrant charging him with the felonious possession of several thousand pounds' worth of jewellery which he had with him at the time of his disappearance. Now, what was the agent in this capture? Simply a photograph taken by Mr. Charles Watkins, of Chancery Lane, impressions of which have been scattered broadcast.

Travellers on the metropolitan railways must have noticed for some time past a portrait of a smug, self-satisfied gentleman in an easy chair and equally easy attitude, apparently looking his best, if thinking his worst, surrounded by a legend offering £50 reward for his capture, or for information leading to the same. At last the photograph fulfilled its purpose, and the arrest was effected through its agency—a striking tribute to Mr. Watkins's skill. The incident is striking, but not unusual—so wide, if irregular, is the application of photography. "A happy thought" will be the universal verdict. Very happy; but let us not pride ourselves too greatly on our modern cleverness. There is nothing new under the sun, and three hundred years ago Shakespeare distinctly anticipated this kind of thing when he wrote—

"Besides, his picture
I will send far and wide, that all the kingdom
May have due note of him."

THE PRESS AND THE PHOTOGRAPHIC EXHIBITION

[We collect, as is our custom, the opinions of the press at large upon the Exhibition. At present the number of criticisms has been small, and the quality poor.]

Daily News.

The Photographic Society of London have opened their annual exhibition with a *conversazione* at the Gallery of the Institute of Architects in Conduit Street. A very large collection of photographs in every form and style is displayed, filling the principal gallery and the ante-room. Such an exhibition is both valuable and interesting, as showing the rising importance of

* *Morning Advertiser.*

photography as a branch of trade and the advance of the art, it so it may be called. Portraiture in the hands of the photographer may be said to have reached its highest point of perfection—that is to say, when the method is practised by an expert and skilful “operator.” Here are to be seen an immense number of specimens, from the tiny miniatures of babies in every guise of native innocence and beauty—such as the two large frames of portraits by Mr. R. Faulkner—to the heroic portraits which Mr. Crawshaw exhibits, and those of more moderate and certainly more agreeable presentment which we noticed in the examples shown by Mr. Valentine Blanchard, Mr. Slingsby, of Lincoln, and some others. Perhaps it may not be invidious to give the preference to Mr. Blanchard’s portraits for their less affected and more artistic treatment, as well as for a certain quality of tone and lightness in the half-tints, which are exceptional excellences in this form of photography. The abruptness of the shadows and blackness of tint too commonly observable in portraits, and the exaggeration of the prominent features, are difficulties connected with the use of the lens and management of the light which few operators have as yet mastered. After all, however, we are disposed to think that in proportion as the photographer becomes more of an artist he will improve in the application of his method both in portraiture and landscape. Artistic feeling and taste are obviously requisites which are still much to be acquired in producing those very exact transcriptions of which photography is capable. The very picturesque heads which Mrs. Cameron has been so successful in producing are the best examples of artistic photography to be seen in the exhibition. In these we recognize a feeling for the beauties of light and shade and sobriety of tone, which are really fine qualities in the art of the great painters. In some of them the effect reminds us of Rembrandt’s pictures, and they only seem to want the flush of colour to make them perfect. But this last achievement appears now to be coming within the reach of the photographer by the aid of that most ingenious application of chemical and mechanical processes: in the employment of gelatine, rendered sensitive to the actinic property of light by bichromate of potassa, a property which was discovered so long ago as 1839 by Mr. Mungo Ponton, of Bristol. This chemist showed the photographers that gelatine is in this way convertible from an extremely soluble substance into a hard, tough substance insoluble in hot water. The photographer then began his experiment by mixing a pigment—such as carbon—with the gelatine before exposing it to light. The result was, that by placing an ordinary negative picture over a prepared sheet, the light acted on the gelatine in exact degrees, according to the transmission permitted by the negative, so that a perfect copy is produced in the hardened form referred to, the unchanged gelatine being capable of being washed away by hot water. Thus, then, the photographer gets his carbon photograph. Some nice processes are required in fixing this copy, but these have now been brought to perfection, as we see in the admirable carbon photographs of the Autotype Company, produced by M. Braun. The most important and valuable works of this kind are the copies of the frescoes by Michael Angelo on the ceiling of the Sistine Chapel, which have been very perfectly reproduced by this means. Now, the gelatine copy, it was evident, might be made a vehicle for colouring matter just as a lithographic stone is, and thus we find the photographers engaged in endeavouring to print from it. There is a first specimen of this most interesting experiment in the exhibition, which has been produced by the heliotype process. It is a reproduction in colour of a portrait study by Mr. Cave Thomas, called the “Jeweller of St. Petersburg”—a man with a fine white beard, wearing a purple velvet cap and a rich blue robe with sable collar and cuffs. The picture is low in tone, but by no means dull in the effect of light; and the colouring, if not so rich and luminous as the oil painting, is really extremely good, while the high finish of the work is perfectly rendered. This has been accomplished by four printings from films of gelatine coated with colour. By the Woodbury process, which is a most ingenious method of taking an impress of the gelatine picture in soft metal plate, which is then used as an ordinary block to print from in any number, there are some good specimens of prints in black-and-white, but nothing in proper colours, although we believe Mr. Woodbury is engaged in perfecting his method of printing in colours. Those efforts have a great interest for art, and in no direction could photography, as the handmaid of art, be more acceptably employed than in reproducing, with all its exactness, the pictures of the great masters.

This has been done by lithography, but at great cost, and with no very satisfactory success. Should photographers succeed in their attempts, as we are now encouraged to hope they will, absolute facsimiles of great pictures would be obtained at a comparatively small cost. By the heliotype process a fresh plate is produced in an hour at the cost of a few pence, and a dozen impressions may be taken at one pull of the press, a man being able to work two or three hundred impressions in a day. As a means of book illustration of an artistic nature the advantages of accuracy of representation and economy are strikingly great. The cheapening of such works of art alone as the drawings of Raphael and Michael Angelo in all their beauty is an immense service to art. The fine copies of the Parthenon Sculptures by Signor Caldesi, and Mr. Frith’s Egyptian Temples, are admirable examples of exact representations, which could be attained in no other way. The most legitimate, and certainly the most successful and valuable, use of photography is in representing things which are beyond the artist’s power of eye and hand—such scenes, for example, as the ruins of Paris, of which we have before us, in this exhibition, the extensive series taken by M. Liobert. In the exact copying on an enlarged scale of minute engraved gems and antique medals, by which the exquisite beauty and amazing perfection of works of the ancient Greek sculptors are set before us with such striking effects, photography renders the most invaluable assistance, and far exceeds the art of the greatest adept in engraving. A frame of these works, executed for Mr. Ruskin as illustrations of his Oxford Lecture, by the heliotype process, should be especially studied. Other interesting instances of the photographer’s most apt applications of his method are to be noticed in the set of pictures illustrating the potter’s art, taken from the workshops of the potteries by Signor Alferi, who is himself a potter, and in those taken by the Army Photographic Department of the huge targets fired at and demolished in the practice ground, and the burst guns that have been tested to destruction in trying their strength. Mr. Good’s London Docks, with the thousands of barrels of wine on the quay, is another curious example of the kind. Mr. Drayson’s architectural interior of Canterbury Cathedral is noticeable for having none of the distortion so common to these subjects. There are several good landscapes on a large scale by Mr. Earl, of Worcester, and Mr. W. D. Sanderson, of Manchester, and an excellent set of views of Killarney by Mr. Vernon Heath, clear and atmospheric in effect. In lightness of tone and good skies there are none better than the views of Dover Castle and Allington Castle by S. M. E. Chatham, and the small views on the coast by Mr. Russell M. Gordon, taken by the dry process. Mr. Edward Fox is also particularly happy in his selection of landscape subjects, and his clouds are remarkably good in form and effect of light and shade.

The exhibition will be found by far the most interesting yet arranged by the Society, and is in every way deserving attention, as showing the progress of photography, and its varied and important application to art and utility.

Echo.

The annual exhibition of the Photographic Society has now after some sixteen repetitions, got to be regarded as a sort of institution, to the recurrence of which those who are interested in the progress of this particular art or science—which is it?—look forward with much pleasurable anticipation. We are always hoping for some new discovery in connection with photography. We are eager for the time to arrive when some such increased sensitiveness may be imparted to the prepared plate as may enable it to seize and retain upon its surface the colour of the objects before it, as it already does their shadows and half tints. We long for the time to come when that beautiful little coloured picture which we admire so much when we look into the camera may be reproduced just as we then see it. No such result, however, has as yet been obtained, nor is there any—even the slightest—indication of our being on the road to its attainment. Whatever colour is found in combination with photography in this present exhibition is put on, after the photograph is finished, by hand, and being imparted—since the best painters are not in the habit of co-operating with the camera—by inferior artists, is rarely, if ever, satisfactory.

There appears to be no strikingly new feature of any kind in the present exhibition in Conduit Street. Here are the usual powerful and striking portrait studies, life-like and real as ever. Here are more of those large views of open country with glorious effects of sun and cloud, which we have so often admired before.

Here are the same attempts to make up something like subject pictures, and to produce examples of the humorous or pathetic, attended with the same results—the production, namely, of certain fine specimens of photography, which, as such, delight us, but which, regarded as dramatic studies, leave us unsatisfied. The instantaneous photographs exhibited in this collection are, as has been the case before, among the most interesting specimens. The small portraits of children, by Mr. Faulkner, are particularly good in this kind—little, fleeting, half-shades of expression being caught suddenly, and most happily, in the very act of passing. Attention is especially directed to the little girl with a doll in frame 211, the third study from the left corner on the bottom row, as a remarkable instance of a very subtle and delicate piece of expression of a half-serious kind. By means of his instantaneous process Mr. Faulkner has been enabled, moreover, to immortalise that evanescent and beautiful phenomenon, a childish smile—not a mechanical grin of the mouth, turned on to order, but a real smile, which pervades the whole face and affects all parts of it alike.

One of the most remarkable effects of the invention of photography is, that we are able through its agency to form a perfect idea of all sorts of places which we have never seen, and in some cases are never likely to see. There are in the present collection, for instance, a great number of views of scenes in Greece, the work of Mr. W. J. Stillman, which, though on a small scale, inform us so completely what the Parthenon and other Greek buildings are like, that our curiosity is in a great measure satisfied without our being obliged to undertake a journey to Athens. A somewhat similar satisfaction in reference to the Indian temples results from an examination of the series of views in India, by Major Impey, of the Royal Engineers; while as to the ruins of Paris, we have them here in Conduit Street under our hand, and can make ourselves wretched over the havoc that has been wrought, without encountering the horrors of a Channel passage in the middle of November.

Standard.

This Society have on view an extensive collection of photographs at the rooms, 9, Conduit Street, Regent Street, intended to illustrate the present state of the art in England. The *Photographic Journal* thinks that the specimens now exhibited will give general satisfaction, and we think so too. Specimens of portraiture, composite pictures, and landscapes certainly sustain the reputation of the contributors. Of a number of handsome heads, lent by Mr. R. T. Crawshaw, one called "The Full Blown Rose" is most excellent in the nice management of the shadows, in contrast, in this respect, with the same exhibitor's example entitled "Disdain." Only those who make photography a study can note, with nice accuracy, the advance made in its practice. In a "Portrait of a Lady," by Mr. Valentine Blanchard, we have a forcible example, but at the same time one showing a want of delicate transitions. Mr. W. H. Prestwich exhibits a portrait of a lady, in the form of a medallion, very delicately treated, highly finished, and yet tender in the masses. Messrs. Fradelle and Leach have a number of portraits (not wanting in force) of some popular actors and actresses, with Mr. Buckstone at their head.

Some of the landscapes are very good. Two Norwegian views by Mr. E. C. Buxton are bright and crisp. Some views in Canterbury Cathedral by Mr. C. M. Drayson have much truth and force, especially in the rounding of the columns. The School of Military Engineering, Chatham, exhibit, among others, "A View in Cobham Woods," which does the School credit. Mr. F. M. Good sends a fine group of "Scotch Firs," beheld as if stirred by a stiff breeze, which could hardly have been more truthfully rendered. Messrs. Robinson and Cherrill contribute composite subjects of "The Blackberry Gatherers" and "Returning from School" order. Mr. William Bedford has some very graceful foliage and still water in "The Pond at Tintern," but he has not succeeded so well with the rapid brook on "The West Lyn, North Devon." The water in this instance is deficient in sparkling touches of crested foam. The trees in "Cobham Wood" have also furnished Mr. W. de W. Abney with a subject rich in sylvan beauty. The Heliotype Company exhibit, among other examples of their skill, some reproductions of drawings, in black and red, by Raphael and Michael Angelo. Mr. Arthur Lucas shows the possibility of making copies of oil paintings in photography in a number of truthful compositions after Horsley, Bottomly, Hardy, Carter, and Barnes. Mr. F. C. Earl excels in groups of flowers of a large size. Processes of painting are exemplified by, among

others, examples from the Autotype Company. Indeed, the exhibition, in its number, variety of subjects, and general excellence, is throughout very interesting and instructive. The state of the atmosphere has not been favourable to the display and appreciation of the more intricate and delicate features of the specimens, but this may be remedied before the season of the exhibition is over.

COLOURING PHOTOGRAPHS.

Mr. W. J. BAKER says, in our Philadelphia contemporary: "Most people have a weakness for colour. It crops out often in a form annoying to the photographer, when he is asked if it would not be an improvement 'just to flush the cheeks a little,' or to paint that brow, or gild the chain; or he is told of 'So So and Co.,' whom, of course, he knows to be inferior artists, that a certain lady, friend to his present customer, took a piece of her dress, and her jewels to them, and they coloured the picture by them; 'it was beautiful, just like wax.' In his secret heart our photographer believes good plain work to be just perfect. He has a little conscience; he has some eye for colour; he has seen So So and Co.'s daubs; he knows that one and the same hand does their India-ink, water colours, ivorytypes, porcelains, and their oil (if they go into that line), and that these things are let out on the public at prices that a good painter could not touch them at. So the question of competition becomes irritating, in proportion as the eye of the public is dull, and its purse-strings tight. But in spite of the dull eye and tight purse, the public clings to its weaknesses, and our photographer, if he will have a first-class reputation, must be prepared to do the wax-like.

"The usual plan is, engage an 'artist' on a weekly salary, who touches up, and paints out, in a weakly way, what little good there may have originally been in the photograph, and as long as the public prefer a little mucky daubing to the pure expressing of simple form, so long will these pseudo artists flourish, parasite-like, upon our more legitimate art. Against good painting we have nothing. If a capable man, or woman, chooses to take a photograph, as a ground to work on, and will produce thereon a piece of genuine colouring, the method is justified by the end, and the thing is occasionally done. Neither let it be imagined by anyone, that the writer holds the present class of colourists as solely responsible.

Incapable, conceited, and dogmatic, as for the most part they are, I have rarely met one who did not sincerely desire to improve, although it is a notable fact that as soon as one does advance in skill to a high point, he generally emancipates himself altogether from the slavish limits imposed on his hand by the photograph, and takes to drawing from life.

The photographer is usually the most to blame. Seeking to make too large a harvest out of the public credulity, he thinks he cannot afford more than half to his artist, and oftentimes not as much as that; and also, as before intimated, puts his work at prices, the whole of which would not pay for good labour. Again, generally, too wide a range is expected of the colourist. He must undertake all that can be done with a brush, and be up to the dodges, ivorytyping, &c. None but a veteran could master so much. Even among life-long artists one line is considered quite enough, but our photographic colourist, without having learned to draw even, must wield brushes and crayons in all the styles. It is no wonder if, under these circumstances of poor pay and diluted skill, our colourists manufacture the terrible, hideous, absurd monstrosities called by the gracious cognomen, "coloured photographs," with which our galleries inundate the homes of this land, and which in cheap frames can be found, a deadly rival to the plain photograph, in almost every parlour.

Not to be too modest in the way of putting it, whether or no these things are seen to be a nuisance, and a foe to art, depends on the standpoint from which they are viewed. Ignorance, a low grade of taste, may admire them, and be

moved to some brutish sense of beauty, as an ox might eye the green grass and yellow buttercups. Commerce may quiet the rising protest with a handful of dirty greenbacks, but taste and conscience will alike protest against these impositions on a credulous and weak public.

With many it is yet considered an open question whether photographs ought to be coloured at all. Is photography a fine art? If so, why are not its productions entitled to consideration in their pure form as those of the other arts are conceded to be? Who would flush the cheeks of a marble statue, or give a costly engraving to be coloured, or put gold-leaf on the jewellery of an oil painting? But be this as it may, if photographs are to be coloured, let them be well done. Employ skill at a fair price, and as for these present incapables, let them learn first to acquire a firm true hand, that can draw with stipple, and hatch regularly and delicately, not forgetting the clean wash. If with practice they cannot acquire this, let them drop out of the ranks, and find something suited to their level that they can learn to do well. Hoe corn, milk the cows, make shirts, cook food that can be digested—any thorough labour is more honourable than this pretentious daubing. And those that with careful practice find themselves improving as colourists, let them still be assured, that only the study and toil of a lifetime will in any degree satisfy the requirements of artistic perfection.

Correspondence.

COL. STUART WORTLEY AND MR. CAREY LEA.

SIR,—Mr. Carey Lea, in your issue of last week, makes the following remarks:—

"These calculations (which cannot be impugned) Col. Wortley does not venture to attack, but replies by citing vague and various calculations by other parties, arguing from them in a manner which is calculated to provoke a smile. I shall not waste your space nor your readers' time by replying to them seriously."

I herewith, therefore, repeat in the same words I previously used, what Mr. Carey Lea calls "vague and various calculations by other parties." In my letter in the PHOTOGRAPHIC NEWS, September 22nd, 1871, page 455, I say: "Mr. Lea intimates that his chemical knowledge is such that it is impossible he could have made any error; but in the *B. J.* for this year, page 68, Mr. Lea, in calculating the quantity of free nitrate he supposes his collodion to contain, entirely omits any calculation of the amount of silver reduced by the two minims of aqua regia added to each ounce of his collodion." This error the editors of the journal, in their leading article of the same date, point out as follows:—

"Having said so much in explanation, we cannot avoid noticing that Mr. C. Lea has left wholly unreported to the observations we made on the addition of nitro-hydrochloric acid to the collodion. A very cursory perusal of our former article will show that we attached chief importance to this acidification of the collodion, and we ventured to suggest that in this matter Mr. Lea had much underestimated the influence of one of the materials he employs in preparing the emulsion. We showed that the addition of nitro-hydrochloric acid to the sensitized collodion means simply the removal of more or less of the 'large excess' of nitrate of silver, the amount of the latter removed being proportional to the quantity and strength of the acid mixture added. We ascertained by direct experiment that two measured minims of the strong acid directed by Mr. Lea to be added to each ounce were capable of precipitating 2.13 grains nitrate of silver. We must, therefore, regard a body which is capable of producing such an effect as a very important constituent of the collodio-bromide emulsion; one, moreover, whose effect should be very accurately measured. If, when working in warm weather, Mr. Lea treats his collodion with two minims of acid of the above strength, and nine grains nitrate of silver to the ounce, he could only have two-tenths of a grain of nitrate of silver free in the emulsion. The chances of loss are sufficient to render it highly improbable that any real excess of nitrate of silver could be present; in fact, only a skilled chemist, working with a delicate balance,

would be likely to avoid any appreciable excess of bromide in the emulsion."

And again, PHOTOGRAPHIC NEWS, September 29th, 1871, page 466:—"The latest calculation I can find as to the amount of silver decomposed by the addition of certain quantities of bromide and aqua regia to the collodion is one by Mr. T. Sutton, in the *B. J.*, 11th August, 1871. He states in this that about five and a-half grains of bromide of cadmium will convert about seven grains nitrate of silver. The five grains bromide of cadmium added by Mr. Lea may, therefore, be reckoned to convert six three-eighths grains nitrate of silver. The one grain bromide of ammonium will convert one seven-eighths grains nitrate of silver; while, as Mr. Sutton states that two minims of hydrochloric acid will convert three grains nitrate of silver, the one one-third minim of hydrochloric acid contained in the two minims of aqua regia added by Mr. Lea to his collodion will convert two grains nitrate of silver, and we have thus the following calculation:—

Converted by 5 grs. bromide cadmium	6 $\frac{3}{8}$ grs. silver
" 1 gr. " ammonium	1 $\frac{7}{8}$ "
" 2 minims aqua regia	2 "
	10 $\frac{1}{2}$

being a conversion of ten and a-quarter grains of nitrate of silver to the ounce. I cannot, then, see how, on this calculation, Mr. Lea can have excess of silver even when using ten grains to the ounce, and of course when (as he says he does in hot weather) he only adds nine grains."

Now it appears to me that these calculations, which Mr. C. Lea speaks of as "vague and various by other parties," are as precise and to the point as it is possible for calculations to be, and it appears to me to be grossly discourteous that a leading article by the editors of the *B. J.*, and calculations made by one of their correspondents should be summarily dismissed as "vague and various by other parties, and unworthy of being replied to seriously." Besides the discourtesy shown to the opinions of the eminent authorities above mentioned, Mr. C. Lea appears to me to have acted on the principle enunciated by a somewhat unscrupulous attorney when instructing counsel in a very weak case. The counsel having explained the weakness of the case, and asked for further instructions, the attorney replied, "Yes, we've a bad case; you must abuse the plaintiff's witnesses." Well, Mr. C. Lea has a bad case, and he has certainly turned round and acted as though he had received much the same advice.

Mr. C. Lea goes on to ask me to point where his calculations were wrong. In the *B. J.*, February 10th, 1871, page 68, Mr. Lea, in calculating the amount of free nitrate of silver supposed to be left in his collodion, to which had been added five grains bromide of cadmium, one grain bromide of ammonium, and two minims of aqua regia, writes as follows:—

"Thus the calculation stands literally and exactly as I gave it—that between three and four grains nitrate of silver are present in excess in the ounce of mixture. In proof—

Quantity of nitrate	...	10.00 grains
Ditto equivalent to bromide	...	6.67 "
Excess nitrate of silver per ounce	...	3.33 "

Now in the *B. J.*, September 16th, 1871, page 434, in proving the excess of nitrate of silver in the same formula for collodion, he proves it as follows:—

Cad. brom. ... ..	...	5 grains
Am. ... ..	...	1 grain
Sensitizes with nitrate of silver	...	10 grains
Deduct equivalent to bromides	...	6.66 "
Excess nitrate of silver over bromides	...	3.34 "
Deduct for aqua regia	...	1.38 "
Absolute excess nitrate of silver...	...	1.96 "

It is manifest, therefore, that one of these calculations *must be wrong*, and it was the ignorance displayed by Mr. Lea is not estimating from the beginning that chloride was introduced into the collodion by the use of aqua regia that called forth the leading article in the *B. J.*, from which I have taken the extract given above. I have before called attention to this, but Mr. C. Lea omits any notice of it. I shall now beg of you to place side by side the following paragraphs:—

From Mr. Lea's article in your last issue:—

"I shall only add that as Col. Wortley, after taking without acknowledgment, my aqua regia process."

From the paper read by Col. Stuart Wortley at the meeting of the Photographic Society, June 13, 1871:

"I may here take the opportunity of pointing out how deeply indebted we all are to Mr. C. Lea for the investigations he has made into the conditions of the process, and for the liberal manner in which he has made public the results of his numerous experiments. I had never been able to work this process to my entire satisfaction (because my conditions of proper working are a collodion saturated with free nitrate) till Mr. C. Lea made the valuable suggestion of adding nitro-hydrochloric acid, brought to an orange colour by means of warmth as an acidifier to the collodion. Good negatives can be obtained by the use of hydrochloric acid only, but the mixed acids as proposed by Mr. Lea are of great advantage to the certain working of the process."

When, then, Mr. C. Lea says that I took his aqua regia process without acknowledgment, I know what I should be entitled to say in private life, but in journalistic life I can only point out to your readers that Mr. Lea's statement is entirely opposed to fact, and I must leave them to judge between us.

I need take up little more of your space, because, at the end of his article in your issue of last week, Mr. Lea remarks:—"Whether the use of a moderate excess of nitrate of silver as I have recommended, or of a very large one as advocated by Col. Wortley, shall become the favourite plan, does not in the least affect the rights of the case." In this sentence Mr. Lea admits all that I have contended for, viz., that our processes are different. I repeat, that he was entirely wrong in saying "that it was useless loading down the collodion with silver," and using more than ten grains in winter, and nine in summer, and that, in fact, the use of a much larger proportion of silver in the collodion, and less bromide than he recommends, increased the sensitiveness of the process by three times, at the very least. This fact is now becoming recognized, and I believe that I have a perfect right to base my title to a distinct process in having given to the photographic world this important advantage.

To conclude, then: as Mr. Carey Lea calls the precise calculations to which I have called attention "vague and various calculations by other parties;" as I have pointed out clearly the serious error he made in omitting to calculate the chloride produced in his collodion; as he has made a deliberate misstatement in saying that I adopted his aqua regia without acknowledgment; and as he has admitted the difference in our two processes, I feel myself justified in saying that I shall take no notice of any further personal attack he may make upon me in your columns, and am quite content to leave the matter to the judgment of those who will bring an impartial and unbiassed opinion to bear upon the matter.

I have pointed out in previous articles the disadvantages attending the use of aqua regia in the collodion after a more extensive acquaintance with it, the bad effects of pyrogallic acid in the preservative on the keeping qualities of the plates, and the disadvantage attending the use of bromide of ammonium; and it is not necessary for me to further amplify this portion of the subject. Had I followed M. Carey Lea into the various arguments he uses in his paper of last week, I could prove how fallacious they are; but, for the reasons I have mentioned, I feel that to do so would be useless, as Mr. Lea's remark about "vague and various calculations by other parties," and his wilful mis-statement of the acknowledgment I made of his aqua regia, show me that from him I cannot expect that courtesy, fairness, and candour in argument which could alone render such a discussion interesting or profitable to your readers.

H. STUART WORLEY.

PHOTO-COLOGRAPHIC PRINTING.

SIR,—Referring to the description, in your last issue, of a new photo-mechanical process by Capt. Waterhouse, I wish to point out that the use of tannin, as well as that of double inking, is protected by my patent of the 8th December, 1869, and that the method of transferring the films is protected by my patent of the 6th September, 1870.—Yours obediently,

ERNEST EDWARDS.

[Gallic acid, pyrogallic acid, and similar bodies were men-

tioned as used by Tessie du Motay some years ago. The use of two inks has, we understand, been employed by M. Albert, and by Ohm and Grossman, long before Mr. Edwards' patent, and it is alleged to have been a common practice amongst lithographers, as undoubtedly amongst copper plate engravers, for years past.—ED.]

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE annual meeting of this Association took place on Tuesday the 28th ult., at the Free Public Library, William Brown Street, the President, Mr. THOMAS HIGGIN, in the chair.

The minutes of the previous meeting were read and passed.

The Rev. J. D. Riley and Mr. John Carroll were elected members of the Association.

The SECRETARY then read a report of what had been done by the Association during the past year, showing that the Society was in a very satisfactory condition.

The TREASURER's report was next read. There was a balance in hand after paying all expenses.

On the proposal to alter Rule 10,

Mr. WATLING moved an amendment, which was passed; so that the rule now stands:—"The ordinary meetings shall be held on the last Tuesday in each month, with the exception of July, August, and December."

Mr. J. M. BENNETT presented the report of the *soirée* committee; and, after some discussion, the committee, with Mr. Mawdsley and Mr. Tyrer, were requested to make arrangements for an exhibition and *soirée* to be held in January next.

The undermentioned officers were then elected for the year 1872: President—Mr. E. Phipps. Vice-Presidents—Mr. E. Leader Williams, Jun., and Mr. J. W. H. Watling. Treasurer—Mr. John Henderson. Hon. Secretary—Mr. Wm. Murray. Mr. J. M. Bennett, Mr. J. A. Forrest, Mr. Thos. Higgin, and Mr. H. R. Robertson to be members of the Council in place of those who retire by rotation.

On the proposal of Mr. J. HENDERSON, seconded by the Rev. T. B. BANNER, Mr. C. Bell was unanimously elected an honorary member.

The following objects of interest were exhibited:—

By the PRESIDENT: A copy of a "Report to the Surgeon-General of the United States Army on an Improved Method of Photographing Historical Preparations by Sunlight," by Assistant-Surgeon J. J. Woodward, United States Army, illustrated by ten beautiful photographs.

By Mr. J. HENDERSON: A collection of beautiful views of Ceylon, consisting of one panoramic and thirteen 12 by 10 views.

By Mr. MAWDSLEY: An exceedingly neat and compact case containing an 8 by 5 camera, slides, fronts, &c., made by Mr. J. Rogerson, of Manchester. Mr. Mawdsley explained the different arrangements, and pointed out several improvements, one of which was a spring preventing the shutter of the dark slide from opening, and also one preventing the slide from moving when the shutter was opened.

The usual votes of thanks to the President and officers were passed, and the session of 1871 terminated.

Talk in the Studio.

EXAMPLES OF VARIETY AND GRACE IN POSE.—We have received from the establishment of Mr. Hughes, in Oxford Street, some specimens of the examples of pose selected by Mr. Werge from the works of Bartolozzi. We shall refer to them more at length in our next. All we need say in acknowledging the receipt is, that they are very admirable and cannot fail to be useful.

LIGHT AND SHADE.—Sir Joshua Reynolds observes, in regard to the grouping of lights, that "there shall be a superiority of one over the rest; that they shall be separated and varied in their shapes; and that there should be at least three lights. The second lights ought, for the sake of harmony and union, to be of nearly equal brightness, though not of equal magnitude with the principal." Mr. Robinson, in his *Pictorial Effect in Photography*, says:—"There must be unity of effect in the light and shade as well as in the composition. Chiaroscuro will often 'pull a picture together' when the composition is scattered. Where there is too great a repetition of forms, light and shade will break them up or mass them together."

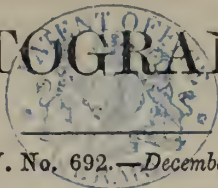
THE VALUE OF EXTENSIVE SKYLIGHTS.—At a meeting of the Philadelphia Photographic Society, Mr. Trask opened the subject of skylights and lighting for discussion. He described his light as 33 ft. long by 13 ft. wide, with side-light same length. He explained the advantages of a large light, the principle being that he can use as much or as little as he pleases; especially was it adapted for shadow pictures, giving soft shadows and perfect detail. Some discussion followed on the merits and demerits of large and small lights. It was claimed that a large light gave the photographer an opportunity to study the variety of effects to be produced, and educated him to a better understanding of the nature and management of light; while, on the other hand, a small one was easier worked, and better effects could be produced from the fact that the light was more concentrated. The old Daguerrotype was referred to as proof of the advantages and excellence of a small light.

THEORY OF THE LATENT IMAGE.—The writer of "Notes on Science" in the *Journal of the Society of Arts* says:—"Some important experiments, made by Dr. Budde, have been published, from which a new theory of the photographic latent image may be deduced. Chlorine gas is passed into a tube closed at one end, and the gas is confined by a column of oil of vitriol saturated with chlorine. This must be done in comparative darkness. A beam of light is then decomposed by means of a prism, and the several coloured rays of the spectrum are allowed to fall in succession on the tube containing the chlorine, an arrangement having been made by which any alteration in volume that might take place in course of the experiment can be detected and carefully registered. When the red rays fell upon the tube, the effect produced was very slight, the increase in the length of the gas column being only the $\frac{1}{5}$ of an inch. According to the degree of refrangibility by the ray to which the chlorine was subjected, so did its expansion increase, until when under the action of the violet, the effect was at its maximum, the expansion being ten times greater than what was caused by the action of the red rays. What is ascertained from this experiment is, that the expansion of the gas is not due to heat, for were that the case the red rays would have exercised the most powerful action, this point having been further ascertained by delicate thermometers. To further establish the fact that the expansion is due solely to the action of light, and not to a decomposition of the sulphuric acid by the chlorine, there was substituted for this acid, saturated with chlorine, the tetrachloride of carbon, the same result being obtained. The result of the experiment appears to warrant the conclusion that the violet rays of the sunbeam act by decomposing the molecule of the chlorine, setting free the two component atoms of which the molecule is supposed to be built up. The two atoms occupy a greater space when separate than when combined, and are also in a favourable condition for entering into combination."—The writer then proceeds to quote the opinion of Mr. Taylor, to the effect that a clue is thus obtained to a sound theory of the latent image, which shall serve to explain the phenomena relied on by the supporters respectively of the present vibratory and chemical hypotheses. Accepting Dr. Budde's conclusion for chlorine, he believes it clearly follows that all the cases known to photographers in which light brings about change of any kind, may be explained on the hypothesis of the partial or complete separation of the atoms by which the molecule of a given compound may be built up. Taking the case of iodide of silver, an atom of silver is known to be equivalent to an atom of hydrogen, and no more; but the atom of iodine is equivalent to three of hydrogen, though in most compounds only appearing to be equivalent to one. Experience leads to the conclusion that, in many cases, the action of violet light chiefly consists in the severance of the union of dissimilar bodies held in combination by comparatively feeble affinity, and the experiment recorded alone proves that the same kind of action is inimical to the exercise of the still more feeble attractive force which tends to unite the atoms of like matters in molecules. By extending this to the union of bonds in a single atom, as in the case of iodine, one gains a clear conception of the nature of the action of light upon iodine of silver, and the cause of the difference in chemical relations between the exposed and unexposed silver compound. By luminous action, two of the three attractive powers of the iodine are freed from each other's control, and are ready to enter into new combinations. Having occupied so much space in giving an account of the newest and most plausible theory of photographic action, the account of novelties in photographic practice is deferred."

To Correspondents.

- F. C.**—Your general dimensions and proportion of light are excellent. The light in the south side, although not necessary for ordinary work, may occasionally be useful, and may, as a general rule, be kept covered. Unless the south side be sheltered from the vertical rays of the summer sun by some adjacent high building, it will be a great advantage to throw the ridge out of the middle, so that the south side of the roof is slightly the largest, and so intercepts the vertical rays of the sun. The effect of this is to give increased pitch to the north skylight, and render it more like a high skylight. Such a plan works well.
- A. SUBSCRIBER.**—The only extra apparatus you will require is the camee press and fittings to give the convex form to the medallion. In all respects, except the suitable masking, the operations and apparatus are the same as for ordinary card portraits.
- W. W.**—The plate should be dry in applying albumen solution with a Blanchard brush. So far as we remember, we answered all the questions in your last. If not, please repeat them.
- STEREOSCOPIC AMATEUR.**—The lens you describe with a monogram is a French one of uncertain origin. The monogram or initials are those of a London dealer who used to supply French lenses. Regarding the unsatisfactory pair of stereoscopic lenses, you had better get rid of them and get a better pair. Those you mention will answer well. Slow lenses will often give a weak, peer image under the same circumstances in which a quick lens will give a brilliant, intense image. It will scarcely pay to fix new glasses in the old tubes.
- J. ALEXANDER.**—The Photographic Exhibition in Conduit Street is open free to the public every day except Saturday, when the charge for admission is one shilling. Your letter was written upon a newspaper wrapper, and was therefore liable to double postage charge of twopence. The halfpenny stamp does not in any case cover the postage of a letter.
- UNFORTUNATE R.**—The final polishing of a lens is effected by means of rouge or putty powder. The latter will suit your purpose, but the figure of the lens will be readily altered by the operation, and the lens injured.
- X. L. W.**—You cannot secure the copyright in a negative taken by another person, unless the proper legal steps are taken by that person to assign the copyright to you. If the original owner of the negative have taken the proper steps to secure his copyright, he can make a legal assignment of it to you, but not otherwise.
- THE REV. S.**—If the engraving be copyright, copying for any purpose, and gratuitous distribution as well as sale, would be an infringement of the copyright; but if the portrait in question have no "publication line," by which is meant the name and address of publisher and date of publication, according to the Copyright Act, the assumption is that the engraving is not copyright, and reproduction for a gratuitous purpose would infringe neither moral nor legal rights.
- THOMAS BROWNE.**—In accordance with the announcement made at the outset, the Photographic Exhibition will be open in the evenings of the three days immediately before closing.
- LEO.**—We cannot tell at all how far the gentleman you name may be disposed to give instructions, but in the albumenizing of plates we do not see that more specific instructions can be given. The plate having been slightly cleaned is dried, and a Blanchard brush being dipped in the albumen solution is drawn over the surface from end to end, covering all but about one-eighth of an inch, taking care not to allow any to run over the back of the plate, which is then placed away to drain and dry. 2. The chief cause of a sandy deposit and pinholes is over-saturation of the bath with iodide. Sometimes allowing the plate to remain too long in the bath will tend to such a result. Over-intensifying will tend in the same direction. 3. No. 1 is the best lighted of the cards sent. Each of the others seems to indicate the presence of too much top front light.
- NO NAME.**—We have received a postage card bearing our address and nothing more. Some correspondent's unwritten question must inevitably go unanswered.
- II. H. V.**—There is another article on the mezzotint process in the same volume (p. 172), and in the following volume (1871) there is an article by Carl Meinert on the subject, in the number for May 27th, 1870. 2. There is no difficulty in using the frame in question, but a little care and skill are necessary. We do not know the price. 3. Different photographers employ different modes of vignetting. The best results are obtained by means of a card with an oval aperture placed at some distance from the negative, and fringed round with cotton wool so as to make a size and gradation suited to each individual picture.
- Several Correspondents in our next.
- Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15 Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.



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A MUSEUM OF PHOTOGRAPHY.

A suggestion recently made by Dr. Mann deserves to be placed on record, in order to secure for it the deliberate consideration it merits by a wider public than that to which it was uttered. It may be interesting, before entering into the subject, to mention the time and place of the suggestion. Many of our readers may not have heard of the existence of a conclave of photographers which flourishes under the designation of the Solar Club. It is a strictly private institution, and all its proceedings are considered confidential. Hence we are prohibited from explaining with any degree of fullness the nature of its aims, ceremonies, and compacts. We may state briefly that its number of members is limited to five and twenty, that they consist of the *elite* of the metropolitan photographers, and that however its primary aims may be stated, the advancement of photography is one of the foremost considerations of all its members. That the members dine together once a month, and spend a social and convivial evening, is a detail, perhaps, scarcely worth mentioning; and that the refreshment should consist, in accordance with the rules of the Club, of "roots, and water from the spring, or——" is only in keeping with the ascetic character of these modern Ghebers. At these monthly reunions are generally found guests representing literature, art, the drama, and other ranches of fine art. At the last meeting, a full and brilliant one, were poets, leader writers on the daily and weekly press, novelists, dramatic authors, painters, and distinguished provincial photographers. And it was in this assembly that Dr. Mann, in the course of some excellent remarks, made the suggestion which we venture to excerpt from the general confidential character of the proceedings.

Referring to the admirable exhibition now open in Conduit Street, and to those which for some years past had been held in the same rooms, Dr. Mann expressed his regret that no tangible evidence of such displays was retained. They were open for a few weeks, and then they passed away, and, except the journalistic chronicles, left no sign or record behind. He pointed out how interesting and valuable would be a museum of photographs, in which a selection of the best examples of different branches of the art should be preserved, so as to admit of examination and comparison, and form a tangible record of the degree and character of the progress made in the art, at once interesting and instructive in the highest degree.

It appears to us that this suggestion is a most important one. Ideas of a similar kind have before been mooted: it has been suggested that a permanent exhibition of photographs in London would be interesting and valuable, and in the disastrous Coventry Street experiment of the Photographic Society such a scheme formed part of the general plan. But hitherto the projects have been too comprehen-

sive or cumbersome, and the circumstances have not been propitious. A permanent exhibition as a distinct institution would be costly, and as it could not be self-remunerative, it would be beyond the province or means of any society or combination of persons to establish one. But for the project briefly indicated by Dr. Mann we think that the facilities now exist, and that the time is now propitious if those concerned are sufficiently in earnest about the matter. The Photographic Society of London is now, for the first time for many years, out of debt, and with reduced expenses and increasing income from accession of members, it is in a position to consider how far it may, with an eye to moderation in cost, best aid the advancement of photography and the interests of photographers. Various modes of doing this have been proposed, as yet informally, and will, doubtless, be considered by the council. One of the first projects will doubtless be the selection and distribution of a presentation print amongst the members. Another scheme, which has been talked of by some, is the resumption of the system of giving medals for various phases of excellence illustrated at the Annual Exhibition. We venture to think that, next to the distribution of presentation prints, nothing would be more useful, nothing more acceptable to the mass of photographers, than the formation of a museum of photographs by the Society, to be accessible at all times by members of the Society, or, if necessary, by photographers generally, and the public at large. It is not necessary that we should enter into detail as to means here. But it is not improbable that some portion of the rooms in Conduit Street now occupied by the Society for its meetings might be made available without much trouble or cost. The selection and purchase of a certain number of choice prints from the Exhibition would practically serve a similar purpose as the distribution of medals. The selection, duly made by a jury appointed for the purpose, would constitute an award of honour which would possess much of the value of a medal, and the pictures being constantly displayed with the name and address of the producers would probably aid in securing more substantial advantages.

To provincial photographers such an exhibition would be a source of great value and interest. There are few who do not occasionally visit London, and it is not an uncommon thing to hear the enquiry: "Where can I best go to see what is doing in photography?" Such a museum properly maintained would meet the case at once. Provincial members of the Society, who at present reap few of the advantages of their membership, would in such a museum feel that in it at least they gained some special advantages by their connection with the Society. How far such a scheme, tried without much risk of cost or effort, might become the nucleus of a permanent exhibition of photographs and apparatus, and possibly of a library and reading

room, or even of a photographic educational institute, are matters for speculation only at present; but the suggestion as to the museum is, we think, one upon which early action might, without impropriety, be taken. At any rate, it will bear immediate discussion, and we shall have pleasure in hearing further opinions from those interested in the subject.

EXAMPLES OF POSING.

EXAMPLE is proverbially better than precept. "Things seen are mightier than things heard." If this be generally true in relation to manners and morals, it is very specially true in matters of art. The sight of one good picture affords more instruction than many chapters on composition and chiaroscuro or the balance of lines and tones. In relation to posing the human figure, example is an imperative element of all instruction; and variety of example is necessary to suggest varied possibilities of effect, even to fertile minds. There is no piece of advice we have more frequently urged upon the photographic student than this: lose no opportunity of studying the works of great artists, and note how their effects of grace, ease, beauty, and dignity are secured. Sir Joshua Reynolds has pointed out the great value of this study, and told of his own mode of pursuing it, making an accurate analysis of the proportions of light and shade present, and of their mode of distribution. The aim of this mode of study is to fill the mind with a knowledge of effects, so as to afford material for suggestion in producing original work, not with a series of memoranda to guide the memory in producing imitations. In photography, fortunately, slavish imitation of paintings is scarcely possible, for few artists have painted their pictures so that the effects all come within the range of photographic possibility.

The works of engravers being in light and shade, only without the—so far as the photographer is concerned—misleading element of colour, present the most effective lessons for the photographer, and the series of studies of variety and grace in pose recently selected by Mr. Werge from the works of Bartolozzi (an engraver celebrated for the grace and variety with which he rendered the human figure) recently published by Mr. Hughes, cannot fail to be valuable to many portrait photographers. Let it be distinctly understood that they should be studied for suggestion only, and they will become doubly valuable. A simple imitation, if possible, would soon exhaust the series, and as there is generally something incongruous in imitations, the effect would be unsatisfactory. But if the studies be studied carefully for hint and suggestion, they will be found at once valuable and prolific. The antiquated draperies will, indeed, be valuable in checking any attempt at precise repetition, and enable the photographer to examine the grace of lines in the figure itself, much better than the voluminous and flowing garments of the present day, whilst it may be generally set down as a caution of art, that if the figure itself be gracefully posed, the drapery, unless very awkward in cut and untractable in material, can be arranged to fall gracefully around it. We strongly commend these studies to our readers.

THE COMBINATION PRINTING FRAME SUIT.

THE Chancery suit commenced about twelve months ago, in which Mr. B. J. Edwards sought an injunction to restrain Col. Stuart Wortley from infringing his patent in a combination printing frame, has just been decided, the judgment pronounced by Vice-Chancellor Malins being in favour of defendant, with costs. Our readers will remember that the printing frame patented by Mr. Edwards for producing photographs from two or more negatives by an accurate system of registration was a combination of several known things. In principle it resembled the registering printing frames used for printing on opal glass; the paper being made as rigid as the glass by attaching

it to the back of the printing frame as paper is attached to a drawing board. Col. Stuart Wortley made a similar printing frame for similar purposes, combining similar known things to those combined in Mr. Edwards' frame, but with certain differences. The frame made by Col. Wortley was described by him, and figured in an early number of the present volume. Mr. Edwards conceived that Col. Wortley's frame was in effect precisely the same as his own, and commenced his suit for infringement. The case has been repeatedly before the Vice-Chancellor, and being so essentially technical in its character, and each side fortified by strong affidavits by men of experience and repute in photography, it was naturally difficult to decide. Our own impression, which, whilst the case was *sub judice*, we declined to express, was that whilst there was undoubtedly sufficient novelty and ingenuity in Mr. Edwards' frame to become the ground of a patent, there was sufficient difference in Col. Wortley's frame to escape the charge of infringement. All the same unpatented elements being open to Col. Wortley as to Mr. Edwards, he had an undoubted right to combine them. The novelty of the combination, and not of any separate part, seemed to us to constitute the patent, and a modified combination, or any number of modified combinations, of the same elements seemed to us to be legitimately at the service of the public. According to the decision of Vice-Chancellor Malins the novelty in Mr. Edwards' frame was insufficient to entitle it to a patent. According to the report of the case in the *Daily News*, which we subjoin, the Vice-Chancellor, admitting the ingenuity of the contrivance, said that there was nothing of discovery or invention about it, and that, *therefore*, it was not a proper subject for a patent.

The decision as here recorded is an important one, and suggests important reflections as to some other photographic patent claims which are based upon new applications of familiar ideas, but which we need not discuss now. Another failure in the patent has an important bearing upon some recent remarks we made on the insufficiency of the definitions in a photo-collographic patent specification. The patent for this printing-frame is declared by the Vice-Chancellor to be invalid, "because it merely gave a description of the whole machine without describing what part of it was new." This is precisely the want of which we complained in the specification of Mr. Ernest Edwards in relation to a printing roller: the novelty, if any, was so mixed up with the known and familiar as to render it impossible to determine what were the points claimed by the patentee. A similar uncertainty in a former specification is at the present moment the subject of discussion in our pages. We have held the opinion that this indefinite form of statement was unfair to the public. According to Vice-Chancellor Malins it is illegal, and renders the specification in which it occurs invalid. Inventors will do wisely, then, to specify clearly the actual points of novelty upon which their patent claims are based. We subjoin the report of the case from our daily contemporary:—

EDWARDS v. STUART WORTLEY—COMBINATION PHOTOGRAPHS.

The object of this suit was to restrain the defendant from infringing the patent of the plaintiff for improvements in photographic printing. The specification, dated in November, 1870, described the invention as improved apparatus for the production of pictures, in which more than one negative is employed, and commonly known by the name of combination photographs. It was admitted that combination photographs were well known years before the plaintiff's patent, but what he claimed was the principle of a pressure-frame, with inner interchangeable frames to hold the negatives and sensitive paper. Colonel H. Stuart-Wortley, the well known amateur photographer, having heard of the plaintiff's patent, obtained an interview with him in June, 1870, for the purpose of seeing the invention, and stated that if he found it perfect in operation, he would take out a licence to use it for large negatives. Having examined the apparatus, the defendant, as he stated, not finding it perfect in operation, did not take out a licence to use it, but proceeded to produce combination photographs by machinery, which the plaintiff contended was an infringement of his patent. Thereupon a long correspondence took place between the parties without any satisfactory result, and ultimately the bill was filed on the 19th of January last. The de-

fondant contended that the plaintiff's apparatus was neither new nor important; that the specification was invalid for want of a proper definition of the novelty; but that, assuming the novelty of the apparatus and the validity of the specification, the alleged improvement was not the proper subject of a patent. The evidence of many persons of skill and experience in photography was brought forward to show that the apparatus was novel and important, and that perfect combination prints could not be produced in any other way; but, on the other hand, Col. Stuart-Wortley exhibited a number of combination pictures produced by means of Robinson's opal glass printing-frames, which had been in use long before the plaintiff's patent, and Dr. Diamond and others proved that the perfect combination of figure and landscape from different negatives could be obtained without using the frames invented by Mr. Edwards.

The cause was argued in Trinity term by Mr. Cotton and Mr. Graham Hastings for the plaintiff; and Mr. Glasse, Mr. Aston, and Mr. Repell for the defendant.

The Vice-Chancellor now gave judgment. In the conflict of evidence, he was unable to come to the conclusion that the plaintiff's apparatus was so novel as to be entitled to the benefit of the patent he had obtained for it. Moreover the specification was invalid, because it merely gave a description of the whole machine without describing what part of it was new, and, though the contrivance was ingenious, there was nothing like invention or discovery about it, and it was not, therefore, the proper subject of a patent. On these grounds the bill must be dismissed with costs.

THE PHOTOGRAPHIC EXHIBITION.

STUDIES AND LANDSCAPES.

BEFORE proceeding to consider the landscapes in the present exhibition, we repair one or two omissions in speaking of subject pictures in our last. The portfolios and their contents on the tables are somewhat apt to escape the attention they will well repay if devoted to them. The series of illustrations of Chinese life and character by Mr. W. Saunders, of Shanghai, are marvellous productions, exceedingly perfect in character, and embracing subjects of exceeding interest. Not only have we large portraits of various types in characteristic costume, but the depiction of scenes illustrating manners and costume which seem beyond the reach of photographic operations. Here are opium smokers, reclining in all the half ecstasies, half idiotic, languor of opium narcotism. Here is a Chinese execution, the victim partially stripped, and head bowed to the stroke of the headsman, who stands over with uplifted sword, whilst officers and numerous spectators stand around. The circumstances under which many of these scenes have been obtained must be very curious. Their interest is unquestionable, and their photographic excellence not less so. A portfolio of Mr. Rejlander's studies should not be overlooked, containing, as it does, some of the best pictures ever produced by this able artist.

Proceeding to the landscapes, and taking in the order in which they appear in the catalogue, the first are some landscapes by Mr. G. Giberne, apparently the name of a novice, whose work as such should be treated gently. It is a pity for his own sake that Kenilworth Castle (23) should have been hung, as the large patch of foggy white, apparently the result of light having reached the plate accidentally, quite spoils it. Several other pictures exhibited by the same gentleman are of average excellence, which render the prominent exhibition of this faulty one the more to be regretted. In close proximity to these we have the charming series of views bearing the name of William Bedford. These views, as we have before remarked, possess all the fastidious perfectness which rendered the works of Mr. Francis Bedford such a perennial charm. Here we have the highest possible phase of technical excellence; exquisite delicacy, perfect brilliancy, and manipulatory faultlessness combined with fine art qualities and a feeling for the picturesque in nature, which leaves a sense of complete satisfaction. The skies are admirable, and materially aid the fine atmospheric effect which pervades every picture. It is difficult, where all are so excellent, to mention special pictures, but we may indicate as possessing especial charms, in our estimation, the "Pond at Tintern" (30), "The Bathing Cove, Ilfracombe" (31),

and a "Lane at Tintern" (36), all of which are exceedingly perfect in composition and general treatment. Mr. H. Baden Pritchard's Norwegian landscapes will be examined with special interest, as illustrating the bleak, open character of the country, and as admirable enlargements from negatives obtained on dry plates under special difficulties during a pedestrian tour. Mr. F. R. Elwell's instantaneous sea and cloud pictures (39) are very poetical.

Messrs. Robinson and Cherrill's landscapes claim attention solely on pictorial grounds; they do not assume to have the local interest of association secured in the view of a place; they are pictorial landscapes alone or with figures; bits of nature selected solely because of their value for pictorial purposes. But if they claim no interest from locality, they aim at some interest derived from association with a thought or subject. One illustrates a Quiet Evening, another Repose; and whilst these suggest rest, others suggest action, as Returning from School and the Blackberry Gatherers. In various of Mr. Robinson's previous pictures—such as "Autumn," "Returning Home with the May," and others—the subject has chiefly consisted in the figures, the landscape serving as background. In these the landscape is, in all cases, the subject of the picture, the figures being small, each constituting an incident rather than the main story. The chief charm of the pictures consists in the rarely beautiful and wonderfully rendered skies, each one of which is a magnificent study of cloud effect so full of poetry and picturesque grandeur as to make the landscape proper comparatively of subordinate interest. One feature which is especially apparent is the perfect harmony and keeping of the sky with the landscape, both in effect of lighting, and in balance and composition. "Repose" (47), is a landscape in low light, with an evening sky; the scattered sheep at rest admirably carrying out the idea of repose. "A Quiet Evening" (42) is another charming picture, in which the sentiment of the title is admirably expressed. "Broadwater Forest" (53), "Returning from School" (52), and "After School" (51), are also especially satisfactory. The "Wedding Party" (44) is an admirable piece of grouping, and includes some capital portraits.

Mr. Frank M. Good exhibits a series of large and especially fine views. His view of Christchurch, Hants (63), is wonderfully perfect, both technically and pictorially. Eversley Church, Hants, associated with the name of Charles Kingsley, is very capital. A view of the warehouses at London Docks is not suggestive of anything very picturesque, but Mr. Good has made a fine picture of the subject. Some of his studies of still life are admirable. "Game" (61), and the "Common Foxglove" (70), are exceedingly perfect. Mr. M. Whiting's series of cabinet pictures by the gum-gallic process are all very good indeed. The name of Mr. R. Mitchell, a new name to us, is appended to many very excellent landscapes in the present exhibition. His Welsh views (85, 86, 87) are very fine; his "Sunrise, Winter" (445), from a dry plate, is one of the most poetically rendered pictures in the exhibition. Mr. Donmore's landscapes and studies are excellent technical work. Mr. W. J. Stillman exhibits a number of very fine poetical landscapes, chiefly of scenes in Greece, all on dry plates, and in one case on a plate which had been kept two years, and still yielded a perfect picture (349). A 10 by 8 sunset view, with fine clouds, the scene being Cania, Crete (377), is a very fine picture, well worthy of examination, especially as dry-plate work, and fine sky with sunset clouds and landscape all printed from the same negative. We shall have some interesting details on the method of working to impart shortness. The three Athenian views (378), and "On the Cephalus" (94), are characterized by fine pictorial feeling.

Mr. Beasley's landscapes from Fothergill plates are good. Mr. Wilkinson has some good views of Tenby and surrounding country. Mr. J. W. Price exhibits some good landscapes, but which, having white skies, look very bald in the present exhibition. Mr. Vernon Heath's Killarney views are, like

his work, generally delicate and brilliant, and fully maintain his high average of quality. Mr. W. J. A. Grant's studies of a Devonshire cornfield (207) contain some exceedingly fine pictorial qualities which will well repay examination. Mr. W. D. Sanderson's very large collodio-albumen views of lake scenery are admirably perfect. Mr. Charles Adin sends very fine views. Some capital views in Spain are exhibited by Mr. C. J. Fox. The views exhibited by Mr. B. J. Edwards, as produced by the aid of his Graphogenic Apparatus, are very good in themselves, and well illustrate the possibility of producing fine work by means of the apparatus. Mr. Sydney Smith exhibits four unusually fine landscapes. A landscape (156) with figures, horses, cart, &c., is a pictorial gem rarely equalled in photographic work. The views in Kent by the Chatham School of Military Engineering are excellent in every way, both pictorially and technically.

Mr. F. C. Earl's large combination landscapes are, as usual, very excellent; but one or two circumstances have tended to mar the effect a little this year: the pictures are somewhat darkly printed, and require, from their character, a great deal of light to do them justice, and the prevalence of dull weather during the Exhibition has denied them this light; hence there has been a slight effect of heaviness really not due to the pictures. The admirable composition, fine feeling, and technical excellence have notwithstanding this, secured them general admiration, the "Road to the Mill" (165) being the greatest favourite. The large group of camellias, azaleas, and orchids, is probably the most perfect work of the kind ever produced. Mr. E. C. Buxton exhibits a number of landscapes—English, Indian, and Norwegian—all exceedingly perfect. Mr. C. M. Drayson's large views of Canterbury Cathedral are amongst the most perfect architectural photographs we have seen. Major Impey's views in India are very fine indeed. The military photographs sent by the General Photographic Establishment of the War Department, Woolwich, are admirably perfect in a technical sense, and possess much scientific interest.

Mr. R. Manners Gordon exhibits eight of his charming views taken on gum gallic plates prepared in May, exposed in August, and developed in September. They possess, as usual, the highest possible technical and artistic interest. A cottage in North Devon (309), a similar subject (311), and a view near Clovelly (312), are especially charming. Mr. T. M. Brownrigg's views in the Dargle are exceedingly fine views of most picturesque scenery. Mr. Henry Cooper exhibits some of the most perfect small landscapes in the exhibition. "A Village" (356), on a collodio-bromide plate, is a gem which has never been surpassed by any process. "At Eynsford" (382) is equally charming. Lieut. Ahney has some very choice little photographs. "Beddgelert" (359), "Trees in Cobham Wood" (360), and a very effective sunlight scene in the Medway (361), are very fine. Mr. R. Tudor Williams has some capital views in Monmouthshire, both by the wet process and the coffee process. Mr. Hudson's views in the Isle of Wight are excellent. Mr. W. G. Coote exhibits some good landscapes; "Miller's Dale" (444) is especially fine. Mr. Lloyd, Mr. J. H. Lile, Mr. R. Potter, Mr. A. Clarke, Mr. C. A. Ferneley, Mr. Inskipp, Mr. B. Wyles, and some others, exhibit good landscape work, which does not call for special notice. Some views in Russia, and in France after the war, we shall refer to again.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

THE PHOTOGRAPHIC EXHIBITION—RETOUCHING THE NEGATIVE—THE PRESS AND THE EXHIBITION—PHOTO-COLOGRAPHIC PATENTS—PHOTOGRAPHY IN COURT—LOW PRICES—SOCIETIES.

The Photographic Exhibition has been one of the chief subjects of interest amongst photographers during the past

month. Whilst the exhibition is regarded on all hands as a very excellent one, inferior in no respect to the exhibitions of former years, and superior in many respects, I regret to learn that the financial results have not been, so far, as good as those of last year. Probably the exceedingly bad weather may account for much of this. Possibly, also, the fact that (from what cause I know not) the outside press has devoted less attention to the exhibition than on former occasions. Immediate financial results are, however, the least important element in the success of such exhibitions. The steady improvement in the quality of the pictures shown is one of the most assured evidences of the beneficial influence exercised by such displays. The general pictorial standard is much higher now than it was a few years ago, when the annual exhibitions of the Photographic Society were resumed, and it is worthy of remark that the assertion of process and mechanical means is much less common than it used to be. This is, I think, a step in the right direction.

Referring to mechanical aids to pictorial results, I am reminded of some of the comments I have heard in regard to the limits of touching, of which much is undoubtedly to be found in this exhibition. The editor discussed this subject so fully last week, that further remark is almost unnecessary; but I cannot help referring to one or two comments on the subject which have recently come prominently under my attention. One grumbler, who complains of the palpable retouching, suggests that pictures from retouched negatives should be described as such. To such a suggestion I think the natural retort might be, that since it is asserted the retouching is so palpable, there can surely be no need to announce it. But, apart from a retort of this kind, one is certainly tempted to ask if this perpetual assertion of the means is not very degrading to the art? Another objection to the retouching, which I recently heard, was that artists, who at one time eagerly sought photographs as aids to painting, were beginning to lose faith in them, being uncertain of how much was due to the camera, and how much to the pencil of the retoucher. This objection, again, strikes me as based on a low estimate of the province of photography, regarding it as a handmaid to art rather than art itself. That artists—that is, painters—should withdraw their patronage from photography is not really a serious matter, seeing that, however largely they have availed themselves of its aid, they have rarely in any way acknowledged their indebtedness to it. Sophistication to an extent which destroys the veracity and trustworthiness of photography cannot be too much reprehended; but there is very little in the present exhibition at all open to such censure.

I referred a few moments ago to the paucity of notices of the exhibition in the press generally. This is, undoubtedly, subject for regret, as such notices at least call public attention to the exhibition; but, except as giving publicity, some of these notices are singularly worthless. It is distressing to note the painful want of information they exhibit. I fear that in many instances the notices are "done" by gentlemen competent enough, it may be, for many duties, but without sufficient knowledge of either science or art to give value to their comments on an exhibition of photographs.

I notice that Messrs. Sawyer and Bird were good enough, in a recent issue, in answer to some remarks in my last, to indicate what they conceive to be the claims of Mr. Edwards in his first photo-colographic patent. I quite agree with those gentlemen as to what seems to be the claims of that patent; but I repeat my objection that they are not clearly stated; as the bulk of them are obviously open to dispute, it becomes important that the points claimed should be clearly stated—important, that is, to the public who may wish to use that which legitimately belongs to them, and to escape litigation by avoiding using those things claimed with any semblance of right by a patentee. For instance, I know that the use of alum or analogues for hardening the film has been used by Mr. Woodbury, has been patented by Swan in this country, and by Albert in America, all before the date of Mr. Edwards' patent; and yet it appears, accord-

ing to Messrs. Sawyer and Bird, as one of the claims in Mr. Edwards' patent. The use of two inks, which, doubtless, presents more plausible ground for a claim, appears to occupy no more important position in the specification than the use of alum, which is so obviously not intended to be covered by the patent. I have heard it said that the use of two inks is an old dodge with lithographic printers; but that is a point upon which I fancy the evidence wants more fully stating. The use of two inks by copper-plate printers is an old and familiar operation, but I presume that the question is fairly debatable whether applying this method to photo-collographic printing might not form a legitimate patent claim. The use of a mask to secure margins, which is classed amongst the claims by Messrs. Sawyer and Bird, is so familiar a dodge to printers of every kind, photographic and mechanical, that it cannot possibly be intended as a claim in Mr. Edwards' specification. His last published specification is open to similar objection as to its indefiniteness. The practice of summing up the specific points claimed in a specification is not, I believe, absolutely a legal necessity; but it is certainly a great convenience to the public. The unanswered challenge of Messrs. Sawyer and Bird in relation to Mr. Edwards' patent does not tend to increase the confidence in these patent claims which their indefiniteness has first created.

One of the disastrous results with which photography is threatened as a consequence of the practice of retouching is the loss of its reputation as a veracious recorder and indisputable witness. The loss may possibly be a small one either to the art or its professors. It is not due to the practice of retouching that the photographs have been made to yield so much sport to the Philistines in the Tichborne case. Rarely has photography played so prominent a part in a trial, and rarely have its claims as a witness been treated with more contumely. It is certainly important that the extent and limit of the possibilities of the art should be well understood when photography enters court as a witness, otherwise it may become misleading, as were probably the South American Daguerreotypes of the claimant.

The letter of your correspondent, Mr. J. Harrison, which appeared a few weeks ago, is one well worthy of the attention of a large number of photographers. Can nothing be done to raise the declining average of prices amongst a large class of photographers? Many capable photographers are now, I am informed, taking cards at three shillings and sixpence a dozen. No one is really benefited by this suicidal policy; no one is thankful for the cheapness. Are there no means of securing a combination amongst photographers to work only for fair prices?

The societies are now actively at work again. The South London, in spite of a somewhat inconvenient meeting-room, appears to be vigorous and active. The discussion raised by Mr. Fry as to the advantages of hypo or cyanide were fairly discussed, and left the question very nearly where it was at the beginning, as often happens with other discussions. Those who used cyanide seemed disposed to stick to it, and those who used hypo showed no inclination to abandon it. The annual dinner of the Society was one of the most successful of those it has yet held.

AMERICAN CORRESPONDENCE.

ORNAMENTING MIRRORS BY MEANS OF PHOTOGRAPHY—HOW TO EMPTY A BATH WITHOUT SPILLING—HOW TO MOUNT WITHOUT COCKLING THE MOUNTING BOARD—HOW TO MAKE A GOOD DIPPER—THE LOSS TO PHOTOGRAPHY IN CHICAGO.

Ornamenting Mirrors by Means of Photography.—At the American Institute's Annual Exhibition, now being held in New York, the Ornamental Mirror Company exhibit some very effective mirrors, the manufacture of which gives room to one more appliance of photography. Photographs delicately toned (say of the well-known bas-reliefs by

Thorwaldsen) are pasted upon plate glass (the figures only being used, the background all being cut away), and then silvered over in the usual way. The effect is very beautiful, making the figures to appear, by means of the reflecting background, as if they stood out in the air. It is easy to make them, and they may not be new to you; but as giving room to one more source for the employment of our art, they are interesting. Not only are they applied to use as mirrors, but they are used for panels for railway cars, for shop doors, and for various advertising purposes. The value set upon them by the inventor will be understood by the following scrap from his flaming circular:—

"This novel and beautiful 'Mirror Show Card,' as a permanent advertising medium, surpasses every other card extant, as, from its constant usefulness, it is always sure to be hung in the right place, and ever ready to shadow forth the virtues and merits of the advertiser, even when reflecting the beauty and grace of its possessor."

How to Empty a Bath.—We all know the difficulty of emptying the solution out of the ordinary vertical bath dish so universally used in this country. As it is best to cover them closely when not in use, they are usually made without a lip, and it is not easy to pour a solution from them without spilling some of it. There is a way of accomplishing it, however, and I saw it recently in practice by my friend Mr. B. H. Kilburn. Here is a little drawing to show how it is done. Take a strip of clean, white, tough letter-paper; bend it round one edge at the mouth of the bath, and above it; hold it very tight with one hand while you manage the bath with the other, and pour. Mr. Kilburn uses the same strip of paper over and over again. In fact, the longer it is used, the tougher and better it seems



to get.

How to Mount without Cockling the Mounting Board.—This is a very difficult work to perform with some folks. Nothing can be more annoying than to find your mounts all cockled after you have taken pains to mount your prints neatly and carefully upon them. While in Boston a few weeks ago, I found Mr. Frank Rowell, one of the eminent photographers of that city, and a gentleman who has tried very hard to make the carbon process go in this country, practising a method of mounting which seems to be proof against any degree of cockling. He claims to have used it for several years, and that it was partly suggested to him by the manipulations of the carbon process. The following is his method. He says:—

"I have never experienced any trouble from prints cockling when mounted for several years, and I prevent it in the following way:—First, for from twelve to fifteen hundred cabinets, I take 8 ounces gum arabic, 1 ounce good gelatine, 2 ounces sugar, 16 ounces water. Soak the gelatine in sufficient cold water for an hour or more. When your gum arabic is all dissolved, add the sugar and gelatine. Apply heat enough to dissolve the gelatine, and it is ready to try. Take an old print, pin it face down, and brush it over, using a sable brush. Let it dry, and if you have about the same thickness of gum and gelatine, or if it shows about the same gloss that common albumen paper has, it is in good condition.

"All you want is body enough to hold the prints to the board. More than that had better be in your dish. Add water until it is right for body. So much for the gum paste.

"Leave the prints untrimmed as they come from the pointing-frames; pin them on a smooth board by the corners; paste them. When dry, cut the size wanted. Damp your mounts well, but not enough to have any water stand on the surface. Take two pieces of cardboard and a piece of felt cloth; have all an inch or more larger than your mount; sew them all together at one end; place your mount on the bottom board; place the print on the mount in its place; do not rub it too much, only enough to

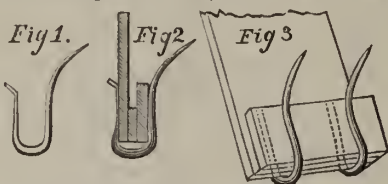
hold it while you let the felt and top-board down in place. Now run them through your rollers, but have a care that the pressure is not too great, just enough only to make them adhere well to the mounts. Roll them back and forth two or three times, then spread them out to dry. If you have a hot press, finish them; if not, roll them in the usual way.

"I do not claim this as new in principle, as I have known of it ever since I made photographs; but perhaps some one new to the business has never heard the particulars."

It seems like a tedious process, but it is effective, and really easy, after short practice.

How to Make a Good Dipper.—The use of the vertical bath of course renders it necessary to employ a dipper also. We use a great many made out of hard rubber, but they are objectionable, and the decided preference is for glass ones, which are often made by cementing two small bits of glass to a long piece. Shellac, being the cement, does not always hold, so here is a dodge from Mr. G. W. Graves for assisting it:—

"Take a piece of silver wire and flatten the end A; then bend in the form as shown in fig. 1; slip it on to the dipper as fig. 2, and the dipper is complete. Two hooks can be



used if desired. The hook projecting prevents the plate leaving the dipper. It is better to roughen the pieces of glass that come in contact. Fig. 3, full view of dipper.

The Loss to Photography in Chicago.—I am not able to give you a full record of the losses by our fraternity in Chicago. I would not go far wrong in stating that every gallery there is in ruins. All the principal ones are gone, only a few of the lower class remaining. A great many good fellows are thrown out of situations, and I expect there will be some suffering among them as well as among other classes. A noble effort is being made by the Executive Committee of our National Photographic Association to relieve them as much as possible. The fraternity in all directions is responding to the call for aid, and we expect much good to be done in this way. Photographers as a class are warm-hearted, and are generally quick to respond to any such call. While I write, there are more busy photographers in Chicago than ever before. They have flocked there from all quarters to make pictures of the ruins. I will send you some of the results shortly, to show you how, in a very few hours, a splendid city may be destroyed. Business is good there, though. New buildings are going up rapidly, and several of the best photographers are already open, or soon to open again. Mr. Charles W. Stevens, the leading stock dealer there, was open in a new store with a stock of goods in a week after he was burned out. Such is Chicago pluck and enterprise. Truly yours,
Philadelphia, Nov. 1, 1871 EDWARD L. WILSON.

ALBUMEN AS A SUBSTRATUM.

BY THOMAS GULLIVER.

HAVING at various times given this substance a trial, and found that, however successful it was at first, it has ended in fogging the nitrate bath, it may be as well to discuss the why and wherefore.

Those photographers who have spoken and written so highly in its favour, I expect, give only their early experience, and do not continue its use, or they use it until the bath shows symptoms of fog, and then make up a new bath. Now I have had the same nitrate bath in use for many years, and by keeping it carefully from all trace of white light, and filling it up with fresh solution when wanted,

have never been troubled with a foggy bath. Here, perhaps, is the cause of my non-success in using albumen as a substratum. I have also found that where the plates have been coated, though they worked well at first, after a time the pictures taken on them were inferior. The pure clean glass is, in my opinion, safest.

And now a few words on dry plates where albumen is used. From the little practice I have had in dry plate work I am not in a position to say much; still it has always happened in my practice with those plates which have been prepared with an albumen coating, that if at first they developed into clean and good negatives, when kept for a few weeks they became insensitive and liable to stain. When we can develop and intensify plates with proto-sulphate of iron there will be no fear of the film leaving the glass, and albumen will not be wanted as a preliminary coating. Such has been my experience.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.

CHICAGO—PHOTOGRAPHIC STATUES—ABOUT PRECIPITATED GUN-COTTON—DETERMINING THE TIME OF EXPOSURE—GIBON AND THOMPSON—PICTURES OF SURGICAL SPECIMENS—AMMONIA AN EXCELLENT MATERIAL FOR CLEANING PLATES.

The terrible news of the burning of Chicago has just reached us, and filled every one with horror, most so myself, who saw this Queen of the West in all her glory, and who was delighted with the grandeur of the place, the energy of her inhabitants, and the cordial hospitality they tendered me. We are in anxious suspense about thousands of friends and relatives. "Where is Rocher, Fassit, and many other brave artists?" is the oft-repeated question, and everywhere are helping hands willing to bring sacrifices, in order to alleviate the immediate suffering. We feel as if the misfortune had befallen our nearest friend and neighbour.

It is difficult, under those circumstances, to master the necessary composure, but I follow the example of the editor of the *Chicago Tribune*, who, when he saw that the fire would overtake his establishment also, went at once into the unburnt suburbs, and established a small printing establishment in one of the small wooden houses. Let us hope that the men of the West, who had built up that wonderful city in the short space of thirty years, will see that, Phoenix like, it rises from its ashes more beautiful than ever. America is a young country, and possesses vitality enough to recover from the heaviest blow.

With much pleasure I see in the last number of the *Photographic World* the application of photography to the taking of statuary is practised in America. Lœscher and Petsch here have done much in this branch, and met with a great deal of success. They have published whole collections, and issued a "Michael Angelo Album," a "Rauch Album," a "Thorwaldsen Album," &c., in which the most celebrated master-works of the above named artists were represented. It is not very difficult to photograph such objects, but I have to caution against one thing, *i. e.*, the employment of unusual light effects. About eight years ago I photographed for a friend his marble group representing Paul and Virginia. I wanted to make it very fine, and to this in marble executed thought I wished to add a photographic idea. I placed, therefore, the statue in an illumination somewhat like the Rembrandt effect (at that time it was called side-light effect). The judgment of my photographic friends declared it a perfect success, an excellent picture, and proudly did I carry it to the artist. He beheld his work as a photograph, and was shocked! "But, my dear Vogel, this is horrid." I was surprised; I called his attention to the light effects. "But that is just what makes it so horrid," was his reply; "I want no light effects, I want to see the details, for which I have worked for weeks and months with all my love of art. Where is the hand of Paul?" "In the shade," I answered. "But that is wrong, the hand must be visible; I have made it for that purpose.

And where is the body of Virginia? Everything is dark one sees nothing but a bright border." I had received my lesson; I was instructed a statue is a different thing from the head of a pretty girl. For the latter it is often advantageous when parts which are not really beautiful are placed in the halfshade, but a statue, on which the smallest details are worked out with the utmost care, demands light for these details also, and a Rembrandt illumination is wrong.

I will not say that all shadows are wrong; on the contrary, they help to give form. In photographing statues the illumination should be arranged similar to that of the sculptor. This is generally an oblique front top light, which strikes the figure under an angle of 45°. Loescher and Petsch selected this illumination, although, as portraitists, the temptation to employ extraordinary light effects was very great.

A year and a half ago I communicated to you the results of investigations instituted by Canuzet, of Paris. He found that pyroxyline (gun-cotton) can be freed from foreign substances; by precipitating the plain collodion with water, pure gun-cotton is precipitated, and I myself found at that time that this precipitated cotton yields an excellent collodion. Monckhoven, in Vienna,* has lately made experiments with this precipitated gun-cotton, and recommends it very highly. He states that such cotton makes an excellent collodion, that it dissolves completely in alcohol alone, and that the result is independent of the quality of the pyroxyline; that further, the collodion is always of the same consistency, no matter if alkaline or the salts of cadmium are employed for sensitizing. The two latter points are very remarkable.

I myself have experimented with this precipitated collodion, but did not always get equally good results. The collodion which I made one and a half years ago was excellent, but during the summer I got a precipitate which dissolved only with difficulty in alcohol and ether; the collodion was muddy, and, even after long continued settling, the plates were veiled and foggy. So far I have not been able to discover the causes of these differences.

The question has often been ventilated, if a method might not be found to determine at once, and under all circumstances, the correct time of exposure.

We are as yet very far from having an instrument which, like a thermometer, will indicate the exact photographic temperature of exposure; but we are not quite helpless either in this respect. With a clear, unobstructed sky, the chemical intensity of light is governed by fixed laws, and depends on the position of the sun; and we can calculate according to the measurements of Bunsen and Roscoe, with appropriate correctness, the chemical intensity of the light for any given place, provided we know the exact position of the sun, and the sky is unobstructed by clouds or vapours.

I had a table prepared which gives the intensity for twelve different days of the year, at intervals of four weeks each; the calculations are made for Berlin and places of the same geographical latitude. The table gives the intensity in degrees for the different hours before and after noon; 0h means noon.

	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	8h.
21. January	23,01	21,93	18,64	12,79	2,77				
21. Feb. ...	29,95	29,12	26,53	21,65	14,07	2,77			
22. March...	34,95	34,40	32,62	28,99	23,00	14,80	2,77		
22. April ...	37,08	37,45	36,55	34,40	30,42	24,05	15,11	2,77	
22. May ...	38,26	38,19	37,77	36,48	33,69	28,78	21,56	11,95	2,77
21. June ...	38,35	38,28	38,02	37,01	34,59	30,24	23,71	14,65	5,94
22. July ...	38,26	39,19	37,77	36,48	33,69	28,73	21,56	11,95	2,77
22. August.	37,64	37,41	36,48	34,29	30,24	23,80	14,76	2,77	
23. Sept. ...	34,95	34,40	32,62	28,99	23,00	14,30	2,77		
22. October.	29,63	28,86	26,07	21,28	13,61	2,77			
21. Nov. ...	23,01	21,93	18,64	12,79	2,77				
21. Dec. ...	19,74	18,64	15,43	9,21					

1h, 2h, 3h, 4h, means 1, 2, 3, or 4 hours before or after noon; so that, for instance, 1h means either 11 o'clock in the morning or 1 o'clock in the afternoon; 4h means either 8 o'clock morning or 4 o'clock afternoon. For days lying between those specified the correct intensity can easily be found by interpolation; for instance, on the 7th of October at 0h (12 noon), the intensity is midway between September 23rd and October 22nd.

$$\frac{34.95 \times 29.63}{2} = 32.29$$

The table indicates at once that the intensity on December 21st, at noon, is only one-half of that of June 21st; we will require, therefore, on the former day twice as long an exposure, provided the atmospheric conditions are equal.

We see from the table also, that on December 21st, at 3 o'clock in the afternoon, the intensity is only one-fourth of that of June 21st at the same hour; it follows that on the December day we must expose at 3 o'clock p.m., four times longer than in June at the same hour.

Equally useful is the table for determining the time of exposure for different hours of the same day. If I have made at noon on September 22nd a picture with ten seconds exposure, I will require at 8 in the morning or at 4 o'clock in the afternoon, when the intensity of light is only $\frac{2}{3}$, $\frac{3}{2} = 1\frac{1}{2}$ times as much time, or at least fifteen seconds. We find, also, that the light intensity during the summer months is nearly constant between the hours from 10 to 2; we will require for those hours the same length of exposure; before and after more time will be necessary. I have published the above table in the German edition of my Handbook; unfortunately, however, without giving special instructions how to use it. I have lately, while travelling and taking landscape views, frequently referred to it, and have very seldom gone amiss.

For America the proportions are different. The intensity of light is in proportion to the more southern latitudes greater. But the difference between the several months progresses in about the same ratio, so that the table may serve as a starting point, until one has been prepared with especial reference to a particular locality.

I have transgressed a little into science, and at once it occurs to me that I have to thank you for the interesting prints representing surgical specimens, made by Gihon and Thompson, Philadelphia. They are, in fact, almost as instructive as the originals themselves. I have shown them to the members of the Medical Society, and they cannot praise highly enough these excellent pictures.

In conclusion, a few remarks about cleaning plates. This subject has been discussed as long as photography has been practised; a proof that something is still to be said about it, and to be learned about it. The albumenizing, which, in many instances, has taken the place of the cleaning, has not exhausted the subject either. There are instances where we have not time to wait for the albumenizing, and where we have to resort to polishing again. Many substances have been proposed to be used for cleaning purposes—alcohol, ether, old collodion, tripoli, oxide of iron, &c.—and I should hesitate to mention a new substance, and to augment the number by another one, if it had not produced such excellent results, under circumstances when all other means failed: this is ammonia.

During my last summer trip, I had a large number of old plates, with greasy marks, which neither alkali nor acid would remove, nor had alcohol or ether any effect. At last I resorted to ammonia, the fat-dissolving properties of which are well known, and behold! in a few minutes the plates were clean, and gave faultless pictures. I next tried a number of plates which were completely soiled, and those also, with very little exertion, became perfectly clean. Since then I clean all my plates with ammonia. Even varnished plates, from which the varnish had been removed by soda solution, yielded brilliant pictures.

I pour a few drops of ammonia on the plate, rub it

* Report read before the Vienna Photographic Society, October 17, 1871.

over it in all directions, with a linen cloth, almost to dryness; I next rub the plate with a clean linen rag, and finally with a leather pad. No cleaning method leads so rapidly to good results as this one.

LANTERN HINTS.—No. 3.

— BY JAMES MARTIN.

OXYGEN gas being the *sine qua non* when a brilliant light is required for the magic lantern, a few hints about it generally will no doubt prove of service. Between two and three pounds of powdered chloride of potash will be required to produce sufficient for a good evening's exhibition, at a cost of about five shillings. Oxide of manganese should be added to the amount of one-fourth or one-fifth part of the weight of the chlorate, and well mixed together. A small portion should be thrown into the fire, and by its behaviour the safety of the preparation is known and may be relied upon. Oxygen may be procured ready prepared in a compressed state, but I do not see any advantage thus gained, except by those who are too timid to make it themselves, as I should not think that it could be used direct from the cylinder in which it is packed, as the pressure must vary from that of an air gun to *nil*, and thus be both uncertain, unmanageable, and dangerous; there must always be a considerable quantity remaining in the cylinder which cannot be used. Small copper retorts are now much used for making the gas, which, at a high heat, would, I fear, prove untrustworthy. I should prefer depending upon a strong cast iron retort, having a large delivery tube, and made of sufficient height to prevent the boiling chlorate from choking it; this is the real danger, but it can only happen from a reckless application of sudden great heat. This should never be applied; on the contrary, the retort should be gradually warmed up, and when the gas begins to flow it should be raised from the fire until it ceases. Then replace it, and so on, until all is given off. The purifier, or washing bottle, should always be of glass; no better can answer the purpose than a 40-ounce Wolf's bottle, the stopper of which will serve as a safety valve. A proper attention to the appearance of the gas passing through this will enable the operator to regulate the heat to a nicety. The bottle should be about half-filled with a solution of common washing soda, which will free the gas as it passes through it from any free chlorine, and so preserve the gas bag. More solution than is here recommended should not be put into the bottle, otherwise the force of the current of gas might send some of it into the gas bag, which would be anything but desirable. The first bubbles that appear are not gas, but rarified air driven out of the retort and tube by the heat. These should be allowed to escape before the tube is fixed to the gas bag. Should a considerable quantity of air be allowed to mix with the gas, there will be frequent explosions whilst burning, perhaps of sufficient strength to put out the light and frighten the audience; therefore, before it is filled, the bag should be warmed and the tap opened, then tightly rolled up, and compressed. Whilst in this state close the tap and keep it so until the tube for the delivery of the gas is fixed to it. When full, I need not say, it ought to be put in some secure place until wanted. My bags have caps screwed on to the taps, so that, should they be turned, no gas will escape. Gas bags should never be hauled about by the taps, as this practice will, in time, loosen them; the bag will then leak, and cannot be repaired, except by a maker. They should have some sort of handles, or straps, to lift and carry them about by, especially those of large size, as, when full, they are very awkward to manage. Each bag should be marked on its upper side with a large O in white paint on that used for oxygen, and an H on that used for hydrogen, so that no mistake may occur in placing them or connecting the tubes to them. My pressure boards form shallow boxes with locks and keys, in which the bags are placed when empty. They are thus completely out of the reach of danger or accident. Gas bags are generally made either

wedge-shaped or square. Sometimes the tops and bottoms of the latter shape are of wood, serving as pressure boards. About 112 lbs. weight are required on each bag for the hydro-oxygen light. The pressure should on no account be removed or altered while the gas is burning, and care should be taken to place them out of the reach of the audience, so that no one may lean upon them, as this might disarrange the light and put it out, and the sudden removal of the pressure might cause an accident. Gas bags should be tested now and then as to their soundness. This practice may save, perchance, some disappointment or accident. To do this, fill them quite full of common air with a pair of bellows, place them between the pressure boards, weight them with full weight, then take a stick, stand it upright by the side of the bags, and mark upon it the height to which the upper corners of the pressure board rises; leave them for an hour, then measure them by the stick again, and if the two measures agree, the bags are sound; but if the pressure board have descended, then the bags are leaky. A puncture or small hole may be repaired in the following manner:—Make a strong solution of pure india-rubber in uaptha; thrust through the hole as many threads of stocking or lamp cotton as will fill it, leaving the ends so that they project inside and outside the bag about half an inch; spread them out in rags on the bag, then saturate the cotton with the rubber solution by dropping some of it in the centre; let it dry, then repeat until the cotton is well covered with it, and adheres to the bag. It will be much the safest plan not to attempt the repair of any large rent or rupture of the seams, but send it to a maker for that purpose. Gasometers made of metal would be the most reliable and durable, but are too cumbersome for removing from place to place; they also require to be placed on a level surface, and care taken that they work freely and true, so that the pressure may be well regulated.

All washers should be made of soft spongy leather, and kept saturated with oil. Any leakage from unions will generally be known by their producing a hissing noise. Some putty should always be at hand, in case of anything proving untrustworthy. All unions should be screwed home; these, being made of soft brass, should never be subjected to rough usage, otherwise they may be knocked out of shape and become useless. As coal gas is to be obtained in almost every place, I need say nothing about the preparation of hydrogen, and in country exhibitions the oxy-calcium light will be much less cumbersome, and prove quite sufficient.

My next hints will be on the arranging and management of an evening exhibition.

A VERY SIMPLE DARK-TENT.

BY DR. H. VOGEL.*

The number of dark tents known to photographers just now is somewhat large, but which is the most practical among them is an open question. I have experimented with the tent of Murray and Heath, and that of Rouch. Remele, in his manual, recommends for landscape photography the apparently very practical tent of Herzog, of Bremen. This last has, however, some disadvantages; it is very heavy, it requires two porters, and its erection takes some time. These circumstances are much in the way of its employment, for not unfrequently it is a matter of paramount importance to the landscape photographer to be able to set up his tent at once, so as to get to work before certain effects of light have disappeared. Facility of transport and rapidity of erection are two important qualities for a tent to possess.

In America I learnt to know from my friend Kilburn, in Littleton, an exceedingly simple tent which seemed to me to fulfil the requisite qualifications in a very high degree. I have now constructed one in Europe on the same plan,

* Photographisches Mittheilungen

importing therein several simplifications of my own, and it is in this way that the tent I am about to describe has been produced. The apparatus served me all through my recent journey through the Carpathians under the most trying circumstances of heat, rain, and storm, and from the fact that it answered its purpose admirably I can strongly recommend it for public adoption.

The tent consists of a wooden frame capable of being shut up or collapsed, the construction being shown in fig. 1. There is a bottom, B, serving as a table to work

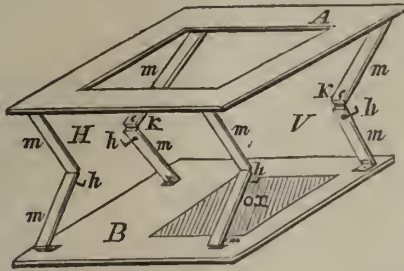


Fig. 1.

upon, and a cover with opening, A, stretched over with black linen. The top and bottom are connected together by folding limbs, *m m*, attached to one another by hinges. If the hooks, *h h h*, are allowed to fall out of the eyes, *k k*, the limbs collapse and snap together like a pocket knife, and then the apparatus forms a flat package easily transported. When the cover is lifted, the limbs straightened, and the hooks put into their places, an upright structure is at once formed.

Inside the wooden frame is stretched a four-sided tent cloth, sewn together. It is nailed against the frame, A, and the bottom, B; at H there is a window of four-fold stuff, and at V (see fig. 2) is the opening at which the operator sits, upon the camp stool, S.

Above, at *g*, fig. 2, is a ventilator; at *x*, fig. 1, there is

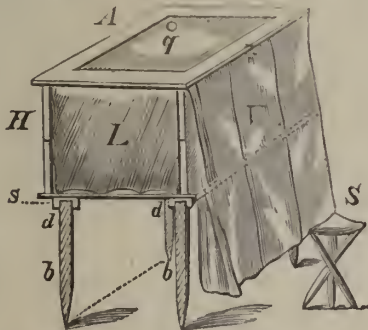


Fig. 2.

a broad opening at the bottom, fitted with a trough-shaped piece of rubber stuff. This serves to catch the waste developing liquid, and a hole in the middle allows the trough to be emptied; an india rubber tube is unnecessary.

The tent stands on four feet, *b b b b*; these are either screwed on, or are attached by means of hinges, and the screws, *s s*, permit of the hinges being fixed when the tent is set up.

How the tent is put in position requires no explanation. In stormy weather, or high winds, steadying ropes, connecting the upper portion with the ground, are desirable. In packing the apparatus together, the cloth at the front, V, is stuffed into the apparatus, the camp stool is put inside, as also the feet, if they are screwed on with that design, and then the hooks, *h h h h*, are relieved, and the cover, A, of course collapses. The tent cloth finds plenty of room inside, owing to the supports, *m m m m*, and is 'his way protected from too much pressure. The feet,

if upon hinges, are doubled in after being released by the screws before mentioned, and in this collapsed form the whole apparatus is fastened together by a couple of straps. These latter furnish also a means of carrying the tent, so that the whole may, if desired, be easily carried on the back in the same way as a knapsack. If the size of the lower part, or working table, measures thirty inches by twenty, the weight of the whole apparatus need not exceed eighteen pounds. The time necessary for setting up a tent of this kind is seventy-five seconds.

I may mention that the tent itself is a much more simple affair than the description of it.

Correspondence.

CUTTING AND BRADFORD'S PHOTO-LITHOGRAPHIC PROCESS.

DEAR SIR.—In "Muspratt's Chemistry," article "Photography," there is an account of a photo-lithographic process which is said to have been patented by Messrs. Cutting and Bradford, of Boston, U.S. Are you in a position to state whether the patent is still in force?

The following is an account of the operations:—Upon the stone is spread a composition of—

Water	...	...	...	...	1 quart
Gum arabic	...	...	...	...	4 ounces
Sugar	...	...	...	...	160 grains
Bichromate of potassa	...	...	...	...	160 grains

After printing in the usual manner the stone is washed with a solution of soap, which removes the coating from every part except where the light has acted in rendering the gum and chromium compound insoluble in the menstruum. For portraits, landscapes, and other subjects requiring contrasts of light and shade a grained stone is requisite.

If you think the above worthy of inserting in the NEWS, you may insert it.—I am, yours truly, SEPTIMUS HENDERSON.

Manchester, December 4th, 1871.

[This was one of the earliest photo-lithographic processes. The patent was suffered to lapse. The process has several good elements, but has been superseded by the transfer processes, which are more easily worked.—Ed.]

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

ANNUAL DINNER.

THE annual dinner of the above Society was held on Saturday at the Café Royale, Regent Street. The chair was taken by the President of the Society, the Rev. F. F. STATHAM, M.A., and among the guests present, besides members, were Mr. W. J. Stillman, Mr. Baynham Jones, the Rev. Mr. Bower, Mr. J. Spiller, Mr. Belton, Mr. Henderson, of Perth, and many other visitors.

The usual loyal toasts having been duly honoured, the Chairman gave the toast of the evening, "Success to the South London Photographic Society." The South London Society, he was glad to say, was still flourishing. There could be no better proof of its vitality than the fact of so many members and friends assembling together that evening. He thought that the Society was one that deserved well from all photographers, inasmuch as its chief object was the advancement of art as applied to photography. There was also another feature in the Society which to his mind was especially deserving of notice, and that was, the encouragement it gave to its younger members, and thereby to a certain extent developing the talent they might possess (hear, hear). That it had done so was evident when they remembered how many men since become famous had once been young members of the Society. After referring to the pleasure he had himself derived from the meetings of the Society, Mr. Statham concluded by proposing the health of Mr. E. Cocking (hon. sec.) in connection with the toast.

MR. COCKING said:—It becomes my duty, as the official representative of the South London Photographic Society,

to thank you for the very warm way in which you have expressed yourselves towards its future prosperity. Our Society is a small body, but, I may say, it has a large "soul." I mean that, as one of our objects is the cultivation of "art" in connection with photography, we, as a Society, do possess that element to a great degree; and after all that may be done by the study of the science connected with our work, it is the result pictorially that the general public look at and understand, and so the artistic side of photography must always be the highest and greatest. But we are not rich either in money or numbers; very much, I am afraid, like many artists, who, however clever, yet whose taste it seems to be never to grow prosperous. In the presence of so many visitors here to-night, I may here repeat (what I have stated to our members on another occasion) that our Society was, I believe, the first in this country at which were exhibited, by the kindness of one of our Vice-Presidents (Mr. G. Wharton Simpson), those advanced photographic portraits of Mons. Adam-Salomon, which entitled him to be called the great Parisian photographer, and which have exercised so great an influence upon photography in this country; and we also have, as one of our leading members, a gentleman (Mr. V. Blanchard) who may be said not only to have equalled that Parisian artist, but almost to have gone beyond him, and whom we may justly call our great London photographer. Some twelve or eighteen months ago I really thought our Society was about to illustrate a celebrated production by one of our great men, Mr. Robinson, viz., "Fading Away;" but since then we have showed signs of a healthy vitality, and, by an infusion of new members, giving fresh ideas, our future still holds out a great sphere of usefulness towards the progress of our art science. I have now to thank you for the exceedingly kind way in which you have received my name in connection with the toast.

The Chairman then proposed the toast of "Professional Photography." He thought that the public owed a deep debt of gratitude to the professional photographer. There was scarcely a family in the whole country but what had reason to be thankful that photography existed. Without the professional photographer it would not have been possible for the memory of a dear friend or relative to be preserved so well as by the aid of the simple photograph on the wall, bringing back, as it did, some well known look or expression (applause). With regard to the professional photography of England, he was sure that no country in the world reached a higher standard. Both in America and on the Continent, photographers looked first to see what was going on in this country; and not only the works produced in England, but also the discussions of the various societies, had an immense influence elsewhere. The speaker then alluded to the many men of intellectual attainments to be found in the ranks of professional photographers, and to the high standard of excellence both as regarded manipulation and art qualities; and concluded by coupling with the toast the name of Mr. Valentine Blanchard.

Mr. BLANCHARD, in responding, expressed his sense of the honour conferred upon him in the connection of his name with the toast. He (Mr. Blanchard) was deeply indebted to the labours of professional photographers, and would specially refer to their great father at the end of the table as one from whom he had derived great benefit. Mr. Blanchard then alluded to the circumstances under which he first became acquainted with the picture of the "Two Ways of Life," and referred to the influence which that picture had had upon his own work. To Rejlander and Robinson he owed much, and he believed that from their labours a great deal of his success had arisen. Mr. Blanchard concluded by advising every photographer to examine carefully a portfolio of studies by Rejlander at the Exhibition, inasmuch as it contained lessons the value of which could not be over-estimated.

The next toast, that of "Amateur Photography," was proposed by Mr. Rejlander. He thought that all they knew was due to the efforts of amateurs. It was not the professional who started first, but the amateur, and particularly in the chemical portion of the art. There was a distinction between the chemical and the art amateur photographer of early days, but he should not speak of the latter, for he had heard nothing about them (laughter). In going back to his earliest recollections, there were two names that he remembered—Dr. Diamond and Mr. Spiller—old Spiller (laughter)—who stood out the most prominent. To the theoretical work of those and other amateurs photographers were mainly indebted for the improvements in their processes. There was a time when he expected still

more from amateur photographers. There was so much that artists found difficult to produce—the variety of the passions, expression, beautiful forms—that for years he expected that amateur photographers would come forward and give them what they wanted. But to do that, of course, required art knowledge, and he regretted that artists had been so jealous of photography that whatever use they had made of it was never acknowledged. That was a pity, and he (Mr. Rejlander) thought that artists, both in this and other countries, might do immense service to photography by using and saying that they use it, instead of making it as their own art production (hear, hear). Mr. Rejlander, after referring to the success in landscape photography which amateurs had obtained, concluded by proposing the health of Mr. Baynham Jones.

Mr. BAYNHAM JONES having briefly replied,

Mr. SPILLER proposed the toast of "Art Photography," and in so doing referred to the many members of the South London Society who had distinguished themselves by their artistic talent. His own connection with photography had been rather a scientific than an artistic one, and he was afraid he must confess that his art education had been sadly neglected. However, he now hoped, after three years' hard service in connection with the London Photographic Society, to be able to pay some little attention to art, and, as one step towards it, he trusted the South London Society would receive him as a member (applause). The Exhibition then open was a capital illustration of the value of art photography. Not one of those works which had been admired owed its success to careful manipulation nor to scientific knowledge; that success was due to the amount of art training manifested. He had much pleasure in coupling the name of Mr. Rejlander with the toast.

Mr. REJLANDER, in responding, said: It occurs to me that art photography is now as plain to every one as pens, ink, and paper. Everyone with any knowledge of photography at all can produce something if he has something to produce (hear, hear). Of course I should say to the aspirant of art photography, not to begin his work in the studio, but to look for it in his daily life—at the social table, at a ball, an assembly, in the streets—and if he wishes to produce what he has seen, he can do so in the studio afterwards (hear). I believe there is nothing in this world—no science or art—that has gone on so fast as photography. This is mainly due to the absence of jealousy among photographers, and to the free communication one with another throughout the world. There is no science or art but what has got its secrets, and requires apprenticeships or high premiums; but photography has been quite open to every man, and this is the reason why it has made such progress. I expect, therefore, that in another generation, when the old Jews have left Egypt, the new men will break their shackles, and be judged only by their works. Photographers have laboured with great difficulties, and with prejudice both from artists and art writers, who have admitted nothing of mind in anything that is not produced by hand. Mr. Rejlander then went on to speak of the advantages possessed by artists, and not by photographers. The former had the power of correcting any little error in drawing, which the latter had not; consequently the photographer had in this respect an immense difficulty to contend with. With regard to the mechanism of the photographer—an objection often brought forward—he would say that if people could only go into the studio of the artist and sculptor, and see the arms and legs lying about, and the little bit of drapery, or the lay figure, they would not have so much veneration for the painter (hear). The speaker then continued: Art photography is certainly extending in another way—what I must call the Madam Rachel way (laughter)—making everybody beautiful for ever. It certainly would take away half the sympathy for departed friends if everybody were made so white, so fat in the face (laughter). I took a portrait of a young lady some years ago—a young lady with a very fine delicate face. I am guilty of taking to these divine thin faces (laughter), and this face was full of refinement—such a wedge-shaped face. About a week ago she sent some photographs of herself to her sister, and as we had been friends in days gone by, the sister thought she could not do better than send one of the portraits to me. The face of the portrait looked like the section of an egg, and I did not know it for a long time. No doubt she liked it, but I think it is a great pity, and when it is applied to public men—historical men—I think it is very wrong indeed (hear hear). Of course to me, and many others very anxious to study faces, to try to compare them with the actions and history of the men themselves, to note what marks they

have received from thoughts and feelings in life, it becomes impossible when all is smooth and nice. If a lady had some marks on her face, and her little nephew said to her: "Are those scratches on your forehead?" that boy would always recollect those scratches, and the portrait taken at that time. I do not want to belie a great art, but there is too much of art (?) in this. No doubt beautiful hollow cheeks, in certain lights and with short exposures, are exaggerated, but are they not as much exaggerated when they are made into plums? It is shocking; and for photographers to send photographs that deceive, I contend, is shameful. Mr. Rajlander concluded by saying that he had known artists who formerly used to buy photographs as a means of assistance in their work, but they had ceased to do so now that the beautiful-for-ever photographs had come up, for, they said, there was so much work put on to photography that they had lost faith in them. As for art photography generally, he trusted that it would prosper, and he hoped that photographers would strive more and more to study nature, and afterwards reproduce it in their studios (applause).

The next toast was that of the "Guests," responded to by Mr. STILLMAN. In an effective speech Mr. Stillman dwelt upon the links that bound photographers together—let them be of whatsoever nation they might—in one common chain of friendship. He congratulated both English and American photographers upon the cordial feelings which existed between the two countries, and hoped that should he remain for any period in England he might become better acquainted with the South London Society.

The "Photographic Press" was next given by the Chairman, and acknowledged by Mr. G. Wharton Simpson, Mr. J. Taylor, Mr. Spiller, and Mr. H. Greenwood; and the health of the Chairman, proposed by Mr. Rajlander, and drank with great enthusiasm, brought the proceedings to a conclusion.

During the evening some excellent songs and glows were given by several musical friends, and in every respect the South London dinner for the present year must be pronounced a success.

Talk in the Studio.

SUBSTITUTES FOR LITHOGRAPHIC STONE.—The *English Mechanic*, under this head, describes a process closely allied to photography, as follows:—"Lithographs, as most of our readers are aware, require for their production a peculiar kind of limestone found chiefly on the banks of the Danube and in the neighbourhood of Munich, and, as may readily be imagined, by the time the stones reach this country and are prepared for the artist, they are rather expensive. An improved process and composition, whereby slate and other materials are made to serve as substitutes for lithographic stones, have been invented by Mr. J. N. Lambert, lithographic artist, of Castle Street, Bristol. He takes a block or slab, made smooth and true, and coats the same with glue or other gelatinous matter. In some instances he adds a solution of silicate of soda and bichromate of potash, or uses this solution alone. The coated block or slab is exposed to sunlight, and then washed, to remove the superfluous coating; and, after being dried, it is ready for drawing or writing upon. The ink or pigment is prepared with gelatine, albumen, or other gelatinous matter dissolved in a saturated solution of bichromate of potash, either with or without chrome alum, and with a small quantity of ivory black to render the ink visible. The picture is drawn on the prepared block or slab with this ink, when it is exposed to sunlight, and afterwards the surface is covered with gum or glycerine. The block or slab is then ready for the printer.

ENAMEL PHOTOGRAPHS IN AUSTRALIA.—We find in the Australian papers repeated allusions to very fine photographic enamels produced by Mr. Tanner, of Clunes, by a process said to be invented by that gentleman.

PHOTOGRAPHS OF LINNEAN RELICS.—The *Gardner's Chronicle* states that a series of photographs devoted to the illustration of Linnean relics has been recently issued in Sweden, and copies are to be procured in London. They consist of photographs of Linnæus's statue in the Botanical Garden at Upsala, of the Botanical Garden itself, the monument in Upsala Cathedral, his country seat and museum at Hammarby, a portrait, one of his letters, and other objects of interest in connection with the great naturalist.

ACTION OF LIGHT ON CHLORINE.—The *Philosophical Magazine*, October, 1870, contains a short communication by Dr. Budge, of great interest in connection with molecular physics. Admitting the hypothesis of Favro and Silbermann, and Clausius, that the molecules of most elementary gases consist of two atoms, this seemed naturally to lead to the conclusion that the so-called combination of two elementary gases must be preceded by a splitting-up of their molecules into atoms. It is known that a higher degree of chemical activity is induced in chlorine through insolation, which may be accounted for on the supposition that light tends to resolve, or actually does resolve, the chlorine molecule into its constituent atoms. If so, then insolated chlorine always contains a certain proportion of free atoms (increasing, no doubt, with the intensity of the light), which, together with Avogadro's theorem, leads to the conclusion that free chlorine through insolation increases in specific volume, the more so the more intense the active portion of the rays falling upon it. In order, therefore, to test the conclusion that chlorine, when exposed to chemical rays, must expand, but, when brought back into the dark, re-contract to its original volume, the following experiments were made. A Leslie's differential thermometer was filled with chlorine, and illuminated by various parts of a solar spectrum, produced by means of a glass prism; sulphuric acid saturated with chlorine was used as index fluid, and in some confirmatory experiments carbon tetrachloride. It was found that, whereas, when the one bulb was illuminated by the ultra-red plus red rays, there was only a movement of the index of half to one mm.; exposure to the blue plus violet caused a movement of from five to six mm.; and to the violet plus ultra-violet of six to seven mm.: the experiments being repeated several times with substantially the same results. These results prove the existence of a substance which apparently behaves to actinic as most other known bodies do to thermic rays. Control experiments seem to show incontrovertibly that these effects are not due to thermic action. Thus a differential thermometer charged as above was kept in a water bath, and exposed to direct sunlight. By alternately shading the one or the other of the bulbs, displacements of the index amounting to several centimetres were produced, which the author is inclined to attribute essentially to the action of the chemical rays: (1) because a CO₂ thermometer under the same circumstances exhibited no action; and (2) because, on shading the bulbs with a plate of blue cobalt glass, about one quarter of the effect of the insolation remained.—*Academy*.

RECOVERING PRECIOUS METALS FROM RESIDUES.—A correspondent of the *English Mechanic* very succinctly restates some of the best known methods of recovering metals from photographic waste as follows:—"Not more than five per cent. of the silver used in photography is utilized, or actually consumed in forming the image of the negative or print; the rest becomes distributed through the washings and solutions, and is wasted unless means are taken to collect and save it. With a little care and attention, three-fourths of the whole amount of silver used can be recovered. No. 1. *The Wash from Negatives.*—The iron of the developer suffices to precipitate the silver that is washed from the plate, and it may be saved by developing over a barrel, and running off the water, when it is settled clear, by a faucet placed a little distance above the bottom. Care should be taken not to introduce hypo, cyanide, or ammonia into the barrel, as they prevent precipitation. The barrel may be used to collect the free nitrate of prints, the first and second washings being thrown in and precipitated with common salt. The water in the barrel should never be drawn off until it is settled perfectly clear. A great excess of salt must not be added to throw down the silver, for fear of producing a double chloride of sodium and silver, which is soluble. It is unnecessary to add salt so long as a drop of nitrate of silver solution produces a milkiness. No. 2. *Cyanide Solution.*—The cyanide for fixing should be kept in a tray, and, when it becomes so saturated as to clear a negative too slowly, it should be poured off in a jar, and the silver thrown down with muriatic acid, or a piece of sheet zinc. No. 3. *Hypo-sulphite Solution.*—The silver in this solution may be thrown down as black sulphuret with sulphuret of potassium; or it may be precipitated with sulphuric or muriatic acid. No. 4. *Free Nitrate Solutions and Washings.*—May be thrown in No. 1, and precipitated with common salt. No. 5. *Ammonia Silver Solutions.*—These can be precipitated with zinc. Mix with No. 2 or 3. No. 6. *Acid for Cleaning Plates.*—This, after long use, acquires considerable silver. Throw the acid in the barrel

with No. 1. No. 7. *Silvered Paper and Fillers*.—May be burned in an open iron vessel, or a stove with a very light draught, and the ashes preserved. Toned paper is not worth saving for either silver or gold. Prints should be trimmed before toning, in order to save the silver and gold. All the residues obtained by the above methods may be mixed and dried in an evaporating dish or other suitable vessel, placed over the stove or in the sun. No. 8. *Method of Saving Gold from the Toning Bath*.—As soon as the prints are toned, pour the solution in a glass or stone jar, add a little protosulphate of iron, and let it stand in a warm place not less than twenty-four hours. The gold will fall down as a dark purple powder, and the clear water can be decanted or run off with a siphon whenever the jar becomes full. The gold powder is very fine and light, and is easily lost. In whatever state the silver is obtained, fuse it in a crucible with twice its weight of carbonate of soda."

SILVER REFINING.—Dr. F. Gutzkow, late manager of the San Francisco Assaying and Refining Company, has recently described to the Chemical Society, Berlin, a new method of silver refining, which he discovered and introduced in California. In the old process silver was reduced from dilute sulphuric acid solutions by metallic copper; but the increased production of sulphate of copper as a bi-product of many manufacturing processes rendered the process a very costly one, on account of the difficulty of selling the blue vitriol without loss. The plan of Dr. Gutzkow at length adopted was as follows:—He dissolves the ingots in hot concentrated sulphuric acid, and then pours his hot turbid fluid into a cast-iron cauldron, containing dilute sulphuric acid; sp. gr. 1.617, heated to 110°. When the liquor has become clear, it is siphoned off into another cauldron, and cooled by water externally applied. At the bottom of this vessel a yellow-coloured crystalline mass of sulphate of silver will be found deposited. The sulphate of silver is then removed with iron shovels, placed in a lead-lined box with a perforated bottom, and a very concentrated solution of proto-sulphate of iron (green vitriol) poured upon it. A portion of the silver will be carried through with the iron solution and deposited in a spongy state in the vessel placed to catch it, but the greater portion of the crystalline sulphate of silver is converted into a dense coherent mass of metallic silver, which when washed and pressed is fit for the crucible.—*English Mechanic*.

RE-LACQUERING BRASSWORK.—A correspondent of the *English Mechanic* gives the following hints on re-lacquering:—"Strong sulphuric acid, 2 parts; water, 1 part; red fuming nitrous acid, 1 part. These must be mixed in the open air, as the gas evolved on mixing the nitrous acid with the vitriol and water is of a suffocating character; this will pass off in the course of an hour or so, during which time the mixture may be occasionally stirred with a glass rod. The bright gilded effect produced on the brass by this mixture is so good that any one trying it will not return to the use of nitric acid. The subsequent washing, drying, and lacquering cannot be done too soon after the dipping, as the articles tarnish rapidly if kept unlacquered."

INFLUENCE OF LIGHT ON THE CONVERSION OF CANE SUGAR IN THE STATE OF SOLUTION INTO GLUCOSE.—E. M. Raoult placed, on May 10 last, a concentrated solution of sugar in water in glass tubes, and, while boiling the same, sealed the tubes; these were placed close to each other in the same locality, and under identically the same conditions, with the exception that one of the tubes was kept completely in the dark, the other tube being exposed to bright daylight. On Oct. 20 last the tubes were opened and the contents examined. The solutions were perfectly clear, and did not, on being microscopically examined, exhibit the least trace of vegetable matter. The fluid in the tube exposed to light yielded an abundant red-coloured precipitate with the cupro-potassic reagent, thereby indicating the presence of glucose, while the contents of the tube kept in complete darkness did not manifest that reaction at all.—*Chemical News*.

To Correspondents.

A. WHITHAM.—A better authority as a chemist than either of those you name has already published an opinion on the subject. Some weeks ago Dr. Phipson published in our pages his conviction that nothing would be gained by the use of acetate except a little increased risk.

JAMES BLAKE.—Photo-collographic printing, of which the heliotype process is one form, is open to the public, but the heliotype process as it stands, is patented. You will find details of Albert's process, which is free to the public, in our last YEAR-BOOK.

A NEW SUBSCRIBER.—Parkinson's toning formula is as follows:—

Chloride of lime	45 grains
Acetate of soda	2 drachms
Carbonate of lime... ..	2 "
Distilled water	3 ounces

One drachm of this solution was added to thirty ounces of common water, to which were added three grains of chloride of gold. This solution was mixed first thing in the morning and used at night, but it improved with keeping much longer. Mr. Parkinson used to obtain some of the finest black tones we have ever seen.

GAS BAG.—We cannot tell you the worth of a second-hand dissolving view lantern and gas bags. Much would depend on quality and condition; but, in any case, the question is beyond our province.

OTTY.—The primary cause of blisters in albumenized prints is the use of a very highly albumenized paper. The thick layer of albumen gets coagulated by the silver bath on its outer surface only; the inner surface in contact with the paper, remaining in a soluble state, is readily detached in blisters from the paper. The blisters are formed, when the conditions are present, by the change from a dense fluid to a lighter fluid, as from the fixing bath to the washing water. Longer floating in the silver bath often proves a remedy; and the addition of alcohol to the fixing bath also proves a remedy. 2. We presume that any of the dealers in mounts will supply you. 3. We do not find any print enclosed in your letter. 4. In our estimation one ounce of hyposulphite to eight ounces of water will not make a fixing bath sufficiently strong; one in five or six is the most dilute form in which we recommend it.

A. L. M.—If you have not time to prepare your own dry plates, we should recommend the use of either Col. Wortley's or the Liverpool Dry Plate Company's plates. Dry plate work has many advantages in convenience, especially for travelling purposes; but for certainty and excellence you must scarcely expect dry-plate work to equal wet.

D. R.—On the subject of renovating baths, we publish every new idea as soon as it reaches us, and, hence, have none in store but such as we have published. In many respects the plan you indicate, of rejecting a bath as soon as it ceases to work well, answers best in a large professional business. There is a slight loss, of course, in reducing such baths, but the amount is not serious. Another excellent plan is to have several baths in working order, and continually work them in succession. Such a plan answers well, and prevents any risk of being without a bath in working order. The plan of constantly filling up the bath with a plain solution of solution a little stronger than the bath also answers well; but if the filling up is delayed until it is absolutely necessary, streaks will frequently occur. Except for the pleasure of experimenting, we should certainly not doctor a thoroughly bad bath if we wished to assure good work.

SEPTIMUS HENDERSON.—Thanks; your letter appears on another page. The patent was suffered to lapse many years ago, we believe.

W. H. GILBERT TATE.—The cards you enclose are very fine, both in a technical and artistic sense. In the early numbers of the PHOTOGRAPHIC NEWS for 1863 we devoted several articles to a description of the studio, lighting, and mode of working of M. Adam-Salomon, and there have been various articles on the general subject of this class of portraiture in our pages and in our YEAR-BOOKS since. A similar treatment of 10 by 8 pictures to that adopted in the examples now enclosed would give you results of the Salomon character.

DORSET.—The details of carbon printing have been repeatedly described in our pages. The Autotype Company publish a manual of instructions, and every Friday they afford practical instruction gratuitously at their establishment in Rathbone Place. You can obtain tissue ready prepared. We have not received any former letter from you.

ARGUS.—No enclosure has reached our hands, and your letter is scarcely sufficiently specific as to the process you have been trying. Enlargements on paper should be developed with gallic acid, not with iron. We have published various formulae for enlarging processes. If you describe in detail the process you have employed, we shall have pleasure in pointing out where you fail.

W. T. W.—Thanks; at the end of the year. We will bear your kind offer in mind as aiding, by specific answers, any one who finds difficulty in albumenizing plates, should any further similar queries reach us.

E. J. MUYBRIDGE.—San Francisco views duly received. Many thanks.

LIEUT. ABNEY, FRANK M. GOOD, R. TUDOR WILLIAMS, R.

GILLO, G. BUUCE.—Received. Thanks.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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NATURAL COLOURS IN PHOTOGRAPHY.

On another page we print an article on "Photography in 1871," which appeared in a recent issue of the *Pall Mall Gazette*. Photographers have been so long accustomed to blundering misappreciations when their art is treated in the general press, that an article written with the intimate knowledge of the experienced photographer, as well as the skill of an able writer, will be welcomed as a pleasant novelty. The main point upon which we feel concerned to comment, in reproducing the article, is contained in the remarks on the subject of natural colours in photography. Whilst concurring in the general remarks on the conditions necessary for the production of colour, and the conclusion which follows, on the improbability of natural colours being obtained until some new and unsuspected principle of chemical action shall be discovered, we think the writer scarcely does justice to so much of colour as photography has reproduced. The results of the labours of Becquerel and Nicpce St. Victor stand as historical fact. A tolerably vivid solar spectrum has been reproduced, tint for tint. Other objects in vivid and well marked colour have been produced, and copies still remain in existence, for occasional examination in the light, although no fixing process has been discovered which will permit such work to see daylight, and live. We have ourselves produced on a collodion film charged with chloride of silver, exact transcripts of the pieces of coloured glass of several hues through which the film was exposed to light. In all these cases the colours were specific and well defined, with nothing of the character of iridescence. That the colour was due to the degree of reduction produced by the coloured ray upon chloride of silver we are quite prepared to admit, although such an admission leaves some startling difficulties unexplained. The fact seems to be, that whilst the production of colour is in opposition to all the conclusions to be legitimately drawn from our present knowledge of the chemical action of light, there are certain facts in existence which are only imperfectly explained by that present knowledge of the subject.

INTERNATIONAL EXHIBITION OF 1872.

Those of our readers interested in the photographic department of the International Exhibition of next year should bear in mind that the time is at hand when application for space should be made, and that the end of January is the latest time. All the general conditions of the Exhibition just closed will, we presume, prevail at the forthcoming one; but one specific and important qualification of the arrangements will obtain with regard to photographs, the statement of which will prevent much misunderstanding. Photographs will be placed in Class III, of the Fine Art

division as before, but only recent examples will be exhibited. The sentence, as it stands in the published programme, is as follows:—"Photography, as a fine art, executed in the preceding twelve months." In an annual exhibition this is doubtless as it should be, and photographers contemplating exhibiting will not object to the condition. The arrangements of the last Exhibition in relation to photography were not of a character to encourage contributions another year; but it may be fairly hoped that the experience gained by those in control will be utilized, and that more adequate arrangements will in future exist. Applications for space may now and until the end of next month be sent in, and the time for receiving photographic contributions is arranged for Wednesday, March 13th next. Full information will be given to applicants communicating with the Secretary at the office, Upper Kensington Gore.

THE ECLIPSE EXPEDITION.

WE have pleasure in noting the successful issue of the efforts of the expeditions observing the total eclipse of the twelfth instant, from the stations in India, the photographic results in each being satisfactory. The Astronomer-Royal, Mr. G. B. Airy, writes to a daily contemporary as follows:—

SIR,—I have this moment received from N. R. Pogson, Esq., Astronomer at Madras, a telegram reporting the successful observation of the total eclipse this morning in Southern India. I enclose copy of the telegram.—I am, sir, your obedient servant.

G. B. AIRY.

Royal Observatory, Greenwich, London,
Dec. 12, 12 o'clock noon.

From N. R. Pogson, Esq., at Avenasby, to the Astronomer-Royal, Royal Observatory, Greenwich.

"Weather fine; telescopic and camera photographs successful; ditto polarisation; good sketches; many bright lines in spectrum.

"December 12."

Mr. Huggins also sends a copy of a telegram received from Col. Tennant, as follows:—

SIR,—The following is a copy of a telegram which I have received from Colonel Tennant, F.R.S., who is in charge of the Indian Eclipse Expedition:—

"Dodabeta, Ootacamund, Dec. 12, 9.15 a.m.

"Thin mist. Spectroscope satisfactory. Reversion of lines entirely confirmed. Six good photographs."

The sentence "Reversion of lines entirely confirmed" refers to an important observation of Prof. Young, in Spain, last December, who saw at the moment of the total obscuration all the dark Fraunhofer lines "reversed"—that is, bright on a dark ground.

WILLIAM HUGGINS.

Upper Tulse Hill, S.W., Dec. 12.

THE TEA PROCESS.

WE have been favoured a few weeks since by Mr. H. T. Anthony with some very fine examples of dry plate work by the tea process. Mr. Anthony writes as follows on the subject:—

"DEAR SIR,—I have forwarded to your address a small roll of prints, made by my friend Mr. H. J. Newton, from negatives produced by his tea preservative. They are decidedly the best dry plate negatives I have ever seen, and I should like to have the prints compared with those made by negatives produced by other dry processes, for which there is more ample opportunity with you than exists here. These prints were made by Mr. Newton with a twenty to twenty-five grain silver bath, to which nitrate of ammonia and nitrate of magnesia had been added in large proportion. They were fumed with ammonia, washed in an acid wash before toning, toned with a simple acetate and bi-carbonate bath, and received a final wash of a weak solution of nitrate of lead. The paper is Steinbach's, albumenized by myself according to a new formula, and therefore called 'novelty' paper. The albumenizing solution was prepared from dried albumen.

I think you will find the whites of these prints quite equal to those made on Rive's paper.

"It is only necessary to observe, in addition, that the washing when the lead treatment is applied is very short; consequently, the brilliancy of the prints is not improved by long soaking in water.—Yours respectfully,

H. T. ANTHONY."

In comparing the prints with those from other dry plate processes produced in this country, we find them as good as the average of good work, but not quite equal in delicacy to the works exhibited in Conduit Street of Mr. R. Manners Gordon by the gum-gallic process, or of Mr. Henry Cooper by the collodio-bromide process. The prints, as prints, are in every way excellent.

THE PHOTOGRAPHIC EXHIBITION.

REPRODUCTION — CARBON PRINTS — ENAMELS — PHOTO-MECHANICAL PRINTS, ETC.

THE number of reproductions printed in silver was not large in this exhibition, but the few contributed were very fine. Rarely have we seen better work of the kind than the copies of modern paintings exhibited by Mr. Arthur Lucas. Reproduced direct from the oil paintings, they seem to be as perfect, as translations, as engravings usually are. There is no erudeness or glaring violation of harmony, such as at one time was the inevitable result of the incapacity of photography to discriminate colour, whilst all the literal faithfulness of photographic reproduction is retained. Some very fine examples of reproduction were also sent by Herr Milster, of Berlin. Messrs. Caldesi and Co. sent some admirable copies of sculpture from the British Museum.

The very grand collection of carbon prints exhibited by the Autotype Company includes every branch of photography, portraiture, landscape, architectural work, and reproductions; and each perfect of its kind. Messrs. Sawyer and Bird's examples of photo-collographic printing are unusually excellent. The Heliotype Company show good work of the same kind, both in reproductions and subjects from nature. A clever copy of a picture by Mr. Cave Thomas, entitled "The Jeweller of St. Petersburg," is printed in colours by the Heliotype Company, and although, as we understand, only four printings are employed, the effect is not unlike that of a fine old oil painting. Mr. Woodbury exhibits some examples of his new method of photo-engraving, which display very high qualities. A reproduction after Holbein is very satisfactory, as is also a landscape from nature. A portrait of Mr. Sutton by this process is, we understand, reproduced from a crayon drawing after a photograph by Rejlander. The

picture exhibited fails to do justice alike to Mr. Woodbury's process, the original negative, and the sitter.

The examples of enamel exhibited are numerous and excellent, those of Mr. Henderson still bearing off the palm from all competitors. The colour, richness, delicacy, and force of those now exhibited leave nothing to desire. As we have before observed, the plain examples are, in our estimation, better than those coloured and burnt in; but at the same time, the fact should be remembered that they are subject to a somewhat unequal competition in being placed side by side with some enamels brilliantly coloured in oil, and not burnt in. The enamels exhibited by Mr. R. F. Barnes, an old experimentalist in this direction, also contain some exceedingly fine examples, and show a great improvement on the former work of the same gentleman. All his examples are very delicate and soft; some of them lack vigour, but the qualities are, on the whole, very good. Mr. W. T. Watson also sends very excellent enamels, good in colour, delicate, and brilliant. The specimens of the enamel work of M. Lafon de Camarsac, exhibited by M. Bondonneau, are, as usual, exceedingly fine, but they no longer maintain the supremacy they once held.

The stereoscopic work and lantern slides at this Exhibition are all good. Mr. Gillo's stereographs of English life and scenery are exceedingly good. The stereographs by Herr Schwier were full of interest and very excellent. The transparent stereographs of the ruins of Paris exhibited by Messrs. Murray and Heath were exceedingly fine and interesting. The lantern slides exhibited by Mr. C. G. Fernely, and by Mr. F. York, were very satisfactory.

A series of photographs of Moscow, by Peter Nabholz and Co., of Moscow, exhibited by Mr. C. Hauff, excited much attention, a magnificent large panoramic view of the Russian city being universally admired. The extensive series of views of the ruins of Paris by M. Liebert are very admirable, and sadly interesting, as are the similar subjects by M. Franck and M. Quinet. Dr. Vogel's excellent Carpathian views, Mr. Day's album, and some other contributions, formed admirable studies for the visitor who had time to give attention to the pictures exhibited in portfolios.

The examples of apparatus were much fewer than on former occasions; they included a very admirably contrived camera by Mr. Stillman, with great range of expansion and contraction, universal movements of the body, great lightness, portability, and rigidity; a very handsome graphoscope by Murray and Heath; a head-rest for rapid posing by Mr. T. Kay, and a few other contrivances.

Foreign Miscellanea.

A PHOTOGRAPHIC exhibition has been held in Trieste, but was not very well supported. Three silver and four bronze medals were awarded to exhibitors, the former to MM. Sebastianutti, of Trieste, Sorgato, of Venice, and Fritz Luckhardt, of Vienna.

M. M. J. Girard has published in the *Moniteur* an essay upon photography applied to geographical research.

M. Achille Melingo, the well known Austrian photographer, who formed one of the jury at the last Paris International Exhibition, has been created a nobleman by the Emperor of Austria. M. Burger, the photographer who accompanied the East Indian Expedition, has been nominated royal photographer.

A manual on encaustic photography has recently been published in Berlin by M. Julius Kruger, under the title of "Die Pyrophotographie."

A pretty photograph, entitled "Repose in the Forest," forms the illustration to the November number of *Licht*; it is a photograph proper, with a sketched-in background.

The Berlin photographers are busy discussing the best means of cleaning glass plates. Dr. Vogel has recently stated that ammonia answers the purpose very readily. At

the last meeting of the Berlin Society, Dr. Stolze remarked against the employment of strong acid for the purpose, and recommended that whenever nitric or other acids were employed, the same should be used in a dilute form only.

M. Kruger has an interesting article upon the reason why collodion becomes acid, and the best means of neutralizing this tendency.

An interesting review of the photographs shown at the recent exhibition held at Marseilles appears in the *Moniteur*. The collection seems to have been of a very perfect and complete nature.

Dr. Schultz Sellac, whose recent investigations of the latent photographic image are well known, has gone to New York, with the object, apparently, of settling down in that city. He has recently communicated to the New York Society a further account of his investigations.

Photo-colographic processes are still springing up. Captain Waterhouse very frankly communicates the details of a method he has worked out in Bengal; and in Germany two or three modifications of Lichtdruck have recently been brought forward. Dr. Hornig exhibited at the last meeting of the Vienna Society a series of examples from nearly all the mechanical processes at present known. An examination of these pictures will form a very interesting study.

The committee for the award of the Voigtlander prize, which will be given this year, has just been appointed by the Vienna Society. Only two candidates compete.

PHOTOGRAPHY IN THE WITNESS BOX.

WE are happy to state that our recent suggestion as to the importance of examining experts in relation to photographic evidence, which we understand was brought under the attention of counsel, has borne fruit, and on Thursday Col. Stuart Wortley was examined in the Tichborne case as a technical authority in relation to the photographs on which discussion had arisen. We subjoin his evidence:—

Colonel Archibald Henry Plantagenet Stuart Wortley, examined by Serjeant Ballantine, said—I have retired from the army and given myself to the study of photography. I was out in the Crimea, and at the last Exhibition was appointed official reporter of the photography department. We selected the pictures, hung them, and to me was given the duty of making an official report.

I suppose there was no exhibition of Daguerreotypes?—No, that has almost entirely passed away; but I have had experience of Daguerreotypes as well as photographs.

The witness was now called upon to examine the photographs and the Daguerreotypes so often referred to during the trial, and said the former had been taken from the latter. In one instance there were marks on the Daguerreotype which were not on the photograph. There were some smudges round the edge of the Daguerreotype which could not have been there when the photograph was taken. In reply to a remark from the judge, Colonel Wortley said the photograph must have been taken from the Daguerreotype, notwithstanding the differences he pointed out, his lordship seeming to think otherwise. In reference to one (of young Tichborne, produced early in the case) the following examination occurred:—

There has been a question arising about these two photographs being taken at the same time. What is your opinion?—The broad distinction is the waistcoat.

The Lord Chief Justice—My eye is pretty strong, and I have detected five lines upon the shirt in one, and not in the other.

Serjeant Ballantine—Let us get rid of the waistcoat first. What is the difference?—Well, it is clear the one has a waistcoat and the other not.

Is there any mode of accounting for this?—Not in the photographs.

Could the waistcoat have been thrown back and concealed by the coat?—Certainly.

Now what about the shirt (two Daguerreotypes were handed to witness)?—I do not think there are actual lines on the shirt. If there are such lines they are due, probably, to the cleaning of the original plate.

The Judge (who had originally discovered the lines on the shirt)—You cannot see the lines except in a certain light. Just now I cannot see them, but turning the picture about I can now see them clearly: lines running down the shirt straight and at regular intervals apart. When you come to the collar, however, you will find that the lines run the other way.

Witness (after further examination) said he could now see the lines, but should like to add an explanation.

The Judge—But you do see the lines, distinct as a pattern, on the shirt?

Witness—Yes, my lord.

Serjeant Ballantine—Having seen both pictures, can you see anything to indicate that the shirts are not the same?—Nothing at all. The difference only indicates that the exposure in one Daguerreotype has been shorter than in the other.

The Judge—But you see no lines on the smaller Daguerreotype?

Witness—No, and I can tell why. They have disappeared from over-exposure. The picture bears marks of over action of the light. Any patterns there are have been burnt out.

Then there is no evidence that the shirts are not the same?—Certainly not. From the pleats and the general position I should say they were exactly the same.

A Juror—Do you find the necktie the same?

Witness—Precisely the same.

You think then the shirts are the same?—Yes, only in the smaller Daguerreotype all the details would be obliterated by the over action of light.

And the neckcloth?—The neckcloth I have examined and am certain it is the same.

The Judge—Is the picture which has the best detail a good specimen of Daguerreotype?—No, but it is a better one than the other, because it preserves the detail.

Serjeant Ballantine—Are you able to say anything about the coat?—The coat appears to be the same.

The Judge—I think it was pretty well agreed that the coat was the same.

Serjeant Ballantine—Can you trace the chair in which the patient was sitting? (Laughter.)

The Judge—The subject, Brother.

Serjeant Ballantine—I am using the expression which represents my own feelings. (Laughter.)

Examination continued—Is the chair the same?—It appears to be the same chair, because it is exactly the same distance from the arm-pit to the top of the chair in each photograph.

(The photograph of the Daguerreotype was here handed to the witness.)

Does this correspond to the Daguerreotype?—Yes, certainly. In the Daguerreotype what appear to be the right hand and arm are the left actually of the individual.

Is the left hand in the Daguerreotype discoverable?—I can see the back of the hand, nearly the whole of it.

Is the entirety of the left hand exhibited in the photograph?—The two fingers and thumb of the left hand.

Is that thumb visible upon the Daguerreotype?—I cannot distinguish the thumb in the Daguerreotype.

Can you say what has caused its disappearance?—The Daguerreotype appears to have been rubbed with some coarse sand or matter.

Effacing the thumb?—Yes. The same marks appear on other parts of the Daguerreotype.

But in the photograph the thumb is clear and entire?—Yes.

Is there any remark that is patent to you in connection with that thumb?—The formation of the end of the thumb is very peculiar.

In what way?—There must be nearly half an inch of flesh projecting beyond the thumb nail, and the nail itself is more sunk than nails usually are into the flesh.

Have you this morning for the first time seen the plaintiff?—Yes.

Did you ever see him before?—No.

Nor knew anything about him?—Nothing whatever.

Did you examine him to compare his thumb with this photograph?—Yes, I did, to compare the thumb of the photograph with his thumb.

Yes, and what was the result?—I have no doubt that this photograph was taken from a hand the thumb nail of which was in exactly the same state as the claimant's now is.

In the Daguerreotype is there anything you notice in the eye-brow?—There is a peculiar tired-looking expression.

Anything in the shape of it?—The eye-brows are somewhat squarer than one ordinarily sees.

Cross-examined by the Attorney-General—Do I understand that the oval Daguerreotype (the smaller) had the thumb in good order?—In better order than it is now.

In as good order as in the photograph?—Yes.

Do you call that oval Daguerreotype good or bad as a piece of work?—Bad.

Shocking bad, isn't it?—No; not very bad—bad.

Over-exposed, isn't it?—Yes; slightly.

Bitten too deep by the sun?—Yes, in one point; the shirt, which had been allowed to stiek out, and therefore caught most light.

Then you would not say the whole Daguerreotype had been over-bitten?—No.

In order to take a photograph of this I suppose it must be taken out of the case?—Yes, that is the usual way. It might be done through the glass with difficulty.

And I suppose if a person wanted to take care that something should not appear in the Daguerreotype, the time to do it would be when it was taken out?—Yes.

Do Daguerreotypes suffer from exposure to the air?—Yes
And does the injury from exposure when it has once begun go on?—It does.

The Judge—In the same way as the oxidation of metals?

Witness—Similar, but technically it is more in the nature of a fading.

Did I gather that the thumb in the photograph is plainly marked?—Yes.

So that anybody examining it carefully must inevitably see it?—Yes; but photographic copies vary much, and this is a very dark picture.

Re-examined by Serjeant Ballantine—Whatever other people may do, have you the least doubt in the world you have discovered the formation you have described?—I have none.

Would any mere exposure account for the disappearance of the thumb?—No mere exposure would account for what I see on this Daguerreotype.

The Judge—That is not the question. The question is, would any ordinary causes, want of care, &c., cause the disappearance of the thumb?

Witness—If a quantity of sand had been put in and rubbed about it would produce the disappearance.

And is that the only way?—Yes. No chemical fading would have produced the obliteration I observe here.

What do you mean?—The thumb has not disappeared owing to any fading or chemical action; it is the action of abrasion or rubbing.

A Juror—What is the process of copying from Daguerreotypes. Do they take a negative?

Witness—Yes.

The Foreman—Is there any process by which a hand could be inserted without your damaging a portion of the picture?

Witness—I am sure I could detect it, but no doubt it could be done so that everybody would not notice it.

But you yourself are sure you could detect it?—Most certainly.

Is this hand put in (referring to the photograph)?—No, certainly not.

Another Juror—Do you think these two Daguerreotypes could have been taken at one time without the person being aware of it?

Witness—Yes, I think so. There is no reason why they should not.

But one has a waistcoat and the other not?—The waistcoat appears to me to have been pushed back under the coat in one of the Daguerreotypes.

The Judge—I have tried, but could not detect any waistcoat at all.

Witness—I see no sign of it.

Serjeant Ballantine—What he says is, that if there was a waistcoat, it must have been put back. I should like the gentlemen of the jury to know that these photographs are the exhibits of the defendants.

The Judge—Taking this oval Daguerreotype and the photograph, which corresponds generally, do you find there is a difference in the size?—Yes; one is larger than the other.

Does that enable you to form an opinion whether this is the first photograph taken, or whether it may have been a photograph taken from a copy previously taken?—It would be quite easy to take an enlarged copy direct from the Daguerreotype.

But you might reproduce copies from that copy?—Oh yes; you might print copies.

Does it ever happen, that whenever a photograph is taken, corrections may be made, and then copies taken?—Frequently.

May I take it that some of the best specimens of photography are likenesses taken in that way?—No, it would tend very much to destroy the likeness.

I mean, would a person photographing, through inequalities of focus or some other cause, be able to correct defects in the original copy, and take a fresh photograph?—That might be done.

Is it the practice adopted?—It is not a common practice, but I know it is done.

The Attorney-General—I think it ought to be understood that the photographs which show this matter of the thumb are exhibits of the defendants also.

The Judge—There is an abundance of photographs in which the thumb is as plain as possible, and they were put in by the defendants.

Witness—I hope I made it clear, my lord, that one part of the picture might be over-exposed, and not another. It quite depends upon the incidence of the light.

The Judge—Quite so. I want you to tell me, are there any indications of over-exposure of the neck-cloth in the oval Daguerreotype?

Witness—There is a slight indication in the knot, but it is very slight.

In answer to further questions from the Judge, witness said, in the Daguerreotype where the lines of the shirt appeared, the shirt was more in the shadow of the coat than in the other, and that, of course, would be more favourable to the details. He further said he should be able to form an opinion whether a photograph was taken from a corrected copy.

FRENCH CORRESPONDENCE.

For the space of twenty years, not more and not less, during which I have narrowly watched the progress of photography, and have recorded its gradual development in the *Lumière* and *Monteur de la Photographie*, it has been my custom at the end of each year to strike a sort of balance, and credit the period with the good work that has been done from January to December. At first these annual credits included many valuable inventions grafted upon the first valuable discovery; then came the period of improvements, and, finally, that of applications. Important innovations, and a summary of tentative efforts and successes, formed the inventory of the year.

In referring to the last days of the present year, which opened so lugubriously with us in Paris by the commencement of the Prussian bombardment and the scarcity of bread among the bakers—for our city had at that time been isolated from the rest of the world for a period of some four months—I will again repeat my old custom of taking a retrospective glance; and I find, singularly enough, the result truly inspiring. In fact, notwithstanding so much disorder, but sometimes actually by reason of this very disorder, photography has come foremost and done its work; and if I have no new inventions to record, or any special improvements to register, I find at least that our art has received more than one useful application, and that it had, from a certain point of view, gained a very great deal of ground.

Was it not to photography that we owed news and intelligence of the outer world when our city was encircled by the band of iron and fire? This service alone surpasses all that science, always so active and ingenious, could render us during the period of our troubles. Micro-photography was no longer an amusement or curiosity; it was more than a necessity to us, it was salvation.

I have already spoken of the maps executed by M. Terpereau, by whose aid the march of our army through the provinces was so much facilitated. In the same way, maps of the environs of Paris were drawn out at the *depot de la guerre*, by the poor Commandant de Milly; and these were of exceeding importance to the staff during the investment of the capital. Views taken from different forts by Colonel Laussedat formed precious documents for the Artillery and Engineer officers; and I myself helped to secure a series of pictures which, I trust, will be of use in the history of our defence.

Here, a few words, then, of a *resumé* of the services which photography, but tardily invoked, was able to render during the war. These services have been so well appreciated, and so well understood in the proper quarter, that now the study of photography will form an obligatory study with aspirants and military students admitted to the *Ecole Militaire*.

After the sanguinary affair of the Commune, photography was put to another and altogether different employment, to aid with unerring certainty the arrest of insurgents, and by its means a large number of rebels were taken; for many of these figured in groups and pictures taken during the second siege of Paris.

This last phase of the art has proved that justice possesses in it an indisputable aid and safeguard against crime, and very recently, indeed, the question of criminal photography has received the serious attention of the authorities; photographic portraits of criminals have been secured, and copies thereof placed in the hands of detectives charged with their arrest. It is very probable that the system of photographing prisoners will be generally introduced in all the gaols of France.

Every Monday I make it a practice to attend the meetings of the Academie de Sciences, and, I may say, that since the month of July last there has scarcely been a communication read which has not been supported by some photographic illustrations as proof of facts. Thus there have been shown the astronomical diagrams of Father Secchi, illustrations showing the gradual development of the crab during the six years of its growth; representations of the bags used by

an Italian philosopher, M. Suzaune, for the confinement of silk worms during certain experiments, &c. More than three years ago there was a discussion in the *Academie* which promised, seemingly, to extend to eternity, between MM. Bertrand and Chasle, upon the subject of an obscure and incomplete document, the only fragment remaining, so it was said, of the works of Aboul Wefa, a Persian astronomer, who lived some six centuries ago. All at once it was announced by some one that there existed in the library at Constantinople an entire book written by this learned disciple of Ptolemy. "The document must be photographed!" cried every one spontaneously; and authority for the work having been quickly obtained, the task of copying by the camera was forthwith commenced, and we shall now shortly know definitely whether or not Aboul Wefa was acquainted with lunar declination.

Thus, then—and it is well to state the fact—photography finds everywhere the recognized position which has so long been refused to it. The position it occupies as an art-science is one to which it has certainly a legitimate right, for it is only by means of valuable services rendered that the same has been acquired, and it is not always an easy matter, we know, to combat so formidable an adversary to progress as methodical routine.

PHOTOGRAPHY AND THE TICHBORNE CASE.

THE photographs have continued to play an important part in the protracted Tichborne case, and the recent proceedings have been made interesting and instructive by some intelligent comments on the prints and Daguerreotypes exhibited. Mr. Baigent, under recent examination, stated that he possessed some practical knowledge of photography, and pointed out the effects of over-exposure, solarization, &c., and the frequent imperfection of reproductions failing to present all the detail of the originals. As the examination will probably prove interesting and suggestive to our readers, we reprint it here. Mr. Ballantine, who was examining the witness, having produced a number of photographs, a desultory conversation ensued with regard to them.

Mr. Serjeant Ballantine observed that he first wanted the one that went out to the Australian Commission, a photograph of Roger Tichborne in his younger days, taken from the Chili Daguerreotype.

This photograph was then handed to the witness, together with a magnifying glass. It represented a young man with a thinnish face, and wearing a low-crowned hat; and, after examining it for some time with the aid of the glass, Mr. Baigent, at the request of the judge, passed it to the jury, by whom it was also examined. Two photographs—one sent out to the Chili Commission, and the other to the Australian Commission—and the Daguerreotype, or original picture, were then all three placed before the witness. The photographs were exchanged by the witness two or three times for others also taken from the Daguerreotype, on account, as he stated, of some defect, and it was with some difficulty that he was provided with a copy that he considered satisfactory for his purpose.

Mr. Serjeant Ballantine—Now, on looking at that photograph, do you or do you not recognize about the face or head any likeness to the Roger Tichborne whom you knew?—Certainly.

And any to the claimant—yes, or no?

What is there about the head and face that you notice?—There are two photographs, and it is impossible for me to explain without having them both.

Some further delay then occurred, owing to the recurrence of the difficulty before mentioned.

Mr. Serjeant Ballantine—Have you any knowledge of photography yourself?—I have.

Do you mean practical knowledge?—Yes; I have seen a good deal of it.

The witness was proceeding to make some further statement, when

Mr. Serjeant Ballantine, who had repeatedly complained of his not confining himself to a simple answer to the question put, said—Mr. Baigent, you want to say sixteen things at once, and that is difficult to do; the greatest philosophers have never been able to manage that. Just confine yourself to the head and eyes, and tell the jury what is the view you take.

Witness—In each portrait there is in the eye a remarkable peculiarity, such as I have never seen in any other man. The orbits of the eyes are round, and the eyebrows stop some way from the nose in the parallel, and are thickest there.

The Lord Chief Justice—Where?

Witness—Near the nose, although the eyebrows are far from the nose. The eyeball is peculiar in its setting, so that when a person is looking straightforward, on a level with his line of sight, a portion of the white of the eye is visible between the eyeball and the corner lid of the eye. This is a peculiarity that I have never been able to discover in any other man that I have looked at.

Mr. Serjeant Ballantine—Is that, in your judgment, a peculiarity existing in the claimant?—It is identical.

What I understand you to represent is, that that peculiarity with regard to the eye represents a state of the eye that is identical with the eye of the claimant?—Yes; I recognize the claimant by that fact.

The witness was continuing his answer, when Mr. Serjeant Ballantine requested him not to go on, to which he replied—I wish to make it complete.

The Lord Chief Justice—You will render it utterly incomplete if you don't give me time to put it down (laughter).

Witness (continuing, after a short pause)—In looking at the photograph, care must be taken not to lose (as was understood) the line of sight on the lower eyelid, or you will miss the peculiarity which I have already pointed out. Photographs done by second or third rate artists represent the eyeball clear of the lower eyelid. This is not the case in nature. The lower part of the eyeball is generally cut by the lower lid when a person looks on a level with his own sight.

When he looks straightforward?—Yes.

Now you have given a description as clearly as you can on that subject. Do you assert that those appearances are presented in the claimant?—Yes, as the claimant is represented here (referring to a photograph before him) in the Paris photograph. When photographs are recopied they lose all clearness and distinctness. A recopied photograph may be totally unlike the original.

Is this one which will enable you to form a judgment (handing a photograph to the witness)?—Yes.

What you assert, and wish the jury to understand, is that about the eyes in the photograph of the claimant, and about the eyes in the two Daguerreotypes that came from South America, there is an identical similarity?—An identical peculiarity. I should like to make a remark about the eyebrow.

Mr. Serjeant Ballantine—Do so.

The Lord Chief Justice—I should like to see the Paris photograph before the witness goes on to speak of something else.

Mr. Serjeant Ballantine (to witness)—Wait a minute or two; we have got all the year before us. (Laughter.)

The witness having observed that a photograph before him was spoilt,

The Foreman inquired what he was speaking of—whether it was the original?

The Lord Chief Justice replied that it was a copy from the Daguerreotype, and that the witness considered it to have been spoilt by too long exposure.

Witness—Yes, my lord, the effect of over-exposure is solarisation. Exposure causes the detail to disappear, and if it were exposed much longer there would be a total disappearance, leaving only a mass of white. This has, in fact, begun in the Daguerreotype, so that the lobe of the ear is gone, or is very indistinct. The left eyebrow has also mostly disappeared, and the features altogether are indistinct.

Does that photograph represent the points that you intended to convey?—In the eyebrow here there is no eyebrow at all, whereas he had a strong eyebrow.

Do you attribute that alteration to exposure?—Yes.

Is there anything else in that photograph that you wish to point out to the jury?—Yes; in the left hand—that is to say, the hand that appears the right one.

What is there in the left hand that you have discovered in that photograph?—There is the flatness about the knuckles and the indistinct appearance in the form of the thumb nail—the appearance, although very slight, of a deformed thumb. There is also an appearance of flesh protruding over the nail. The thumb nail lies a good way back from the thumb.

In reply to the Lord Chief Justice, the witness added—There is slightly the appearance of the nail being a good way back from the end of the thumb in this copy of the photograph.

The Lord Chief Justice was examining the Daguerreotype when

Mr. Serjeant Ballantine observed that he would not find in that what the witness had described.

The Lord Chief Justice, after examining a photograph before him, said he could not find it even there, although he had very powerful and almost microscopic sight.

Witness (turning towards the jury)—What I stated was that the thumb nail does not extend to the end of the thumb, and the flesh is protruding.

Mr. Serjeant Ballantine observed that the whole of the thumb was erased in the Daguerreotype.

The witness then asked to be furnished with the smaller of the two Chili Daguerreotypes, remarking that it was clearer than the

large framed one which had been placed before him, but Mr. Serjeant Ballantine did not think it desirable to make the exchange.

The Lord Chief Justice said it seemed pretty manifest that whatever copies had been taken were in some way either enlarged or diminished copies of the two Daguerreotypes.

It being half-past one, his lordship observed that perhaps if the Court adjourned then it might be advantageous as regarded the study of photography. (Laughter.)

The Court accordingly adjourned for lunch for half-an-hour.

Re-examination continued—Supposing you to be correct about the eye and the thumb, would that appear more distinct in a Daguerreotype than in a photograph?—Certainly.

Have the photographs you have been shown been taken from that Daguerreotype?—Yes.

Is the Daguerreotype in any way altered since the copies were taken?—Certainly, it has been tampered with.

Don't use the words "tampered with." You see you invite observation because you won't take the expressions I use?—Well, "altered" would be the wrong word. There is no alteration; but the thumb and the greater part of the hand have been "smudged out."

Your lordship has already called attention to the fact that the thumb has entirely disappeared.

The Foreman—Not entirely.

The Lord Chief Justice—Yes; it has not entirely disappeared.

The Witness—"Smudged out." We have not heard by whom the Daguerreotype was sent out.

Mr. Serjeant Ballantine—I take it that it was sent out by, and has hitherto remained in the possession of, the defendants.

The Lord Chief Justice—I thought it was in the possession of the Court of Chancery.

Mr. Serjeant Ballantine—As most things do get into the possession of the Court of Chancery, perhaps this has.

The Lord Chief Justice—The Daguerreotype in the case came out of the Court of Chancery, and an officer of that court is in charge of it, but there is another in a frame which was produced by Mr. Bowker.

Mr. Serjeant Ballantine—It is the latter to which I refer. (To witness)—I take it for granted the photographs could not have been taken from the Daguerreotype in its present state?—Certainly not.

Did you see the Daguerreotype before the adjournment?—Yes.

Had you it in your hand?—No; I just looked at it.

Did you notice this defect in it?—I did not.

The Lord Chief Justice—Do you suggest this has taken place since the adjournment?

The Attorney-General—If it means anything it means that.

Mr. Serjeant Ballantine—It is no suggestion on the part of the witness.

The Attorney-General—But it is a suggestion on your part.

Mr. Serjeant Ballantine—That may be. I want to know the fact.

The Lord Chief Justice—What do you say?

Witness—I did not notice particularly, but I believe it was not in the same state as it is now.

Mr. Serjeant Ballantine—When did you see it?—Some few days after the trial commenced last May.

I do not understand you to say you can pledge your oath to that?—No; but I think I should have noticed it if it had been in its present state.

Except that impression, you cannot give us any account of the matter?—No; I have no idea how the defect was occasioned.

A Jurymen—You say you did not have it in your hand when it was shown to you?—No; Mr. Dobinson held it in his hand. The Daguerreotype was in a frame then.

The Lord Chief Justice—Yes; and it broke off in my hands, and the officer has possession of the broken parts. If that is what you mean there is an explanation?—I mean that it is not in the same condition as formerly.

(The frame was produced.)

You say the hand has been rubbed out?—Yes, since I first saw it.

The Attorney-General here made an observation in an undertone.

Mr. Serjeant Ballantine—I cannot help overhearing my learned friend say that that is a charge against the defendant. (To the Witness) Do you make any charge?

Witness—No; it is my impression.

The Lord Chief Justice—I think it implies a charge. I never heard of it until to day.

Mr. Serjeant Ballantine—Nor did I hear of it, my lord, until a few days since, but from the evidence I shall produce you will find that it is a very important point. There have been imputations made upon every mortal witness who has been called for the plaintiff, and now it is complained that a charge is made against the defendant.

The Attorney-General—Which you disavow?

Mr. Serjeant Ballantine—Neither assert nor disavow; but this I will say, that it there are any grounds for the charge I will not shrink from asserting it.

The Attorney-General—No, not if there are any grounds.

CARBON PRINTING IN THE DARK.

BY LIEUT. ABNEY, R.E., F.R.A.S.

IN the late dull weather at Chatham, we have found it impossible in the ordinary way to get off the requisite number of carbon prints. We, however, by a curious chemical action, have been able to double the number of the prints we were at first able to develop. Mr. Johnson, at a demonstration of the carbon process before the Photographic Society, found that his prints were all too dark when developed, and pronounced the cause to be, that the printing action continued after the tissue was removed from the light. We have lately taken advantage of this continuation of chemical action. We get one print off each negative in the morning, and then place fresh tissue on the negatives, and expose them till they get half or less than half of the required number of tints. We close at half past three, and the frames are taken into a warm, dry room, and placed (face downwards) for the night. At half past nine, or thereabout, the tissue is taken out of the frames and developed in the usual manner. They are found to have got the right exposure, and to be as perfect prints as if printed in the light. From these experiments I derive the facts that for a half exposure eighteen hours in the dark are required, and for a quarter exposure twenty-four hours of this continued action. I am unable to state how small may be the exposure to start the action, but believe that a faint colouration shown by the actinometer would suffice. The negatives from which we are printing, and with which these results have been attained, vary from one and a half tints to seven and eight tints. I think this method might be utilized where large numbers of prints from the same negatives are required.

PLEASANT TERMINATION OF LAW PROCEEDINGS.

AT Greenwich, Mr. Alexander L. Henderson, of Devonshire Place, New Cross, Deptford, appeared to a summons before Mr. Maude, charging him with reproducing a copy and multiplying for exhibition a certain photograph of a lady, nearly profile, with lace mantilla and fan, looking down, without the consent of the registered proprietor of the copyright of such photograph, Dr. G. C. Wallich. The prosecution was conducted by Mr. Pensam, from the office of Messrs. Laurie, Keen, and Rogers; Mr. Thomas Beard appeared for the defence.

It was stated on behalf of the complainant that a negative was intrusted to Mr. Henderson to produce several enamels from, that the enamels were delivered to the satisfaction of the plaintiff, but Mr. Henderson had, without the permission of Dr. Wallich, exhibited a copy at the Photographic Exhibition in Conduit Street. Dr. Wallich having a copyright in the portrait in question, it was urged that a breach of the Copyright Act had been committed.

Dr. Wallich, in examination by Mr. Beard, deposed to the effects above narrated, but acknowledged that he had not given Mr. Henderson notice that the picture was copyright, nor had he requested Mr. Henderson not to keep copies for his own use.

Mr. Beard took exception to the case being heard at Greenwich, as the offence was not committed within the jurisdiction of the Court. This being overruled or not pressed,

Mr. Beard argued that the picture in question was not copyright, as the lady had not given her consent to its registration, and even if it were, the infringement was not of the usual nature, as the Exhibition was of a private character—in fact, a soiree of a society in which members took to or exhibited any photograph or picture, whether done by himself or any other artist, and that Mr. Henderson gave Dr. Wallich credit for having produced the original negative. Mr. Henderson had discovered a method of producing enamel photographs, and his skill in this particular branch was undoniable. Her Majesty the Queen had largely bestowed patronage on Mr. Henderson in consequence of his discovery and the beauty of its results. Immediately Mr. Henderson heard that Dr. Wallich disapproved of the act, Mr. Henderson removed and destroyed the picture, and wrote an apology to the complainant.

Mr. Henderson's letter was put in and read.

A conversation then took place between Colonel Stuart Wortley and Dr. Wallich, when the case was withdrawn.

The magistrate here remarked that it was quite an exhibition of itself.

All parties concerned, belligerents included, adjourned to luncheon together, and, curious to say, a discussion followed on photography and psychic force. A couple of hours passed pleasantly, when all parted better friends, and, to be hoped, wiser men.

HINTS ON COPYING.

BY ELBERT ANDERSON.

MR. ANDERSON, continuing his practical lessons in our Philadelphia contemporary, gives Mr. Marshall and his assistant some hints on the *best* mode of copying pictures by photography. Oliver Spotzenstreix (the assistant) and Mr. Marshall are at issue on the subject of copying, and Mr. Anderson is appealed to on the subject. Spotzenstreix commences by observing:—

I maintain that every picture to be copied may very properly be placed upside down, and copied in the sun—don't you?

A. Most emphatically *no*; I do not.

S. Well, I don't know about that; I suppose you ought to know best. Why, Marshall even goes so far as to try to stuff me up that certain pictures ought to be copied, not only upright, but in the light they were drawn or painted in. Did you ever hear of such nonsense?

A. I wish you had a little more of such "nonsense" in your head. Mr. Marshall is perfectly correct. There are certain kinds of pictures that cannot properly be copied in any other light save the one they were executed in.

S. Well, that's news to me. Will you please to explain this?

A. Certainly. Here is a picture of a young lady, a vignette, in low neck. As you see, it is done in water colours on exceedingly rough drawing-paper.

S. Just so.

A. I hold this up, then, in the light in which it was executed. Now, by examination, you will notice that the roughness of the paper is very apparent all over the drawing, except on the face and neck, which are very smooth and soft.

S. You are right. What makes the face and neck so much smoother than the rest of the paper?

A. This is only apparent, not so in reality, as you may ascertain by passing your finger over the surface of the paper.

S. That's so; but it looks smoother, don't it?

A. The roughness is the more apparent according to the elevations and depressions in the paper, of course. When the paper is held so that the light falls very oblique upon its surface, the roughness is exaggerated as each of these little elevations casts a shadow. When I hold the picture in such position that the light falls upon it, these shadows disappear, and the paper appears to be smoother.

S. True. Now you say the picture was executed in this light; how, then, do you account for the paper being so smooth on the face and neck and so rough elsewhere?

A. Ah! now we are getting at it. The very shadows in the paper are taken into account when the picture is executed, and go to form part of the work in the drawing. Here's the *proof* before you. You may feel the face just as rough as the rest of the paper. Now, suppose we turn the picture upside down to copy it in the same light—there! look at it.

S. Well, well, well; I've nothing more to say. She looks as if she had an attack of small-pox in its most malignant form. So, so, the old man is right after all.

A. Indeed he is. When we come to apply this to painting on porcelain you will perceive another extraordinary effect. See, as I hold this porcelain picture in the light it was painted it looks very smooth and beautiful. Now I will reverse it. See there!

S. Thunder! We see all the brush marks, especially where the paint is raised or thick. I wouldn't have thought it.

A. One of the greatest of all difficulties is when you come to copy oil paintings; for here the artist not only avails himself of the roughness of the canvas, but uses the shadows cast by the paint itself. And that's not all. I'll place this oil painting there, and do you come over here and look at it. How do you like it?

S. I'm blessed if I can see it at all. There appears to be a glaze all over it.

A. That is what we call the "sheen," and the glossy paint acts as a mirror, and reflects the light from the sky-light. Now if we turn this upside down the coarseness of the canvas is painfully apparent, but placed in the light it was printed we lose sight of the canvas again. You cannot even copy this picture "in its own light," so to speak, on account of this sheen; but by raising it pretty high, and tipping the top forward, the sheen disappears.

S. I'm very much obliged to you. I guess I must take in my horns on the copying question. What *can* I copy in the sun?

A. As a general rule, *nothing*. For photographs, first wax and press them flat. For pencil-drawings, engravings, &c., on a smooth surface—especially if not to be enlarged—nothing is better than a soft diffused light. If you have a small card, ambrotype, or a Daguerreotype to be enlarged to life size, you must put such in a strong sunlight; there is no other way; and, with this exception, never attempt to copy in the sun and expect to get a good copy, than which nothing can be more erroneous. Be careful in your selection of the kind of lens you require.

S. I will be happy to see you again on that subject. Have you any particular formula for copying collodion?

A. No; I use the same that I do for portraits. It may be a trifle older, perhaps.

S. I never can get intensity enough on engravings, wood cuts, printed matter, &c. In the proof, instead of the whites remaining white they were all more or less "tinted." The negative is never opaque enough.

A. I am afraid that is not so much the fault of the collodion as it is the man who uses it. Do you modify your developer sufficiently?

S. No; but I strengthened up pretty well with sulphuret of potassium. What do you mean by modifying the developer?

A. In copying line engravings, wood-cuts, photographs, printed matter, &c., give plenty of time, in a bright diffused light.

S. Please be a little more explicit.

A. Suppose with your ordinary developer *one* minute is time enough, then give *three* minutes, and weaken your developer accordingly; and the instant the picture is all out wash it off as quickly as possible.

S. Why this haste?

A. To prevent any possibility of the fine lines "clogging." Now strengthen with pyro in the ordinary way, fix, and wash thoroughly. Next, into six or eight ounces of water pour an ounce of a saturated solution of bichloride of mercury; flow this on and off the plate, gradually increasing the strength of the solution. At first the negative commences to darken, and then to turn of a grayish-white colour; when at its whitest wash thoroughly, and flow on and off a very weak solution of aqua ammonia in water, gradually increasing the strength; in a short time the negative will blacken, and will finally become absolutely opaque. Hollo! here's Marshall.

[After refreshment Mr. Anderson, seeing a journal in Mr. Marshall's hand, exclaims:]

What's that, Marshall?

M. I have here a copy of the PHOTOGRAPHIC NEWS, October 13th, 1871. May I read you something?

A. Sir, you may.

M. This is from p. 489, and entitled "The Employment

of Albumen as a Substratum for Collodion Plates," by Dr. P. Leisegang. Now listen. "Some years ago a statement was made by Mr. C. W. Hull, in the Photographic Section of the American Institute, that a substratum of albumen applied to negatives decreased by about one-half the sensitiveness of the film. The statement was at that time emphatically denied, but no one seems to have taken the trouble to obtain experimental proof of the matter, either one way or the other." . . . "and supports his affirmation by such striking examples that there would seem no longer any reason for doubting his statement." These gentlemen further claim, the albumen affects the intensity of wet and dry plates differently. Will you allow me to read further?

A. Assuredly.

M. Now listen. "To settle the matter beyond dispute, Mr. Hull prepared the next evening six plates in the following manner:—Two with an albumen substratum and four with an albumen margin only, on the two latter being written, with a piece of wood dipped in albumen, his name in large bold characters. The following day the plates were exposed one after the other in the camera without the latter being in any way tampered with, and the result was, that the albumen-coated plates required exactly double the amount of exposure that was necessary for the proper production of an image on the others. Those upon which Mr. Hull had written his name were vigorous and detailed enough, excepting in those portions where the albumen characters were written, the image being here exceedingly thin and weak. The behaviour of the albumen in wet plates is very singular; by increasing the exposure half as long again as usual, much more vigour was obtained, and where the name was written in albumen the image was much more intense than elsewhere." [It appears further on that Mr. Leisegang repeats Mr. Hull's experiments, and both of these gentlemen appear to be satisfied of the correctness of the statement. Finally, we have the following sentence]: "Repetition of the experiment gave like results, and, therefore, it seems to me to be beyond dispute that wet plates sacrifice much of their sensitiveness to the albumen. How are we to explain, however, the fact that this unfavourable influence of the albumen has so long escaped the attention of portrait photographers?" Now, Anderson, we will hear from you.

A. I quote: "How are we to explain, however, the fact that this unfavourable influence of the albumen has so long escaped the attention of portrait photographers?" The explanation is simple enough. I have no hesitation in asserting most emphatically that these gentlemen are labouring under the most complete delusion imaginable. The substratum of albumen in portrait photography has no effect whatever on the length of exposure, on the intensity of the negative, nor on the negative bath; that is all sheer bosh.

Mr. Leisegang says: "No one seems to have taken the trouble to obtain by experiment the proof of the matter either one way or the other." Mr. Leisegang is much, very much, mistaken. I have made numerous experiments before most competent witnesses, and have established beyond all cavil the proof of my own assertion. I coated half of the plates only with albumen, and exposed on various subjects, living and dead. The development was watched with the most intense interest and attention, and in no one instance could we detect, by the trifle of a second, the least difference in time; by the close scrutiny of the microscope the least difference in intensity.

S. Well, that is a knocker.

A. While on this subject, I read from Dr. Vogel's correspondence of the November number of *Philadelphia Photographer*, p. 362.

"I will here refer to a kind of fault in the negatives—I mean those produced by albumenizing. We are indebted to America for the albumen process as a substitute for tedious plate cleaning. It has been generally adopted here, partially with good success, but over and over again we hear of defects, and these happen even to the cleanest and most careful

operators. In view of these facts it surprises me that I have never read in American papers of similar complaints, and it almost seems as if the American photographer had not to contend with them. I leave it to your readers to answer if this is so."

No, my dear Dr. Vogel [we drink your health standing], it is not so. I have used albumenized plates during all my practice, and have never had the slightest trouble. No spots nor honeycomb-cells. It renders the plate absolutely clean, does not in the least interfere with the sensitiveness nor the intensity, and has never had any perceptible effect on my negative bath; the film is absolutely insured against slipping and splitting, to say nothing of the tedious labour saved.

Gentlemen, the meeting stands adjourned.

ON THE USE OF PHOTOGRAPHS AS ART STUDIES.

BY C. A. SHAW.*

THE present writer received lately the following note:—

"Dear C.:—Give me a few hints for a lecture before Art Association. We have started in good shape, bought busts and statues for drawing from the antique, have a library of six hundred volumes, no end of engravings, &c., and now, there being something over a thousand dollars to put forth, I wish a point to howl upon.—Very sincerely, B."

Without attempting a finished article, I sent this in reply.

Dear B.:—Why not take photography for a hobby? Say, for instance, upon commencing, that it is well known not one in fifteen ever become tolerably expert with the pencil. The general failing is a want of art feeling. A person must have something to express by art forms, and he is no artist. But there is often required in the world a certain art technical. Much drawing is mechanical. Many pictorial effects are photographic, or best rendered by the camera; therefore, suggest that there be a photographic course of instruction added. Make the terms reasonable. Teach the theory, and learn them practically one good formula. In chess, when you have mastered one opening you are a match for nearly any player. By this course you will give all your students a certain profession, and, moreover, turn into the photographic ranks a set of professionals benefitted by art culture. I don't like the apprentice plan myself.

If you have a class of photographers, you can get much valuable work done at a nominal figure. Let me suggest a use to which photographs might be put. Take this drawing from the nude figure which is so important, and so expensive to the student studying by himself. Suppose large photographs be had of these figures in definite series. They could be scattered all over the country. If there was a system in it the art culture of the nation would make rapid progress. I do not like stereoscopic pictures; transparencies which can be thrown upon a screen, or large paper positives, which could be stretched upon light strainer frames, would be excellently lighted against a window or with a lamp behind it. Nude figures, male and female, photographed in different positions, and with different lights, would be, I think, a most important addition if any art school would go so far as to ask for a scale divided thus:—

One of each temperament, and of these one of each sex.

One of each age, from infancy to old age, at ten year's interval.

One of different occupations.

One of different positions of lighting front, back, left, right, low medium, and high-light; and,

One of each position of the figure.

This would easily foot up to several hundred thousand

* *Philadelphia Photographer*.

pictures, but a systemized list would embrace several facts in one picture. I think twenty-five would contain all the essential facts, and three hundred about all the studies worthy of preservation, except for scientific interest.

As for science in connection with art, I am realist enough to think we have hardly touched upon the confines of its adaptability. I would like to see a work on geology, or a complete manual of botany, illustrated with photographs of the plants from life, and even larger than nature. After I have seen a thing I can remember its name, but to have a name given to a description is difficult to carry far.

I would like to request you, in your photographic work, to bear in mind the artistic importance of having proper distance for your picture. For any object the distance from it should be three times its height or breadth. If a man's figure in a picture, such as I propose to be chosen from, be eight inches, the pupil must be over two feet removed at least, and to take such a picture the camera should be nearly eighteen feet from the object. I think few photographers give distance enough. Most architectural designs are ruined by this want. It takes a large camera, to be sure, but I presume that you intend doing your work in a one class manner. The reason large photographs of buildings, do not look so out of proportion as small ones is that, first, the eye, being held nearer the picture, accommodates itself to the want of distance; while, secondly, the proportion is an inverse one, between the camera lens and the actual distance of the object; for a quarter of an inch in the focussing may be a quarter of a mile in the distance, while the picture distance, or angle of sight, may be only from three inches to ten. But probably you do not understand a word of this. Moreover, you are a landscapist. Let me give you a hint for some photographs upon that.

I don't think you want large extents of country. Every landscape artist composes his pictures. He looks to nature for suggestions only. He studies the nature of an oak till he is able to grow an oak into any position required by his picture. He wants what an architect does not want, "full sized details." The general features of a landscape can be carried in the head. The bits and facts of detail are hard to remember. But there must be system in their gathering. A photograph must aid the memory, not take its place; it must suggest things seen, not take the place of travel; and it must have its facts classified.

I would have, first, a series of views of some distance photographed with lengthened exposure, from the tenth of a second by minute grades up to its extreme limit. Thus details would come out from the sky to the foreground. None of these would be pictures. A photographic picture is nearly worthless to an art student. Then I would have a grove of oaks photographed at four miles, two miles, one mile, half a mile, and so on down. One tree marked out in the same manner down to one bough, or one leaf even, magnified larger than life; so of all other kinds of trees. There is hardly one artist in America shows how different varieties of trees cut their kinds in the leaf outline they make against the sky. You know the shape of chestnut, and the rugged edge of black oak, or the lightsome flock of birch, but they do not give it.

Of barks and branching I might write a dozen pages. We do not want photographs copied into pictures. We want the man able to grow his trees according to nature. Of rocks and rocks markings I will not speak. We want intelligent study, not mechanical imitation. A photograph gives the artist finer tools with which to pick up facts in nature, but they must be all worked over before being painted.

Enough, you have my views. The worth of an artist to the world is the value his works have for art culture. Let art pass from the hands of those who consider it only an amusement, a study peculiar to the wealthy, and with no other occupation than spending their riches. We want working-men-artists, gentlemen of culture and taste; and such I trust your art school will send forth.

PHOTOGRAPHY IN 1871.*

A REMARKABLE trait in photographic science and the practical application of it of to-day is the large proportion of result due to the studies of amateurs. Photography has become eminently the amusement, or occupation even, of men of leisure, who, being neither thoroughly educated physicists, skilful draughtsmen, nor practical mechanists, find in it a field where science, art, and refined mechanical facility unite their fascinations in a single operation. The simplicity of the chemical reactions, the fineness of nerve required for a good manipulator, and the delightful resources contained in the artistic side of photography are sufficient allurements for men (or women, for many ladies practise it successfully) of culture and leisure to make it *par excellence* their amusement, and almost their ground. We owe to the scientific men, notably to Niepce and Herschel, the knowledge that photography was possible; but to Daguerre and Fox Talbot the utilization of that knowledge in the essential form which it now has; and in the practical results of the art as now employed, the names of Archer, Taupenot, Major Russell, Carey Lea, and Colonel Wortley, with many others who made an occupation of that which they took up as an amusement, represent improvements, without which we should have but a poor portion of the infinite applications of the photography of to-day.

That the art is simple in its rudiments, and easily acquired, all the handbooks under consideration assure us. It is not the *premier pas qui coute* here. The mechanical processes are so facile that any one of average intelligence and steadiness of hand may acquire the requisite skill to "take a photograph" in a few hours; and though in the mere manipulation at any stage of practice "professionals" will do better than amateurs, no one who has looked over many albums will fail to recognize the fact that general culture has done more to relieve photography from the unprofitableness of mere mechanism, sheer manufacture, than professional interest and assiduity in the occupation. Nothing, for instance, can be worse as manipulation than Mrs. Cameron's photography, yet by the happy hazard of poetic feeling, discontented with formal unquestionable excellence, she has done what no one of her professional rivals has accomplished. Mr. Robinson's book is an elaborate effort, and perhaps as good a one as can be found, to reduce to prescription this difference between the work of culture and taste and the blind exactitude of indiscrimination—the merely mechanical perfection in photography. But though it exhausts precedent and example, its utmost reach of instruction can only be to show the more torpid intellects that there are degrees of taste, and lead to the imitation by set rules of the results already attained by some one else, and so back to mere imitation again.

Inventors are sanguine to a proverb, but it is more than doubtful if Daguerre, when he succeeded with a ten minutes' exposure in reproducing his still-life groups, had the faintest vision of the present state of the art with which his name is identified. The process he developed is one of the simplest of the chemical results. A plate of silver, superficially iodized, became impressed by sunlight; this capability of the haloid salts of silver was nothing new, but the discovery that the vapour of mercury carried on the impression made by the light, and developed a latent image, was the first practical discovery in that series of which the representation of the corona of the sun, making the luminary define and describe himself, is the last. But Daguerre's process, with all its surprising beauty, and a delicacy even now unsurpassed, had slight commercial importance from the fact that it was not reproductive. It had beside the disadvantage of reversing what it drew. It was the discovery of the negative process by Talbot which initiated the correct and useful

* "Pictorial Effect in Photography." By H. P. Robinson. (Piper and Carter. 1871.)

"Manual of Photographic Manipulation, &c. By Lake Price." Second edition. (London: John Churchill and Sons. 1871.)

"The Collodio-Albamen Process; Hints on Composition; and other Papers. By James Mudd."

photography of to-day. By this the sun reprints from the original sun-impression the limitless copies which give the process its commercial and industrial importance; and the completion of this substantially in its present form by Archer, in his discovery of the possibility of suspending a film of the sensitive salts of silver on a transparent plate, perfected its beauty, and opened a new realm to industry as well as an indefinite range of uses to photography.

From that discovery the progress in negative production has been very slight. What has been done of better is due to the opticians—to Petzval, Voightlander, Andrew Ross, and to Dallmeyer, whose latest optical improvements have made possible that which a few years ago was impossible, more than to chemical progress. It is true that the whole range of chemical reagents has been overrun to find the elements of instantaneous photography and photography in colour—two of those alchemist's dreams which, like the search for the philosopher's stone, discover everything but what they seek for, and show either the incompleteness of the science or of the savant. Instantaneous photography, in the sense in which it is sought for, means the use of agents or re-agents which shall make the feeblest radiation of light do what the stronger now do, or, in other words, to destroy all gradation of effect on the sensitive surface. The experimenters after colour, again, have lost sight of the fact that the colour ray of the sunbeam has nothing to do directly with the process of photography. All actinic results are shown in the decomposition of one of a series of chemical substances, notably the haloid salts of silver, and until some substance can be found which will be so decomposed into a final result as varied as the tints required—a condition of which chemical science has as yet given no indication—no such thing as chromography is possible, the fancied successes being merely coincident iridescence in the process of decomposition of chloride of silver. To the repeatedly asked question, then, "Shall we ever have photography in natural colours?" we may safely reply, Not till some hitherto unsuspected principle of chemical action is made known.

Yet without doubt the search for these unattainable objects has done much for the attainable, and in the printing processes, by which the negative result is made a positive one, the success from the discovery of other sensitive elements than the metallic salts has been so remarkable that we may confidently anticipate a trustworthy mechanical process by which all sun-pictures may be made as permanent, as uniform, and as cheap as the results of lithography now are. For this admirable silver print, which is the only popularly known form of photography, has the serious drawback that the chemical reactions which produced it will go on to destroy it at no distant period. No silver print can be relied on as to durability; it may be a year, it may be ten or twenty, but some day it will begin to fade. We have prints in our portfolio which had lasted ten or twelve years, when suddenly they began to grow sallow and faint, and are now on the way to become only dirty yellow paper. No means of assuring their permanence has yet been found, even as against the regular chemical action, much less against chemical casualties.

The discovery of the action of light on gelatine imbued with the chromates was the basis on which rest all the new processes which promise permanence. A film of gelatine, combined with chromate of potash, on being exposed to the sun is rendered insoluble. This film, combined with some pigment, being exposed to the action of light under a negative, is rendered insoluble in proportion to the amount of light which penetrates the negative; the unchanged gelatine is then washed away, pigment and all, that which remains holding the colour entangled in its substance. This is the autotype process. But here, as in the silver process, we have complicated and delicate manipulations, rendering skilled labour necessary in all the stages, and making the result so variable, so liable to accidental imperfections, that only in occasional examples can it be said to equal the result of

the silver prints. As a commercial process its success is doubtful, from the difficulty of commanding the amount of sufficiently skilled labour. The fact alone that it depends on sunlight is of great consideration from the commercial point of view.

Fortunately the gelatine process contains the elements of a genuine printing method. The same film of chromized gelatine, minus the pigment, develops, when exposed to graduated light and then steeped in cold water, another phenomenon of importance—the actinized gelatine will not absorb water and swell up as dry gelatine in its normal state does; and the action of the water is such as to produce a relief of the subject, in which the shadows of the negative are represented by the intaglio, and the lights or dense parts of the negative by relief high in proportion to the amount of protection afforded by the negative. To make this semi-fluid relief available for printing is the problem which has hitherto given the best field for study to experimenters, and with results which, if not absolutely satisfactory, are astonishing; and from this the divers types known as Woodbury-type, Albert-type, &c., but generally classed as collographic, take their common basis. The Woodbury-type is an exceedingly ingenious and within its limitations satisfactory method of utilizing the relief. A reverse of it is made which, filled by a gelatinous transparent ink, gives an exquisite print. But mechanical difficulties have hindered its commercial success. The direct relief-printing processes based on French discoveries, and of which the most successful as far as results go is that developed by Herr Albert, employ this gelatine relief as a printing block, using an ink similar to common printing ink. The early modifications of collographic block preparation were subject to the great difficulty that the gelatine film when saturated refused to adhere to its support. Herr Albert remedied this by using a double film, that next the support (a ground-glass plate) being first rendered absolutely impermeable, Mr. Edwards in the heliographic process detaching the film entirely and giving it sufficient solidity to make it partially independent of the printing bed.

The impressions obtained from any of these processes, while occasionally of so great excellence that they may be safely compared with the standard of good silver printing, in other cases fail so much, and sometimes so unaccountably, that it becomes clear that a mechanical perfection is still to be attained by some modification which shall give all the facility of lithography, with all the delicacy and all the certainty of silver printing.

The best results we have hitherto seen in collographic work are some prints made in the establishment of Herr Albert, which are as perfect as any silver work, while other negatives from the same hands are flat and dull and comparatively worthless. When the cause of all these failures shall be fully made known and remedied, so that from the same basis as that from which we now obtain perfect silver prints we may obtain, with the same certainty, mechanical impressions, book illustration, especially in all that pertains to scientific works and books of travel, will attain a usefulness and extent hitherto unknown, giving to industry a new field, and to art and science a new resource, and making common the profoundest discoveries of microscopy, astronomy, anatomy, archæology, in the completest perfection of their records.—*Pall Mall Gazette*.

Correspondence.

ALBUMEN AS A PRELIMINARY COATING.

DEAR SIR,—Mr. Gulliver, in your last issue, makes a mistake. I, for one, have given my experience with albumen after eighteen months' daily use. I have always found it certain, safe, and reliable, giving complete immunity from stains, dirty plates, splitting or slipping films; and never once, all through the past summer (although it had plenty of work), did I have a foggy bath. The only renovation the bath required was occasionally a few drops of permanganate.

After each day's work I added to it a few ounces of an alkaline or neutral sixty-grain solution of nitrate of silver. In fact, this summer, although I have done more than in any previous season, I have had a great deal less trouble with my bath. A bath, although not scrupulously shielded from white light, will, if kept up to its proper strength by adding a few ounces of an alkaline or neutral sixty-grain solution of nitrate of silver, continue to give good negatives for an indefinite length of time; but if it is worked below its proper strength, white light or no white light, it is sure to fog. Organic matter seems to form much more speedily in a weak bath than in one of proper strength. I have never seen it urged that a bath requires exposing to the light when working well, for the purpose of keeping it in good condition; on the contrary, it is a well-known fact that unless a bath is alkaline, light has very little or no effect upon it, and I presume that an alkaline bath in good working order is not to be met with; therefore Mr. G.'s theory, that because his bath is kept from the light is the sole reason why it never fogs, is erroneous. I, for my own part, would rather say that the reason why is because he keeps it scrupulously well fed, which is the secret of never having a foggy bath.

As for the albumen substratum fogging, how can it? Seeing that the albumen is diluted with twenty times its bulk of water, and even the very small quantity on each plate is dry, I cannot possibly see how it can produce fog.

I have never been able to detect the slightest difference in negatives taken on albumenized glass an hour or a month old always the same uniformity. I always can get a better printing negative on albumen than on plain glass, especially when intensifying with iron, which always gives finer negatives than pyro.—I remain, yours truly,
W. T. W.

MY DEAR SIR,—Will you allow me to assure Mr. Gulliver that he is quite in error in supposing albumen as a substratum to be a failure. I should have thought the names of those who have described their method of use in your columns sufficient evidence to the contrary.

You gave in a recent issue a very succinct account of the advantages attending its use, and I have the best reasons to know that in America, on the Continent, and in England it is used as a great boon by persons whose operations are on a large scale. Many do not succeed in applying it successfully to their plates; but this is from unskilfulness, or want of attention to oft-repeated instructions. Lieut. Abney has given valuable information lately on it, and only last Monday at the Solar Club told me he adhered to its use.—Yours respectfully,
SAMUEL FRY.

RIVE PAPER.

SIR,—Observing that Mr. Shew, of London, advertises himself as the Sole Wholesale Agent for our Rive Photographic Paper, we beg to advise those interested that our Sole Wholesale Agents for the United Kingdom of Great Britain and Ireland are M. Marion and Co., of London.

Any other persons advertising themselves as our agents are advertising what is erroneous.—We remain yours truly,
Paris, 4th Dec. BIANCHET FRERES ET KLEBER.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

THE first regular meeting of the winter session was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, December 12, Mr. J. GLAISHER, F.R.S., in the chair.

The minutes of a previous meeting were read and confirmed, and the following gentlemen elected members of the Society: Messrs. Prestwich, Hawkins, W. D. Sanderson, A. H. Bool, J. R. Sawyer, W. S. Bird, R. Brown, J. C. Turner, E. B. Gibson, Dr. Wallich, and Captain Holmes.

The CHAIRMAN, referring to the recent exhibition, said that although the arrangements for such an annual display of photographs involved considerable cost, effort, and anxiety to the council, he felt that they were well repaid by the beneficial influence of such a successful exhibition.

The CHAIRMAN then read the seventh rule of the Society in relation to the nomination of officers in the Society. In accordance with that rule the following gentlemen would retire: J. Glaisher, as president; Dr. Diamond, as vice-president; Dr.

Anthony, Frank M. Good, Jabez Hughes, II. Baden Pritchard, H. P. Robinson, Sir C. Wheatstone, as members of the council. Mr. Spiller also resigned his office of secretary. Proposed for election, or re-election, J. Glaisher as president; J. Spiller as vice-president; Sir C. Wheatstone, J. E. Mayall, J. R. Johnson, W. J. Stillman, Lieut. Abney, and Lord Lindsay. Mr. Pritchard has been appointed to the office of secretary.

Mr. SPILLER wished, before retiring from the office he had held for three years, to express his deep appreciation of the courtesy and support in his duties which he had received from the council and members. He felt pleasure in congratulating the Society on the improved financial prospect, and was glad to feel that his successor in office would commence his duties under the most promising auspices of success and prosperity in the Society.

The CHAIRMAN acknowledged the value of the three years' faithful and efficient services of Mr. Spiller, and said that in accepting his resignation the council had aimed to signify their appreciation in proposing his name as one of the vice-presidents.

LIEUT. ABNEY read a paper on albumen as employed in photography. He detailed a number of experiments with albumen as preliminary coating in different states of dilution, and with and without the addition of iodide, his general conclusion being in favour of a very dilute solution without any addition. He also called attention to the influence of albumen as on the permanency of prints, referring to the sulphur being, relatively to the amount of silver in the finished print, really a large proportion.

COL. STUART WORTLEY agreed with Lieut. Abney as to the advantage of dilute albumen, himself employing the white of one egg to sixty ounces of water. He had experimented very largely with albumen as a substratum, but always under collodio-bromide films. He found blisters proceeded from three causes. One was dampness of the layer of albumen when the collodion was applied. If the albumen film were heated and dried just before applying the collodion no blisters would occur. Blisters would also occur if too much gum were used in the preservative, and this might be cured by heating before development. He had tried the use of bromide and chloride in the film, and found no increase of sensitiveness, but a slight excess of density. He always applied the albumen solution with a camel's-hair brush, and thought that there was no better method. He showed a negative on the collodion film having been removed the image was quite visible on the albumen underneath. This only occurred when the albumen was damp underneath the collodion. Heating the albumen film thoroughly before coating would prevent this and various other disadvantages.

Mr. HART wished to know in what combination Lieut. Abney supposed silver and sulphur were found in a faded albumenized print. In reference to the use of striking albumen he doubted whether sulphur had been eliminated in the form of sulphuretted hydrogen. He thought it was not satisfactorily proved that a faded print consisted of sulphide of silver, as that substance was brown, and the faded prints yellow.

Mr. SEBASTIAN DAVIS found that albumen diluted with twenty parts water gave no blisters, whilst with ten parts of water it did so. In the dry process he used, in which albumen and silver combined formed the preservative, he found the albumen substratum had no effect on the sensitiveness whatever. In applying the albumen he preferred pouring it on and leading it with a glass rod. Referring to the keeping qualities of albumenized paper, he found that the suggestion recently made by Mr. Carey Lea, to add tartaric acid to the silver bath, made the paper keep a few days; but certainly not a few weeks, as Mr. Carey Lea had stated.

C. L. WORTLEY stated that in 1872 he used citric acid as a means of keeping the paper white, and mentioned the circumstance in a paper before the Society in 1863. He had not always continued its use, because it made both printing and toning a little slower. In applying a substratum he used the camel's-hair brush in a similar manner to the glass rod mentioned by Mr. Davios, but he thought the rod probably better.

Mr. FRANK ELIOT had been, during the summer, using a silver bath, made alkaline by the addition of carbonate of soda, as a means of keeping the paper white, and with great success. The sample of paper was one with very little chloride.

Mr. DAVIS said that the addition of carbonate of soda would simply precipitate carbonate of silver, not make the bath alkaline.

Mr. SPILLER said it would leave the bath alkaline.

Col. WORTLEY always kept the bath alkaline for washed paper.

LIEUT. ABNEY, in briefly responding, remarked that the heating process of Col. Wortley was practically coagulating the albumen. He objected to the use of a brush, because the inequalities or brush marks caused blisters. He thought that in the decomposition of albumen there was certain evolution of sulphur. The question of colour in the sulphide of silver was, in other substances, chiefly dependent upon the minuteness of the particles. As to applying the albumen, he had tried the rod, but preferred the Blanchard brush.

After a vote of thanks to Lieut. Abney,

Mr. FRITCHARD read a paper on M. Dagron's photographic operations in preparing and transcribing microscopic war despatches, &c.

After a vote of thanks,

The CHAIRMAN said that he had been commissioned by Dr. Mann to hand to the Society, as a present from Dr. Rutherford, three very fine enlargements of the moon, and a complete photograph of the solar spectrum with its lines. After a hearty vote of thanks,

The CHAIRMAN announced that Mr. Frank Good had prepared a choice little photograph of Shanklin Chine for distribution amongst the members. Thanks being duly voted,

Col. Wortley exhibited and explained the working of his combination printing frames.

Mr. HART then exhibited and demonstrated the use of his new globe syphon, of which details will appear in our YEAR-BOOK. After votes of thanks,

Col. WORTLEY suggested that the meeting should not separate without an expression of deep sympathy with the Royal Family, and earnest hope for the recovery of the Prince of Wales. Mr. Foster seconded the suggestion, which received a cordial response, and the proceedings terminated.

Talk in the Studio.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.—The members of this Association have resolved to hold an exhibition and soiree in the course of next month, commencing on the 22nd, and ending with the soiree on the 24th. Contributions of photographic interest will be gladly received by the Society, the following conditions having been published for the guidance of those who may kindly contribute:—All contributions must be sent before the 15th January, to care of J. A. Forrest, Esq., Lime Street. Each article must be accompanied by a descriptive label attached to the front, giving the name and residence of the artist. It is also advisable to state the process, lens &c., by which the picture was taken; also the price, if intended for sale. A charge of ten per cent. will be made upon all sales effected. All expenses of carriage will be defrayed for those to whom this circular may be addressed. Parcels to be sent per Globe Parcel Express Company. Every possible care will be taken of works sent, but any accidental damage will be at the risk of the sender. All communications on this subject to be addressed to the Hon. Secretary, Wm. Murray, 20, Tower Chambers, Old Churchyard.

To Correspondents.

* * * The YEAR-BOOK OF PHOTOGRAPHY for 1872. In answer to many correspondents, we may here announce that our YEAR-BOOK for 1872 will be ready at the end of the year. It will contain all the features which have, through so many years, secured it universal favour, original articles by the same distinguished photographers who have hitherto contributed to its pages, and by some new contributors, and will in all respects, we believe, maintain the reputation of its predecessors.

P. G. G.—The mode of obtaining the silver from old hypo solutions most commonly practised, and the most efficient when the photographer is accustomed to the operation, consists in adding liver of sulphur to the solution, which throws down the silver as sulphide of silver. This is then reduced to the metallic state in a crucible by heat. But we feel strongly disposed to recommend, as simpler for unpractised hands, and especially in small operations, to place strips of clean zinc in the vessel holding the solution, by which the silver will be deposited as a metallic powder.

B. C.—The front lenses reversed of all portrait lenses may be used for landscape purposes. So far as we remember, the lenses to which you refer are fitted in their tubes with a view to such an arrangement. 2. The depth of all lenses is increased by the use of a stop.

Fog.—The No. 1 triple to which you refer is a very valuable lens for architectural and landscape work. It is very useful for copying, and also for groups, &c., in the open air.

RICHARD MURRAY.—Many thanks. The process decidedly has promise. We shall have pleasure in receiving the promised details.

G. WARE.—The negatives reached us completely smashed, and in a dangerous and uncomfortable position to examine, covering our desk with minute splinters of glass. The only mode in which negatives can be transmitted through the post safely is in boxes. Any packing which yields at all is sure to permit the smashing of the glass when the parcel is stamped. We cannot glean much of the character of the negatives from the fragments, but presume that lack of intensity is the fault. Did you attempt intensifying with pyro and silver at all? The film also seems too thin. We should add more pyroxylic. The slow development is right. 2. We have no practical knowledge of the lenses you name, but, so far as we know, we should be inclined to select B. 3. We fear that bee's-wax and boiled oil would be somewhat stiff and unpleasant; but we do not know anything which will render it waterproof without being more or less stiff. A piece of mackintosh is best, but a waterproof cover is rarely needed. 4. If you filter collodion, it is best done through cotton-wool. As a rule, we prefer to let it stand and decant it. If you wish to dilute it, be sure that your ether and alcohol are pure.

C. JENNER.—The appearance of the negative would afford better indication of the cause of the defect than a print. From the appearance of the print we presume that the negative has become mottled over with a brown stain. This may be due to the presence of hypo and silver in the film, not properly washed out after fixing; the action of light upon such matters in the film would cause such a defect. Or a piece of damp sensitive paper may have been placed in contact with the negative, and the silver stain so caused would gradually get darker and darker, and so cause the defect in question. If the latter cause be in operation, the stain may be removed from the negative by gentle sponging.

G. AVERY.—We know nothing certainly of the patent terra-cotta stoves. We think all gas stoves which do not provide for the escape of products of combustion dangerous. Possibly, some of our readers may have had experience in the matter. The only gas stove we know which seems suitable is George's Calorigen.

O. O.—The only method of printing from a negative of which we can say that the result will not fade is carbon printing. Such a process will also permanently suit your purpose, as the print can be produced completely, and then transferred to the portion of the drawing paper required. You will find some hints which may be useful in Mr. Croughton's article on carbon printing on ivory, canvas, &c., in the PHOTOGRAPHIC NEWS of October 20th last.

DAGUERRETYPE.—The restoration of a tarnished Daguerreotype is easily effected by means of a dilute solution of cyanide of potassium. You will find much more fully detailed instructions in an article in our last YEAR-BOOK than we can give in this column. The article is by Mr. Hughes, on page 25 of the YEAR-BOOK.

IODO-BROM.—The only mode in which you can keep the image well on the surface in development printing is by the use of gelatine, or some similar body, and in that case floating is much better than brushing, as the latter is apt, under such circumstances, to give streaky results. If you use a hard sized drawing paper, instead of photographic paper, the image will be retained better on the surface. 2. It is in no case safe to use hypo over and over for fixing prints. Paper is a much more dangerous thing in contact with hypo than a collodion film, and no comparison can be made between the fixing of a paper print and a collodion negative.

FRIAR.—In order to recommend a varnish for use after retouching, it is necessary to know what kind of varnish has already been, and upon which the retouching has been effected. If you have used an ordinary spirit varnish, there are two ways of dealing with the matter: one is to varnish again with a benzole varnish, which will not dissolve the coating of spirit varnish; the other is to allow the vapour of warm alcohol to play upon the varnish already there. This will fix the retouching, and render a second varnishing unnecessary.

D. W. W.—Our opinion on a point of law is not authoritative. We cannot speak with much certainty of the operations of the Statute of Limitations, but we believe that if an acknowledgment of the debt have been made within the six years, you can still recover.

T. GULLIVER.—Many thanks.

W. TILLEY and several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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PHOTOGRAPHIC PRINTING ON THE MARGIN OF PRINTS.

WE have recently been favoured by our esteemed collaborator, Mr. E. L. Wilson, with some large prints of the ruins of Chicago after its recent terrible devastating fire, produced by Mr. Landy, of Cincinnati. The remnants of some fine buildings still stand, affording just sufficient suggestion of how noble a city has been desolated. The photography is exceedingly perfect, and dreary as in some senses is the effect of heaps of brick and stone ruins, the treatment of the photographer has conferred a pictorial charm on his work.

The especial characteristics of the prints to which we wish to call the attention of our readers is a very practical one, which may be found worthy of frequent adoption. The title of the picture, and several references to special objects in the view, are printed on the margin of the print by means of photography, and apparently by the same exposure as the print. It will frequently happen that the addition of the name of the subject will be a great advantage on a print; but in cases like the present, where much of the value of the picture depends on the facilities it presents for ready and satisfactory reference, this mode of printing becomes of especial value. We have, for instance, upon prominent objects amid the ruins, figures to guide to references in the margin. Here, for instance, we find on the ruins of a gothic building the figure 3 printed white; looking to the margin, we find that 3 refers to St. Paul's Church. A building in the print marked 4 we find, by reference to the margin, is the Post Office; 7 is Tremont House, 8 is Trinity Church, and so on.

The mode in which this printing appears to be on this wise—or, at least, might be effected in this manner:—A clean margin of bare glass being scraped round the negative, an accurately fitting mask of paper or similar substance is placed so as to join up to to the edge of the picture. Upon this mask is written the necessary inscription in an opaque or non-actinic ink. The mask is selected of such a thickness that it is equivalent in opacity to the half-tones of the negative, so that it permits the margin of the print to acquire a delicate tint of brown, somewhat deeper than an india tint, sufficiently deep to render the letters of the inscription to appear white and legible on a tinted ground, but not sufficiently deep to detract in any degree from the force or effect of the print, the tinted margin being really rather an improvement than otherwise. The figures on the objects in the print would be, of course, written, duly reversed, on the negative in a non-actinic ink. Proper care would, of course, be taken to reverse the writing which appears on the margin in placing the mask on the negative.

There is, of course, nothing new in the possibility described, but we have never before seen the idea so well and so thoroughly applied as here. The example may with advantage be followed with a large number of photographic subjects.

RETOUCHING: ITS USE AND ABUSE.

BY G. C. WALLICH, M.D.

THE opinions so ably expressed in the Editorial bearing the above title, and published in the PHOTOGRAPHIC NEWS of the 29th September last, are so thoroughly to the point and so well calculated to place in its true bearings the growing tendency amongst photographers to regard "retouching" as an integral portion of their everyday work, and indispensable wherever a high degree of finish is demanded, that they cannot be too strongly enforced or too carefully acted upon.

In the article referred to you aver, with perfect truth, that "photography, of all the fine arts, is probably the least plastic in its nature, and most bounded by material conditions; and hence it is of vital importance that the photographer should possess every material aid which can be rendered available in his art." And in order to prevent misconception as to the legitimate purposes and limits to which "retouching" should be confined, you lay down as an axiom that it ought to be resorted to only with one of the three following objects:—To secure those relations of colour to colour which are, in certain cases, inaccurately reproduced in the monochrome of the photograph; (2) to correct incidental—or, in other words, technical—errors caused by imperfect manipulation and lighting; (3) and, lastly, to remedy what may be termed accidental or temporary imperfections in the living model—as, for example, scars, freckles, and the like. And you sum up your argument by declaring that, "confined within the limits here indicated, retouching on the negative is, in capable and judicious hands, a legitimate and wholesome adjunct to the result of light and the lens;" but that, "carried beyond these bounds, or attempted by the ignorant or incapable, it becomes one of the most dangerous and degrading innovations to which photography could be subjected."

This is undoubtedly strong language, but it is not one whit too strong; and were proof of its truth needed beyond that which your reasoning itself supplies, such proof has very recently been produced, and in a most conclusive manner, by the important share photography has taken in the monster trial which is at present occupying so much of the public attention. Before supplementing your observations with a few remarks of my own, I may, perhaps, be allowed to point out that so fully impressed have I been with the danger and suicidal tendency (as regards the prospects of photography) of all processes of "retouching"

wherever we have to deal with the historical aspects of our art, that in publishing, in the spring of 1870, a volume of photographs of some of the most "eminent scientific men of the day," I deemed it imperative on me to forego improvements in the technical part of my work which would undoubtedly have added to the beauty of some of the portraits, rather than run the risk of deviating in ever so slight a degree from that unapproachable accuracy which photography alone can claim as its characteristic.

Every experienced photographer must have hailed with unmingled satisfaction the clear and emphatic testimony given by Colonel Stuart-Wortley during the past week in the case of the Tichborne photographs. Indeed, it was quite a godsend, not only to some of the parties most deeply implicated in the suit, but to every photographer who cares for the status of his art, to find a ray of pure light penetrating through the confused mass of evidence that had up to that time been given concerning these portraits. It behoves us, therefore, to take the lesson here taught us to heart, and determine, once and for all, when and where the pencil and brush may be with safety permitted to supplement the work of the lens and chemicals, and where such aids ought to be most scrupulously dispensed with.

In discussing the question, one very material point must be kept in view, namely, the purpose for which a photographic portrait is being taken. If, in order to secure a strictly faithful and characteristic likeness to be handed down as a memorial of the good or the great of our age, then I maintain it is a thousand times better to let the lens tell its own tale, unaided by the most trivial touch of pencil or brush, than to appeal to their aid, and, in so doing, leave the slightest room for doubt as to whether the unerring forces of nature, or the always doubtful handiwork of man, had been instrumental in producing it. On this phase of the question it is unnecessary for me to dwell longer than may be requisite to draw attention to the very significant fact that every true artist, be he painter, sculptor, draughtsman, or connoisseur, will always prefer the truth without mercy which constitutes the inherent attribute of the photograph, to that mercy without truth which must generally appertain to every supplementary kind of manipulation—of course assuming that the work has been conceived by a competent mind, and not by that of a tyro.

It ought not to be forgotten that however pleasing and artistic the elaborately prepared specimens may be which are now so often exhibited as examples of the progress made in photography, nothing could be more calculated to mislead the public, and, as you have so truly urged, to degrade our art, for in but a few instances can such specimens be regarded as examples of what the public may expect to obtain in the ordinary course of photographic business.* Nor is this at all the fault of the photographer if he avows, as I maintain he is in every case bound to do, that highly skilled manipulatory labour has been expended on the article he offers. But it is quite clear that the article thus produced cannot be had by the public at the low rate it generally consents to pay, and, what is worse, thinks sufficient remuneration for it. In fact, people have fallen so gradually and readily into the error of supposing that the best class of photographic portraiture of the present day is but so little removed from the "card picture" of ten years ago, which we now regard almost with contempt, that the increased facilities for its production, in the shape of more perfect optical, mechanical, or chemical appliances, are thought to counterbalance any increase in the good qualities of the future that is produced by their means. Hence people fail to grasp the fact that in photography, as in every other branch of skilled industry, there are varying degrees of excellence, and that he who can turn out the highest style of work is as fully entitled to claim

the highest legitimate rate of remuneration as the painter, or sculptor, or writer, or professional man who, by dint of superior attainments, is able to command an enhanced price for the labour of his brain or hand.

It has been already observed by others that "untouched" pictures formed the exception rather than the rule at the recent Exhibition in Conduit Street. Nay, more than this, it was palpable that, in a great number of instances, not only had the negatives from which the exhibited prints were taken been almost remodelled by hand, but that the prints themselves had received so much further treatment of the same kind, as to render it impossible for the observer to determine where photography ended and the work of the retoucher began. Without any intention on my part to offer invidious remarks, I may surely be permitted to point out that this is a state of things to be deplored. Why? Simply because it is trusting to a broken reed, and degrading a science which bids fair to do more for man than any other method in perpetuating the present, when the present is supplanted by the future; and in instilling a truer conception of the more subtle aspects of nature, than it has heretofore been in the power of any, save painters of the highest order, to embody on their canvas.

A little reflection will make us feel that, in looking at a photographic likeness, even should the print before us be the ten-thousandth impression taken from an untouched negative, the chain is unbroken which enables us to regard it as an emanation, subtle it may be, but, nevertheless, coming direct from the original. It is true that owing to unskilful treatment of light or shade, absence of artistic taste in the arrangement of the figure and accessories, or accidental causes, certain parts of a portrait may prove defective. And in such a case it may be desirable to remedy what is objectionable, by the brush or pencil. But surely no one will assert that the picture produced under such circumstances can compare in value with one in which all these defects had already been obviated by the exercise of a higher degree of skill and knowledge. On the one hand there is the charm of truth; on the other, that lying like truth, which always arouses suspicion. Hence in retouched portraiture we virtually revert to miniature painting, in which fidelity to nature has too often become an unknown and an unknowable quantity.

To what, then, do the foregoing observations tend? Is it to show that "retouching," either on the negative or the print, is inadmissible or unjustifiable? By no means. Their aim is merely to demonstrate the necessity of restraining this supplementary device within due bounds. There are persons, as is well known to every photographer, whose desire is to be represented not as they are, but either as they have been, or wish to be. Such persons naturally regard the power conferred by the pencil or brush as the one thing needful to carry out their wishes. And, of course, as a matter of pure business, the photographer must attend to their requirements. They care little for truth, and are content to leave posterity to separate the wheat from the chaff in this as in other questions; consoling themselves with the reflection that, as all history has been declared to be a tissue of falsehood, the small "white lie" thus added cannot appreciably swell the catalogue.

What I seek, and would, in conclusion, beg of you to raise your voice in endeavouring to establish, is the rule that, for all exhibitional purposes, and particularly when the object is to compete for prizes, a hard and fast line should be drawn between photographs pure and simple—that is to say prints which are themselves untouched, and which have been produced from untouched negatives—and photographs in which these conditions have not been maintained. By the establishment of this important distinction between two very different classes of photographic pictures, the true interests of the art would be advanced, instead of being obscured; a stimulus would be afforded to all who entertain a just estimate of what this art is yet destined to

* I say "but a few instances," and am quite prepared to admit that the works of some of our ablest photographic artists, both in London, the provinces, and abroad, are exceptional cases; and for the most part empty of all reasons, namely, the cost of production, it is indispensable that they should be.

achieve; and the mixed style of portraiture would be relegated to the position it is fairly entitled to hold as a most valuable occasional adjunct to photography, but nothing more.

AMERICAN CORRESPONDENCE.

HOW TO MANAGE THE NEGATIVE BATH—CORNERS FOR PLATE-HOLDERS—CAMPHOR IN THE PRINTING BATH—PRINTING MEDALLION TINTS.

How to Manage the Negative Bath.—It is difficult to write anything new on this subject, and yet, so long as that very peculiar institution, the negative bath, continues to get out of order, and men continue to doctor it and mercilessly tamper with it, so long does it seem necessary to keep the subject before the people. Some photographers advocate "doctoring," and some declare that the sun cure is the best. I append a few sensible remarks from Mr. I. B. Webster, one of the latter class, and a photographer of many years' experience, which are worthy of attention. He writes me as follows:—

"As a rule, the negative silver solution is doctored too much, a practice that involves loss of time and waste of material. Too much care cannot be taken in its first preparation, and when one is prepared that will produce satisfactory results, it should be guarded with a watchful eye, as much depends upon the faithful performance of its required duties. To prepare a solution for negative, dissolve one ounce of nitrate of silver in twelve ounces of good water. This will give a solution forty grains strong. When all is dissolved, set the solution in the sun, and let it remain there until the organic matter is precipitated. Observe the effect of the sun's rays (or even out-door daylight, when cloudy) upon this solution, and you will see it first assume a reddish colour, then, as the action proceeds, little particles will gather and remain suspended for a time. These will soon begin to turn dark, and finally settle as a black precipitate at the bottom of the bottle, leaving the solution a beautiful, clear, colourless liquid. Four hours' good sun will do this part of the operation well, or even one half hour (for the moment the solution assumes the reddish, murky colour, the separation has commenced, and proceeded so far that it will never be dissolved again, and the filter will finish the work of purification), but one day and night is the safest time to rely upon. Now, suppose you have used four ounces of silver, of course you have forty-eight ounces of solution. Now test with blue litmus paper to determine about how much acid to put into it. If it proves to be alkaline, you know that it will require more acid than if it were neutral or slightly acid. Before adding acid, first give it all the iodide of silver that it will take up. For instance, dissolve five grains of iodide of potassium in a small quantity of water (half ounce), and in another bottle dissolve five grains of nitrate of silver in the same quantity of water; pour these two together, and a beautiful canary coloured precipitate is the result. Fill up the bottle with water, and in the dark, let the precipitate subside, then decant and fill up again, and when settled, decant again. This continue until the liquid is clear, that evincing the fact that the potash is all washed out, leaving pure iodide of silver as the result. Drain off all the water possible, and add all to your forty-eight ounces of silver solution, and give it a thorough shaking up. The precipitate made by the sun will do no harm, as it cannot again dissolve. Now add chemically pure (C. P.) nitric acid in quantity judged to be necessary by the test previously made, say from five to fifteen drops, better too little than too much, as it is easier to add more after it is in the bath dish than it is to take away, if too much has been added. After adding the acid, shake thoroughly, and, if possible, let it stand over night before filtering into the bath dish. A bath made as above can be relied upon for good results. Now take two ounces nitrate of silver, dissolve in twenty ounces of water, let it remain out doors in the sun or strong

light for a few days, until it is purified of organic matter. This is the medicine that will cure nearly every disease that a negative bath is heir to. Suppose you have worked it pretty hard, and begin to see the effects of disease, it is only necessary to decant or filter some of this stock solution into it, and, like the magicians' "presto, change!" your bath is at work as well as ever. If there is an excess of iodide, or acid, or alcohol, or ether, the adding of this plain solution goes to equalize any or all of them. It restores and keeps the bath up to its original strength, and, if carefully used, need not be disturbed more than twice each year, and then only to be filtered. Two silver solutions made and managed in this way, alternately in use and at rest, are equal to ten managed in any other way. When one is at rest, keep it out doors, exposed to sunlight and air. Never allow your plate to sink to the bottom of your bath dish, but suspend it as near the surface as possible, and have it surely covered; and while immersed, set the bath dish upright, or tip it forward, whereby floating particles will settle upon the back of the plate. Keep the solution covered with velvet when not in use. Have several samples of collodion ready for use, that the best effects may be produced at all times. Adopt rules of neatness in everything appertaining to your business; keep snug up to your orders; read every article referring to photography that you can get hold of; adhere closely to what has proved itself to be good; subscribe for and study the photographic journals; and all will work well.

Corners for Plate-Holders.—In the few English camera-boxes which I have seen I notice that silver wire is used in the corners of the plate-holders. Here we use a solid corner made of composition, rubber, or, what is the most popular, of solid glass. These all break at times, and often cause a deal of inconvenience. Mr. F. G. Waller, a practical landscape photographer in New Hampshire, has sent me a method of repairing them, which I append, as it may be useful to some of your readers:—

"My method of repairing makes them as good as new, and a great deal better than many of the new ones. When the corners become unfit for use, I take them out, and cut the wood dovetailing, or any shape which will not let the corner come out. I then take gutta-percha, an article used by dentists to set teeth while articulating them, previous to using the vulcanizing rubber. By putting it in warm water it softens and works like putty. I take about the quantity necessary to fill the corner, dip it in warm water, and press into place; then take a block with a square corner, the thickness of the depth you wish the corner, and press it in as far as you wish the inside of the corner; after which you can trim off the surplus rubber with a chisel or knife. Should it harden before it is sufficiently in place, dip the corner, plate-holder and all, in the warm water, and it will soften again. After it has set twenty-four hours, varnish with shellac varnish, especially where the wood and rubber come together, that the silver may not work in. I have used some fixed in this way two years, and they are just as good as ever they were. If some of the manufacturers of plate-holders would use it, they would have better corners than they now do."

Camphor in the Printing Bath.—Here are a few words of practical experience on the use of camphor in the printing bath from Mr. J. R. Clemons, one of our most celebrated manufacturers of albumen paper:—

"After the printing bath has been used some time, it becomes more or less charged with albumen. If, when the solution is poured from the dish into the filter, frothy bubbles appear on the surface, it is in the condition named, and is unfit for use in sensitizing albumen paper. The reason is obvious. When an albumen sheet is floated upon a silver solution thus charged with albumen, a secondary film of albumen, or albuminate of silver, is imparted to it, which deprives it of its lustre, and it is impossible to secure a good tone upon it. The difference will be readily seen by floating one half of a sheet of paper on the used solution

and the other half on a fresh solution, and comparing the results.

"The effect of silvering on such a solution is similar to that of using doubly albumenized paper. In both cases the silver will penetrate both films, even if silvered on the back, and very good prints, apparently, may be made on paper so treated; but when you proceed to tone them, you will find that the double film of albumen resists the action of the gold, and renders it impossible to get rich tones. I have already recommended the addition of alcohol to a bath thus charged with albumen, and then burning it out, in order to cleanse the bath; but since have sought for a less expensive method, and have found camphor to be just what is needed. Besides being less expensive, it is also more expeditious, for in five minutes an eighty ounce bath can be cleansed or all impurities by its use as directed below.

"Make a saturated solution of camphor, viz. :—

Camphor	...	...	...	...	1 ounce
Alcohol	...	...	...	...	6 ounces

To cleanse a bath which is considerably fouled by the albumen, add two and a-half ounces of this camphor solution. A greasy appearance will be presented on the surface of the bath. Shake well, when the greasiness will disappear. Then filter, never using the same filter twice. If, after filtration, the solution turns dark, add a couple of drops of permanganate of potash, and it will immediately clean. This turning dark is owing to long usage of the silver solution.

"It is a fact that the bath is daily impregnated more or less with the albumen; therefore a slight addition of camphor daily is recommended. This will avoid the addition of the permanganate, which rather decreases the sensitiveness. As a quick and ready corrective agent, camphor will be found of great advantage. It will impart a camphory smell to the solution, but in no way deteriorates the quality of the prints."

Printing Medallion Tints.—Since writing you before on this subject, I have received several other hints in the same direction. Some of the results are neat, while others are too obtrusive and detract too much from the picture. The latter class should be avoided always. Nothing is tasteful that will attract the eye first, before the face. I append two or three notes on the subject, which may aid your readers in trying several plans, and in selecting one which will suit their patrons best.

To obtain the fine lines similar to those in Mr. Gihon's pictures described before, Mr. J. W. Emery, of Galva, Ill., says: "I first coat a glass with collodion and let it dry, then varnish it with varnish made green by adding green aniline. When dry, with a ferrotype plate for a straight-edge and a small brad-awl, I cut the varnish from the glass, and thus secure a negative with which to print the margins, proceeding, thereafter, as Mr. Gihon directs."

Mr. Geo. Weingarth, of Shelbyville, Ind., says:—"My method of producing the granulated margins in the medallions that I sent you some time ago is the following: I take about half an ounce of zinc-white, grind it up with a little alcohol in a mortar until it forms a thin paste, then add it to about two ounces of old collodion, and flow it over a clean glass, the same as in coating an ordinary plate. By blowing on the plate before the solution has set a great many different effects can be produced. The plates are used the same as any others for printing borders, putting a mask over the print."

Mr. C. Ferris, of Malone, N. Y., sends us some very good effects, which he produces as follows:—"Take a piece of common, cheap, white lace, lay it between the mask and the print, and it will give regular hexagonal divisions. Now, if you want variety, take a piece of the same lace, twice as long as your print and somewhat wider, double it down in the middle, and swing one section around a very little. You thus get an appearance similar to watered silk—by

laying the lace over a black cloth the effect can be more readily seen; carry it a little further round, and the figures will begin to assume a more regular form; turn it to the figure you like, lay it under the mask over the print, and expose to the sun, and get the shade you want."

Wishing you and the many thousands of readers of the News the compliments of the coming "gift and glee season," and that you may have a prosperous new year,—I am yours truly,

EDWARD L. WILSON.

Philadelphia, December 1st, 1871.

LANTERN HINTS.—No. 4.

BY JAMES MARTIN.

To become successful as a public lecturer will require the possession of great talents, aided by a good voice, superior education, gentlemanly manners, and a peculiar adaptation to that description of subject upon which he prefers to discourse. An exhibitor of the magic lantern can hardly be reckoned as such, as he is neither expected nor required to give an elaborate dissertation upon his pictures; on the contrary, a few sentences given to the purpose are best received.

During these dull winter months, while photography is at so low an ebb, some of its poorer professors may be tempted to take up exhibiting as a hopeful source of increase to their diminished incomes. Let me caution them how they do this unadvisedly, or they may find themselves serious losers by the speculation. There have been so many penny readings, penny singings, penny darkies, and what not, that it has become difficult to obtain a paying audience, more especially as the charges for public rooms are so exorbitant, generally amounting, even in small towns, to a guinea per night, which, with gas, printing, and other items, will cause the expenses of the evening to amount to three pounds, while more than sixty people of all classes cannot be expected to attend, except under powerful patronage. The best chances of remuneration lie amongst country schools and private parties.

If I may offer my estimate of exhibitions as a profession, it is, that they are hard work, uncertain gain, and a most uncomfortable life. But with the amateur all is *couleur de rose*; his pictures and himself are flattered and praised, and this is well earned; for I know of no more agreeable way of spending an evening than in the examination of a fine collection of slides in the hydro-oxygen lantern.

It is to be regretted that a more scientific description of entertainment is not introduced. As at present constituted, the whole affair is considered as little better than a nursery amusement. The magic lantern is capable of far better things than this, and there are no lack of scientific appliances. Its identity would be lost sight of in the display of science afforded. I should say this way lie fame and profit to the exhibitor.

In advertising an exhibition a short notice is best; some short reminder may also be issued on the day of exhibition. Too florid a description of the entertainment should not be given, as, if an audience feels itself deceived, it is apt to show it in a very unpleasant manner. Should there be no appliances for suspending the screen (if permission is granted), the simplest method is to drive strong staples into the two opposite walls, at such a distance from the upper end of the room as will allow of the largest sized picture that can be shown on it. But it frequently happens that the walls are not allowed to be interfered with; in such cases I know no better plan than to procure four light poles, a little longer than the height of the room. Tie them together in pairs, within a few inches of their tops. Having placed a case or box, heavily weighted with stones, bricks, or other heavy substances, near each wall opposite each other, and at that part of the room where the screen is required to be erected, tie a cord securely to one of these, erect a pair of poles, separating sufficiently their lower ends; pass

the cord over the angle formed by the junction of the poles, tie it to them, then erect the other pair on the other side of the room; carry the cord over them also, and tie it to them; then bring it down and secure it to the heavy-weighted box on that side. When complete, the whole will resemble the scaffold of a rope dancer. If the weights at the sides are sufficiently heavy, it will be very firm and strong. Should the poles, from being too long, straddle very wide apart, it will be best to tie them together at their lower ends, lest they might slip.

The screen is best made of fine sheeting. This can be procured three yards wide. Any joint should not form a hem, but be sewn together edge to edge, otherwise there would be a dark line down the picture when shown through it. Jaco-net muslin, and even this varnished, have been recommended; but when too transparent a substance is used the effect of the picture is marred (when showing through) by points of light appearing in it. I remember seeing the picture of a fierce looking Turk thus exhibited; he certainly looked a regular fire eater, for he appeared to have one in his stomach.

The screen should have a strong tape bound round it, and to this, at the upper side, should be firmly sewn a series of rings to suspend it. The cord before mentioned must be passed through them, and the ends of the screen strained tight, and tied to the poles, to prevent bagging. The lower corners should also be tied to the boxes on the floor; thus it may be nicely strained and placed quite vertically; then be wetted with a plasterer's brush or a sponge, beginning always at the top. Do not allow a wet screen to be dragged over a dirty floor, otherwise it will become stained. Should it be too high for the room, put it up from the bottom; never allow nails to be driven through it anywhere but through the hem at the sides; always be particular in keeping it in good order, and free from stains.

The proposed dimensions of the picture will govern the height of the platform and support for the lantern, and also its distance from the screen; in all cases the nozzle of the lantern must be so raised and directed to that point on the screen where the centre of the picture should appear. For small rooms a substantial kitchen table with a packing case upon it will serve, but for larger places a temporary platform must be erected; this must be made firm and substantial, as every vibration will mar the effect of the pictures.

As the human eye can only command a certain angle of vision, it follows that the spectator must be at a certain distance from the picture to be able to take in the whole of its details at one glance: this is about the length of the picture distant from it; therefore, too large a picture should not be attempted in a small room, otherwise those in front will see it imperfectly, or the space for the audience will be very circumscribed. Chairs are generally used as front seats, forms for those in the body of the room, they being so arranged as to rise higher and higher as they recede from the front, so that all may see without discomfort. Should there be a moon, or the windows be low, they must be blocked up with everything available; brown-paper tacked to the frames serves admirably well.

A good fire should be made in the room, not only for the purpose of making the oxygen gas, but also to bring the temperature of the lenses and slides as near to that which the room will be when filled by the audience, as possibly, should this not be done, their breath will settle over everything like a mist, spoiling the whole effect, prove a trouble and annoyance, and be almost impossible to be got rid of. Hints in my next of how to show the pictures.

ON BLISTERS IN ALBUMEN PRINTS.

BY A. L. HENDERSON.*

I AM not aware of any failure in connection with photography of a more tantalising character than blisters in albumen prints. The causes are somewhat numerous. A ream

of paper may be tried and found apparently perfect, and matters may go on smoothly enough for a time, when suddenly blisters will arise and mar several, if not a whole batch of, prints. When dry, some of the smaller blisters disappear, and, when mounted, appear perfect enough; yet I have had prints returned months afterwards cracked up in the most extraordinary manner. I hope, in the discussion which will follow this short paper, that we shall come to definite conclusions as to the causes and cure of blisters.

Cause the first is, I think, almost beyond the control of the operator. The fault lies with the manufacturer of the paper; *i. e.*, the paper is too highly sized, which prevents the albumen from permeating the fibre of the paper. With such paper, and the albumen rather thick, blisters are almost sure to follow. Blisters from this cause may be partially relieved by keeping the paper in a damp place and using a bath weak in silver and other nitrates, but with the addition of a little glycerine, sugar, or honey.

Cause the second: Too strong a sensitizing solution. On several occasions I found that my printers had left the bath exposed in the sensitizing tray nearly all day, and in consequence the sensitizer had increased to nearly double the strength, and blisters followed. The cure in this instance is obvious, *viz.*, to weaken the silver solution.

Cause the third is the most troublesome of the manageable or curable blisters—that is, those arising from the varying temperature of the solutions and water employed in the final washing. I have found a sudden change of wind produce blisters. I can only account for it in this way—that the water in the reservoir had decreased in temperature compared with the fixing and toning bath. After the prints had been in water all night blisters were found, although at night, before washing, there was no appearance of them. I may here state that freshly-dissolved hypo is several degrees colder than the washing water, and photographs should not be fixed in hypo newly dissolved unless it is warmed. The cure in this case is to keep your solution and water at an equal temperature.

Cause fourth: An acid toning and an alkaline fixing, or *vice versa*. When this occurs effervescence is set up, and carbonic acid gas is liberated in the paper, which separates the albumen from its support in patches. Cure: keep your solution in one condition, either alkaline, acid, or in the proper form—neutral.

Cause fifth and last is one not often met with, *viz.*, sulphuric acid or sulphates in the printing bath. I have found traces of sulphuric acid in the nitrate of silver. I have also added free sulphuric acid, as well as sulphates, to the sensitizing solution, and blisters were invariably the result. Cure: add nitrate of barytes until all the precipitate of sulphate of barytes is deposited. When added to the bath this nitrate imparts peculiar properties to the finished print which is difficult to describe.

As this paper is to open a discussion, and my experience being limited compared to some of my brethren here, I leave the subject in their hands, with the full conviction that it will receive the attention it deserves.

ON THE PREPARATION OF MICRO-PHOTOGRAPHIC DESPATCHES ON FILM BY M. DAGRON'S PROCESS.

BY H. BADEN PRITCHARD.*

LITTLE more than a year ago the victorious Germans, striking blow after blow, and never pausing once in their triumphant career, marched straight upon Paris. Surely and swiftly did the relentless Teutons proceed to surround the city; and day by day did the means of exit and ingress become fewer and more difficult, until at last the metropolis was cut off from the rest of the Continent, and isolated as effectively as a bare rock in mid ocean. Even the telegraph wires, buried deep under the sod, or sunk in the mud of

* Read at a meeting of the South London Photographic Society, Dec. 14.

* Read before the Photographic Society of London.

the Seine, were grubbed up by the wary foe, who left their antagonists not one single line of communication open. So complete, indeed, was the isolation, that the head of the Government, M. Gambetta, who had confidently thought to give his instructions, as usual, from the capital, was compelled to make good his escape in a balloon, and to establish his head-quarters in some more favourable locality.

But although the balloon afforded a means of communication with the provinces, the Parisians were powerless to obtain replies to their messages, and were ignorant, therefore, whether the mails "par ballon monte" ever reached their destination. Pigeons were sent out in the balloons, and these, loaded with precious documents, were thrown up at Tours and other places in the hope of their returning home. But the pigeons were badly trained, and the cold too intense for them to fly with certainty, and scarcely a single message reached Paris in this manner during the early part of the siege. The Parisians were in truth sorely pressed for a means of communication; and never, forsooth, did the old proverb that "necessity is the mother of invention" appear more forcible than when M. Dagron came forward with his process of producing micro-photographic despatches upon an imponderous film. The members of the Government, be it said to their praise, at once appreciated the value of M. Dagron's invention, and speedily furnished that gentleman with means to leave the city, and to take with him apparatus and requisites for his work. Two balloons, appropriately christened "*Daguerre*" and "*Niepee*," were despatched on the 10th of November; but only the latter escaped the enemy, and then only with the loss of some of its valuable freight. There is but little time now to enter into a detail of the adventures and vicissitudes experienced by M. Dagron and his colleagues on their perilous landing in and journey through an occupied country. On their descent from the clouds, they had barely time to assume the blouses and caps proffered by the friendly peasantry, and to place the apparatus in a couple of waggons, before the Prussian cavalry swooped down upon them; one of the vehicles was at once captured, as likewise the balloon, and it was by good fortune only that M. Dagron and his friends escaped with some of the valuable instruments. These, placed in barrels, were conveyed by means of a Prussian permit for the transport of wine through the enemy's lines, and were at last landed safely at Tours on the 21st of November.

And now, before describing the process, just one word regarding the service that science, in the form of the camera and microscope combined, actually rendered to the French Government during the trying moment. From first to last about 50,000 despatches, or, in other words, half the number actually sent off by pigeon, reached their destination; and so expeditiously were the films prepared, that the messages seldom remained in the authorities' hands more than twenty-four hours. The service was quite open to the public, who for the charge of one franc could forward a message of some dozen words to a correspondent in Paris; and one could always rely upon the fact that, at any rate, every other despatch sent would reach its destination. An extract taken from one of the films will show the nature of the despatches:—

"Lille, 39 Jany.—Planque, 19 bertin, aymar convalescent, fernand souffrant brest, tout reçu lettres, fleurs, merci tourjours, courage, embrassements, vous mere venir—Legend | Defontaine, 14 boulevard montmare, reçois lettres, santés excellentes, oncle, tante, moi, bruxelles, éris, rue grand hospice 38—Léonie Defontaine | Rheims 15. jeuneurs, paris, reçu lettres 22, bonnes nouvelles, metz, aussitôt possible arriverai paris avec benedict seulement, enfants resteront—Fanny |—"

One example may be quoted to show the very prompt manner in which the correspondence was oftentimes conducted. Requiring some chemicals, and especially a little pyroxylin, for photographic purposes, M. Dagron, not being able to procure the same at Bordeaux, sent an order for

them to MM. Poulleuc and Wittmann in Paris, on the 18th of January; on the 24th of the same month, six days afterwards, the goods were lying at his disposal at Bordeaux having been forwarded, according to instructions, by the first balloon. The pigeon in this instance required only a dozen hours to traverse the distance from Poitiers to Paris.

These are broad, unquestionable facts; and we will now proceed to detail how they were accomplished. As before stated, the pigeons were ill-trained, the weather was unfavourable, the bombardment around Paris was incessant, and consequently but very few, probably not more than three or four per cent., of the winged messengers ever reached their destination. Under these circumstances it was obvious, in order that a dispatch should arrive safely, that a great number of copies should be forwarded; and this, of course, had to be done. Twenty, thirty, and sometimes forty times was the same message sent off, the despatch being, indeed, repeated until its reception was advised from Paris. In truth the whole 50,000 despatches safely received might all have been carried by a single pigeon; but the actual number of copies of messages sent off probably amounted to upwards of a million. The weight of the films was quite unimportant; each pellicle, containing three or four thousand messages, and measuring 30 by 55 millims., weighed but three-quarters of a grain. Twenty such pellicles were rolled into a quill tube, and usually formed the freight of one pigeon, the quill being attached to one of the feathers of the tail.

M. Dagron pledged himself to the French Government to reproduce upon the film two hundred squares or divisions of printed matter, each one of a thousand words, per diem. The messages to be transmitted were in the first place abbreviated as much as possible, and then printed in clear type upon sheets of transparent paper, each containing a dozen divisions or pages. These sheets were cut in halves, and each half sheet placed in contact with a film of dry collodion in a printing-frame. In this way six pages of matter were reproduced at one time clearly and legibly, with an exposure of a couple of seconds only, the printing being produced by development. The glass plate was then cut into six portions, each containing one page, and these were put one after another into the microscopic camera to be copied. The apparatus contained as many as twenty microscopic lenses, so that in two exposures forty copies of each division were produced upon a sensitive film.

This film was subsequently removed from the glass by means of collodion containing a small proportion of castor-oil, the pellicle peeling off the surface in a very easy and perfect manner, although, naturally enough in this manipulation, some amount of skill and practice is necessary. So delicate and free from structure is the film, that the diminution may be carried to the greatest extreme without the material itself interfering in any way with the minute characters; and its transparent nature is moreover a most valuable property. With paper, or substance of that kind, the fibre and structure of the surface necessarily prevent the production of a clear image when the latter assumes very minute proportions.

Arrived in Paris, the precious little films were flattened out, placed between glass, and magnified by means of an electric light, the messages being thrown upon a screen in a readable form. Clerks copied down the despatches, and forwarded them to their destination; but subsequently this method was improved upon by substituting for the screen a sheet of sensitive paper, on which the enlarged type was photographed; and the sheet of printed matter thus obtained was then cut up and distributed.

So efficiently had M. Dagron organised his establishment at Tours, that despatches were sometimes actually sent off by pigeon within five hours of their receipt by the Postal authorities, and this, be it remembered, in the most unfavourable portion of the year for photographic operations. So rapidly, indeed, was the work proceeded with, that upon the day of the declaration of the armistice there remained not one single message on hand to send into Paris.

ALBUMEN APPLIED TO PHOTOGRAPHY.

BY W. DE W. ABNEY, R.E., F.R.A.S.*

THOUGH I dare not hope to be able to give much fresh information on the subject of albumen applied to photography, yet I venture to think a few remarks on it may recall to the minds of some of the Society certain peculiarities in its application that are worth attending to.

The first point I propose to touch on is the sensitiveness, or otherwise, that is imparted to the collodion film by albumen as a substratum. I have made a large series of experiments on the subject, and think that (at all events to my own mind) I have cleared up all doubts on the subject.

First, with wet plates. I prepared a large series of plates with different strengths of albumen, some iodized and others uniodized, in every case coating one half the plate with one strength of solution and the other with another, or leaving it bare. I pitted each strength of uniodized albumen, as given below, against every strength of iodized. I took three proportions of albumen and water in both cases:—

- | | |
|--------|---|
| No. 1. | that diluted with half its bulk of water. |
| No. 2. | " " " 10 times " |
| No. 3. | " " " 100 " " |

After a variety of experiments, I found that the best strength of iodide to give to the solution was $3\frac{1}{2}$ grains to the ounce of albumen.

I found that with No. 1. solution, whether iodized or uniodized, there was one prime objection—namely, that large blisters occurred, which rendered it totally unfit for a substratum.

With old collodion with free iodine and bromine in excess, the *iodized* substratum worked as sensitively as without any substratum, but gave more intensity; but with a newer and thicker collodion the iodized substratum gave less sensitiveness, whilst with collodion of proper working colour the result I recorded was again an increase of sensitiveness. Probably in the first case the iodine was carried into the albumen film, rendering it of proper colour, and thus more sensitive.

With the uniodized solution of No. 1 I found that the old collodion gave inferior sensitiveness on that portion of the plate which was albumenized, whilst with the new and the other specimen the sensitiveness was not impaired to any extent.

Another fact worth recording here is that, the more rectified the solvents of the collodion, the more marked was the difference between the portions of the plate coated and uncoated with the film of albumen. I lay this to the fact that the water in the collodion has the property of softening the film of albumen and carrying on to the film a portion of the iodides. To try this, two plates coated with uniodized albumen were flowed with two samples of collodion, one made with nearly anhydrous solvents, whilst to the other had been added a maximum quantity of water. On carefully removing the films of collodion and sensitizing the albumen, the difference was at once apparent.

Taking No. 3 substratum next, I found that the sensitiveness was in no ways assisted either by the iodized or plain albumen, beyond getting slightly more *density* in the first than in the second case.

No. 2 I found a mean between the two. When albumen is coagulated by heat I find that there is absolutely no difference in the sensitiveness or density. I lay this to the fact that, although coagulated albumen will absorb water, there is not sufficient in the collodion to cause the film to swell and open its pores; whilst in the case of the non-coagulated the pores are easily opened by the slight quantity of water, and the iodizers are carried into it (in the case in which the substratum is uniodized). In the bath the silver solution penetrates lastly to the substratum; consequently the iodizers in the film of collodion are converted into iodide of silver *before* the pores of the albumen

are opened, and before it can attack the components of the albumen itself. Reasoning from this it follows that no iodizer, except that mechanically mixed, can find its way into the coagulated albumen.

With dry plates I found that the iodized substratum gave more sensitiveness than those on which no substratum was brushed; whilst that on which the uniodized solution was brushed was slightly less sensitive. In both cases the difference was much more apparent in the strong solution (No. 1). May I venture to offer an explanation of this, first taking the case of uniodized albumen? When in the bath the albumen gets moistened and swells to a certain extent. When the preservative is applied it forms a sort of varnish over the surface. It absorbs moisture from the film as it dries. With the moisture is absorbed into the film part of the albuminous matter. The iodide of silver, being still mobile, is separated into its ultimate atoms by the albumen, and may be considered to be embedded in a film made up, to a certain extent, of collodion and albumen. Now a silver-iodized albumen film, we know from experience, is less sensitive than a silver-iodized collodion film. Consequently a silver iodide embedded in a mixture of the two produces less sensitiveness than if embedded in the collodion alone. Long washing here would produce the same result in a slightly different manner. In this case the albumen will partly dissolve into the pores of the film, unless previously coagulated by heat. I think that this remark applies also to the preservatives used as well as to the albumen, and that in a great measure the slowness of dry plates may be traced to this cause.

With the iodized film this action can take place in a less degree, as the albumen has a work of its own to perform, namely, to keep its iodide in its place. Any slight increase in rapidity, I think, arises from the increased thickness of film and the consequent smaller loss of light by transmission.

Many gentlemen, I know, have arrived at different results; but I think, if the conditions under which they worked are considered, they may find that their results and mine may not be opposed to one another. From my experiments I learn the following:—Use as dilute a solution of albumen as is consistent with adhesion; and if it be necessary to use one stronger, iodize it. I think it is unnecessary to enter into all particulars of the strength of iodizer necessary. I recommend $3\frac{1}{2}$ grains to each ounce of albumen. My mode of using the albumen is with the "Blanchard brush," as I described in the PHOTOGRAPHIC NEWS of July; consequently my layers of albumen are very thin in comparison with those given by flowing the solution over. I believe the albumen on a plate when brushed on is only one-third the thickness of that when flowed on. My method of mixing my albumen and rendering it fit for use may be new to some. I take powdered silica, or else very fine white sand, and add it to the undiluted albumen till it has the consistence of paste. I triturate this in a mortar, and gradually add water. The silica or sand subsides, and I decant off the clear liquid. It needs no filtration, as it is perfectly smooth and bright.

My experiments pointed out to me with tolerable certainty the cause of blisters during the development of dry plates. With the strongest solution blisters were raised resembling great lumps, whilst with the second strength they were of the size of a grain of sago. With the third strength the blisters did not appear, or only as pin-points, with the exception of where the brush passed over the plate twice at any one part. This last part proved to my mind satisfactorily the "raison d'être" of this enemy. I took layers of coagulated and dried albumen of varying thicknesses, and marked their expansions in water. In some cases they expanded $\cdot3$ inch per inch when free from the glass, and that they absorbed from three to four times their bulk of water. My next attention I paid to the glass. I found that all glass is microscopically smoother in some parts

* Read before the Photographic Society of London.

than others, particularly patent plate. I reasoned to myself thus—that if smooth patches in the glass caused blisters, then the rough portions would be those not affected. I roughened a piece of glass in one spot and applied the albumen. I found that on that portion of the plate which was roughened no blisters appeared, whilst on the other parts great wheals put in an appearance. My argument seemed to hold good. Naturally on those parts of the plate which were rougher than others, the albumen would adhere best. Though the degrees of roughness in good glass are inappreciable to the unaided eye, yet the expansion of the albumen would be a good tell-tale of such inequalities. Tracing the blisters “*ab initio*,” then the albumen when wetted would try to expand, and those portions which had the least adhesion would give first to the expansion. A single point would start the blister; it would gradually rise in the shape of a segment of a sphere or ellipsoid, these forms being the most easily developed by the force of expansion acting equally around a nucleus. One other cause of blisters I should mention, where very dilute solutions of albumen are used. The surface of a perfectly clean glass appears greasy in certain parts. The albumen will not hold to such places, but leaves bare patches. In developing dry plates these always appear as blisters.

When dilute solutions are used, the adhesive force is greater, or at all events equal to the force of expansion, and the swelling takes place only in a direction perpendicular to the surface of the glass.

A further proof of the truth of my theory is this:—Col. Wortley recommends his plates to be developed with a large quantity of spirits of wine in preference to water alone, and he rid himself of his blisters through this mode of development. He uses a stronger substratum than I do, and uses or used a larger quantity on each plate. Spirits of wine does not expand the albumen; consequently he frees himself, in a measure, of blisters.

One word more about substrata. It should be remembered that salts of silver do not *coagulate* albumen, but only precipitate them. I think more investigation in this line is required. The collodion leaving the surface at such parts, a dilute solution of ammonia, applied first, rid the plate of this fault.

I have trespassed almost too long already; but before closing I must refer for a moment to albumenized paper. I have lately been analyzing papers of different makes. In sheets of paper (in the state in which they came from the manufacturer) which I have tested, I have found 1·2 on an average of uncombined sulphur present. The same amount of sulphur is found in a perfectly washed print; but I think the chief feature in the analysis lies in the fact that the sulphur is in the albumen *before* hyposulphate of soda has been in contact with it. May not this account in a great measure for the instability of some of our silver prints? I find that, on an average, in one sheet of paper which has been printed upon toned, that there are only $\frac{3}{4}$ of a grain of metallic silver, or the astonishing result of more sulphur in the paper than in silver. The silver present, if it all combined with the sulphur (which it might do after being in intimate contact with it for a long period), would leave but little else but sulphide of silver. The result would be a fading in the print. Mr. V. Blanchard called my attention to the fact that some time ago he had pointed out that strongly smelling paper gave more permanent prints than those prepared on paper less objectionable to the nose. When albumen decomposes, it parts with its phosphorus and sulphur as sulphuretted hydrogen and other foul-smelling gases. In the strong-smelling paper, consequently, at all events a portion of the sulphur had been dissipated; and the natural conclusion to be arrived at would be that the prints would be more stable, which Mr. Blanchard's experience confirms. I think our albumenized paper manufacturers might ponder over this and try to rid us of this unattackable enemy. I throw out one suggestion. If albumen be precipitated by potash, most of the sulphur is separated

from it, and the albuminate of potash redissolves on the addition of acid. Might not the watery solution from the albuminate containing the sulphur be filtered away, and the residue redissolved in hydrochloric acid? I close with this suggestion. I have still experiments on hand which may elucidate more fully what I have stated regarding the albumenized paper.

PHOTOGRAPHY AND THE TICHBORNE CASE.

In this trial the Lord Chief Justice having expressed a wish for some further information on technical points connected with the photographs, Col. Stuart Wortley was recalled and questioned by the learned judge with respect to the photographs of the young man Roger Tichborne. Having handed to him a photograph showing Roger Tichborne in a loose dress and a low crowned hat, he asked whether he had any means of forming an opinion whether it was copied from any other?

Witness—Yes; I am certain it is copied from another photograph which had been much touched since the original was taken. The light on the hat had been obliterated by touching, and the eyes have been touched. In saying that, I am assuming that the one touched from which this was copied was the copy of the Daguerreotype I saw yesterday.

The Lord Chief Justice—I wish to guard you against assuming anything. My question is one of abstract science. Is it a copy from another photograph?

Witness—Yes, it is copied from another paper photograph which had been much touched since it was originally taken.

Are there any points as to which you can make that intelligible to us?—The photograph from which it is copied had been touched by a pencil stump or pen and ink so as to obliterate the light. The eyes and nearly the whole of the face had been touched on the paper from which this photograph has been taken; also the shirt collar and the hat under the brim. The shadow under the chin had also been touched, and the moustache slightly. All these answers apply to the photograph from which this has been printed. The shadow on the coat is also a little touched on the left side.

Have you anything more to say?—No: except that it is an ordinary copy of a touched photograph.

The two well-known Daguerreotypes of Roger Tichborne, one in an oval frame and the other in a case were handed to the witness.

The Lord Chief Justice, asking the witness to look at the oval one, said—Be kind enough, discarding all you have heard or read of this case, to say whether you find anything in the photograph to show that it has any connection with this particular Daguerreotype?—I am certain it is copied from a print taken from this Daguerreotype, and touched after it had been so taken.

Can you tell us how you arrive at that opinion?—Yes, by certain technical marks which are well known. In the first place, all the folds of the neck-handkerchief are exactly alike in the way the light falls upon them.

Is there not a difference in the expression of the two faces?—Yes; that is done in the touching. The photograph has been so much touched that it ought not to be looked at as a fair copy of anything.

There is, I think, a marked difference as regards the band of the hat. Might not the photograph have been copied from another Daguerreotype, taken, for instance, at the same sitting as this one?—As nearly as a human being can be certain, I am certain that the photograph is taken from a touched copy of this Daguerreotype.

I see how it may have been done: there is an alteration in the cheek bone?—Yes, that, and the eyes, and all, have been softened down. The mouth is also slightly softened.

All that may have been produced by the alterations?—Not may have been, but, in my opinion, was produced.

Can you form any opinion (handing a photograph of the plaintiff to witness) whether that has been taken from a Daguerreotype or another photograph?—I am inclined to think it is printed from an original negative. I mean the negative taken from the original individual.

Here is another (a different photograph of the plaintiff)?—My opinion is that is also from the negative taken directly from the individual.

And not touched in any way—simply the effect of nature and the sun?—I think so.

I will hand you another. This is the vignette of the plaintiff, which Mr. Shurpen, the architect, of York, had seen in a shop window, and I thought represented the same person whom he had seen in Australia.

The witness, having carefully examined this, said—I think this is also taken from life; but the face has been extremely retouched by hand on the negative. I mean much retouched.

Can you tell whether a photograph has been copied from the original negative taken from the person, or from a negative copied from another photograph?—Certainly. I can trace a photograph

taken from life by the texture of the skin and the garments; but if one photograph is copied from another I can trace the paper of that other photograph. That is invariably the case.

If the photograph was copied from a Daguerreotype, would there be similar indications?—Yes; there would be certain indications, but less so than if it was copied from another photograph. The touching of a negative is more difficult to detect, but the tendency of the present day is to do it to an undesirable degree, as it destroys the likeness.

Mr. Pollard—Here is another photograph which we wish to put in. We will connect it with the case hereafter.

The Attorney-General (after examining the photograph)—I think my learned friend had better connect it with the case first.

The photograph was then withdrawn.

At the suggestion of the Foreman the following questions were put by his Lordship to the witness:—

Look at the Daguerreotype in the frame, and tell us whether, in your opinion, the lobe of the ear appears to be below the point where the ear forms a junction with the face?

The witness (after asking his Lordship twice to repeat his question) said—It is not below.

Have you any means of forming an opinion as to whether that would be a correct representation of the individual?—Yes.

What is your opinion?—I am inclined to consider this as a correct representation.

Of the ear of the individual?—Yes.

It has been suggested that the lobe of the ear may have extended considerably below the junction, and that a different effect has been produced by some different light. Do you find any indications of that?—No. The witness afterwards added—Allow me to remark that the bottom of the ear is unusually thick, and not prolonged; it is a coarse and fat lobe.

Not protruding or falling below the junction?—Yes.

A Jurymen—Not one that you could easily pull?—Yes. I could fancy, from the fatness of the lobe, that it was one that might easily become pendant. The Lord Chief Justice—Was it pendant when the Daguerreotype was taken?—No.

In your opinion, is the whole shape of the ear correctly shown?—I think it is.

It is on the side exposed to the light?—Yes.

Allusion has been made to pulling the ear; might it become pendant by pulling? Have you any scientific knowledge on that subject?—No. (Laughter).

You can't say whether it would or not?—No; only this lobe is coarse and fat.

You have no experience of fat ears becoming longer by pulling? (Laughter).

The witness's attention was then directed to the Daguerreotype in the case, and, in reply to questions from his Lordship, said—Here the ear is distinctly visible. It correctly represents the ear of the individual so far as the lobe is concerned. The actual point of junction to the face is hidden behind the cheek. The ear does not show a pendant lobe, but the actual point of junction is more concealed than in the other Daguerreotype.

The Lord Chief Justice—In this Daguerreotype (in the case), I see distinctly the lines (pattern) upon the shirt, and also upon the collar—at least, on one side; on the other side the lines in the collar are less distinct. I also see the lines on the band of the shirt.

Witness—I can also see the lines, but I can barely trace them on the collar at one side.

The Lord Chief Justice—Now just look at the Daguerreotype in the frame; I think you will find no trace of the lines on the shirt or collar. Is it the same, or a different shirt?

Witness—Perhaps your Lordship will allow me to explain. Daguerreotypes are representations taken in a camera on a chemical substance; exposure to light produces an invisible image on the Daguerreotype plate, which is afterwards brought out by development. If the exposure to light has been timed correctly, and the light of the portrait is properly managed, the whole representation of light and shadow, with its details, will be perfect. If, however, there has been any over-exposure to light, the following result will occur: If forty-five seconds be the correct exposure, and fifty-five seconds have been given, the extra ten seconds would have the effect of solarizing or obliterating the detail. To make this clear, I will instance a Daguerreotype landscape. The sky is invariably solarized, because the exposure necessary to give the details—the dark parts, such as the trees or houses—must over-expose the sky, which reflects so much more light into the camera.

Now we come back to the shirt. Are you able to form an opinion whether the shirt is the same in both Daguerreotypes?—I can only give negative evidence upon the point. If one had been exposed ten seconds more than the other, that would obliterate the marks upon the shirt without affecting the darker parts.

The question having been repeated by his Lordship,

Witness said—I can only repeat that my evidence is negative. I can see no detail in one, which can be accounted for, because I see sufficient solarization to obliterate the detail—the lines of the shirt, for example.

You cannot tell whether the shirts are the same?—No.

Look at the collar.—There is just a sufficient difference in the set of the collar to make it doubtful whether it is the same shirt. Your Lordship will notice that the head looks in a different way, which would account for the difference in the set of the collar.

The examination of some further photographic experts must be deferred until our next.

Correspondence.

WALLICH V. HENDERSON.

STR.—The report of the above case furnished in the PHOTOGRAPHIC NEWS of the 15th inst. is so calculated to engender an impression to my prejudice, that I must request you to grant me space to remark upon it in your next issue.

The report states that a negative was entrusted "to Mr. Henderson to produce several enameleds from." It was not so. A single copy only was ordered, and that of a specified size. Two copies were delivered; it being intimated that one was sent on approval. Both copies were purchased, however, in order to avoid a pretext for the retention by the defendant of a copy of a registered negative.

The defendant's counsel, according to the report, "argued that the picture was not copyright, as the lady had not given her consent to the registration." So far as the argument is concerned, this is true; but evidence, although not called for, was forthcoming to prove beyond question that the copyright is perfectly valid. I undertake to prove that it is so, not only by reference to the wording of the Act of 1862, but by the interpretation of the Act, offered in no ambiguous or halting terms, in an editorial on copyright in portraits, published at page 229-30 of the PHOTOGRAPHIC NEWS of the 19th May last.

The report goes on to say that the Exhibition in Conduit Street "was of a private character," and that "Mr. Henderson gave me due credit for having produced the original negative." On these points I am content to leave the public to form its own opinion. I must mention, however, as a matter of fact, that on and after the day following the soiree, and until the subsequent Monday, when the enamel was withdrawn, no notice or inscription was appended to the frame beyond the one intimating that the enameleds were produced by Mr. Henderson. Nor could such notice have affected in the remotest degree the question at issue. On this subject the Act is very explicit, declaring it penal, even in the instance of a purchased and legally assigned copyright, to attach any name, initials, or monograms, other than that of the producer of the original picture or negative, to any photographic or other copy taken from it.

Finally, the report alleges that the charge "was withdrawn." This demands an explanation. Without calling for any evidence but my own, the magistrate, after hearing defendant's counsel, suggested to the latter the expediency of arranging the matter privately; but intimated, at the same time, his readiness to give his decision on it, should it still be asked for. The withdrawal did not take place until it was intimated that the conditions offered by my counsel would be complied with.

In conclusion, it only remains for me to assure you of my conviction that the report, as given in the News, has been based on misapprehension as to what really transpired during the hearing. But for the reasons assigned at the beginning of this letter I should certainly have refrained from re-opening the subject. What I did, it became quite imperative on me to do in the interests of my sitters.—I remain, sir, yours very faithfully,
G. C. WALLICH.

Kensington, December 18th, 1871.

[We need scarcely disclaim any intention of presenting other than an unbiassed and true report of the proceedings in question. Our correspondent has scarcely noted, we think, the exact significance of the phraseology employed. He remarks that we described the charge as having been withdrawn, which would imply that the withdrawal was the act of complainant. If he refer to the report in our pages, he will find the record to be, that the case was withdrawn, which suggests the act or consent of all the parties, which is a very different matter.—Ed.]

ALBUMEN APPLIED TO PHOTOGRAPHY.

STR.—At the late meeting of the Photographic Society a paper was read by Lieut. W. de W. Abney on "Albumen applied to Photography." Owing to the number of subjects

on hand for that evening, the discussion was narrowed far more than desirable, and the reply thereto still more so. As the paper in question is likely to be published in your next number, I shall be obliged by the insertion of this letter in the same issue, to rebut a statement which I consider is wholly incorrect.

Lieut. Abney says that he has "lately been analyzing papers (albumenized) of different makes." . . . "I have found 1·2 on an average of uncombined sulphur present. The same amount of sulphur is found in a perfectly washed print; but I think the chief feature lies in the fact that the sulphur is in the albumen *before* hyposulphite of soda has been in contact with it. May not this account in a great measure for the instability of some of our silver prints? I find that, on an average, in one sheet of paper which has been printed upon and toned, that there is only $\frac{2}{3}$ grain of metallic silver, or the astonishing result of more sulphur in the (albumenized) paper than in the silver. The silver present, if at all combined with the sulphur (which it might do after being in contact with it for a long time), would leave but little else but sulphide of silver. The result would be a fading in the print." Here Lieut. Abney remarks that his attention had also been called to the fact, by another gentleman, that strong smelling paper gave more permanent prints than those papers prepared with fresh albumen. "In the strong-smelling paper, consequently, at all events a portion of the sulphur had been dissipated; and the natural conclusion to be arrived at would be that the prints would be more stable."

From my past experience of human nature I have ever found that the majority of mankind rather accept a statement as fact than trouble themselves to ascertain the soundness of its foundation; hence has arisen the many forms of superstition existing, as well as most of the popular errors, for the statement passes from lip to lip, and eventually acquires the weight of an axiom. I consider it, therefore, my duty to prevent the spread of one of these errors by giving to the photographic world the results of my experience, and so placing the matter before them as I have no doubt it really is.

Commencing with the sulphur in the albumen, I must deny that it exists in an uncombined state, for the following reasons:—

We know that nature builds up matter of primitive atoms, nature brings them together in definite proportions and special order, and man names the element or compound molecule; again, the arch-chemist takes the same proportions, but in different order, and man calls the product by another name. Again, the proportions are altered, whereupon other forms are called into existence, and other properties are conferred *ad infinitum*. We see that nature in no instance allow us to detect the free atom. Although nature runs one harmonious circle of combination, no beginning, no end can be discovered. Strange as it may appear, a nugget of gold is a *compound* of atoms.

Pre-eminently beautiful is the contemplation of the compounds formed in or by those organizations we call life. Let us but attempt to separate these atoms, and we either get an aggregation of molecules which are ponderable particles, or we get the atom in a fresh combination, wherein we cannot weigh it by itself. For example, take common resin (transparent like albumen), a substance composed of two gases, hydrogen and oxygen, united with a solid—carbon. If we ignite this resin you well know that there is a large amount of soot given off in the form of smoke; this carbon could not be recognized in the transparent resin, because it was in combination. When we analyze resin in order to find out the true amount of carbon, we take care to bring it in contact (at the same instance of disengagement) with a sufficient quantity of oxygen to convert both it and the hydrogen into compounds, one as water, the other as carbonic oxido or carbonic acid gas; this gas is then passed into a solution of potash, from the accumulated weight of which we calculate the amount of carbon there was in the resin. I could bring hundreds of other instances before your notice to prove that the elements do not exist in natural compounds in a free state. On the other hand, there is equally incontrovertible evidence that in the natural decompositions and convulsions of nature, wherein elements are disengaged or set free, that there is a law (call it polarity or what you please) determining their coalescence to form matter of more or less magnitude, as exhibited in the form of metals, metalloids, liquids, and gases, which are easily recognizable as such. Therefore, if sulphur existed in albumen in "the free or un-

combined state," it must be as a *mixture*; but the component parts of mixtures are indefinite; they are detected by the eye through the aid of the microscope, and often by the unaided vision. Yet we are told that "the chief feature lies in the fact that the amount is always the same." Such cannot be in the uncombined state.

Let me repeat my strong belief that this universe is one circle of combination and constant evolution; and could I hope in my earthly sphere to detect a free or uncombined element, I should expect to find it to be a *spirit*, not excepting the free atom of the densest of metals. At the instant of evolution combination takes place; in chemistry it is termed the *nascent state*, and, should there be no congenial element or compound with which they combine, then atom combines with atom, and is precipitated or escapes as a gas. In the case of sulphur it would be a precipitate.

Knowing, as you all do, that the elements silver and sulphur have an affinity for each other, how is it that they do not combine when the silver is in its nascent state through the evolution caused by the action of certain waves of ether (spirits) composing light? It is stated that there is $\frac{2}{3}$ grain of silver in presence of $1\frac{1}{2}$ grain of free sulphur. Let it be understood that these are enormous quantities in comparison with the quantity of each element that is capable of detection (I believe it is not limited to the millionth of a grain) by their combination in the form of a blackish-brown film or precipitate; and yet it is indirectly asserted that sulphide of silver is white, as illustrated in a faded print. I do not forget that gold and some other substances exhibit various tints in different states of attenuation, nor that, in the formation of a particular compound of sulphur and mercury, a small quantity of sulphur in excess of mercuric salt solution produces a white precipitate, and as the sulphuretted hydrogen continues to be added, it passes through many shades and colours to black, but these various sulphides distinguish it from all other bodies.

When albumen decomposes as in an addled egg, this result has taken place with a limited supply of oxygen, and hence the detestable odour of sulphuretted hydrogen. This does not take place when albumen is freely exposed to the air, as in the present instance, when separated from the yolk for the preparation of albumenized paper. Here the air has free access, and other compounds are formed, conspicuous amongst which is butyric acid, a volatile compound having a strong rancid smell. The formation of this compound having been brought about by fermentation, the matured cells or germs are present in a dormant state in the dried albumen, on the surface of such bad-smelling paper, ever ready to carry on the transformation of a further portion of the albumen into organic acid and other products by the simple addition of aqueous particles, which are almost universally present. Now it so happens that this offensive smelling acid forms a white compound with silver, and being, at the instant of production, in immediate contact with the silver of the photograph, is it not more reasonable to attribute the fading to its action than to sulphur—or, rather, than to expect a reversing of nature's laws, or assuming that sulphide of silver is white in this isolated case?

I know of instances of the latter, faded works of high standing names, whose earlier ones stand unchanged. I have strong circumstantial evidence that these faded ones were printed on offensive smelling paper.

I do not wonder that careless photographers, and those employing cheap and, consequently, incompetent assistants, prefer the bad smelling paper, as it is said to be easier to work than the pure and fresh albumenized paper. Surely no such unscientific reason, did it actually occur, will satisfy the conscientious worker, whose main object is perfection of his work, in any branch of art or science.

Having, as I believe, plainly shown the fallacy of one popular idea of sulphur fading, repeated by several great masters in photography, I trust that this letter may have served the purpose and thus be an apology for its length.—

Yours, &c.,

F. W. HART, F.C.S.

December 20th, 1871.

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THIS Society held its annual meeting on the evening of the 14th inst., the Rev. F. F. STATHAM, M.A., F.G.S., presiding.

The following gentlemen were balloted for and admitted as

members: Messrs. John Spiller, John Henderson, and John Stuart; after which the Council's report was submitted, as follows:—

Annual Report.

Your Committee, in presenting the Annual Report of the South London Photographic Society for 1871, have much pleasure in congratulating the members upon the strong vitality which has characterised their proceedings during the past session, and which holds out the prospect of a career of great interest and usefulness for the future.

Your Society has also, during the past year, been increased by the accession of many members of the profession who, by their inventive and manipulative skill, have caused their names to be well known, and have thus considerably strengthened the roll of members which has hitherto given so much importance to the South London Photographic Society in the history of our art-science.

Your Society has also been again selected as the medium for making known to the photographic world some important and exceedingly useful inventions. Amongst others may be mentioned the graphogenic apparatus, by Mr. B. J. Edwards.

The meetings have generally been well attended, and valuable discussions have ensued upon the following papers, which have been read during the session, viz.:—"On Long Exposures in Relation to Expression," by Mr. Edwin Cocking; "On the Coming Season, and What we shall do in it," by Mr. E. Dunmore; "On Cook's Patent Camera," by Mr. C. E. Elliott; "On Working the Wet Collodion Process without a Dark Room or Tent," by Mr. B. J. Edwards; "On the Production of Small Portrait Negatives Suitable for Enlarging," by Mr. F. Foxlee; "On Carbon as a Base for Finished Work in Oil, Water, &c.," by Mr. G. Croughton; "On Hyposulphite of Soda, or Cyanide for Fixing," by Mr. S. Fry; "On Blistering of Albumenised Paper," by Mr. A. L. Henderson.

One of the meetings (as heretofore) was devoted to the exhibition of photographs produced by the members, and another evening was given up to a conversation upon the photographs by foreign artists in the International Exhibition, as also, upon the same occasion, Mr. T. Sebastian Davis, V.P., made some excellent remarks upon the subject of "Facilities for Outdoor Photography by the Wet Collodion Process."

During the session apparatus, photographs, and other interesting matters have been exhibited by the following gentlemen:—Mr. Elliott, Mr. Howard, Mr. W. H. Price, Mr. Tesch, Mr. Barnes, Mr. Foxlee, Mr. Dunmore, Mr. Hunter, Mr. Croughton, Mr. Johnson, Mr. Henderson, Mr. J. T. Taylor, and Mr. G. Wharton Simpson.

It will thus be seen that the members of your Society have had a very wide range of subject matter brought before their notice, and with every prospect of the forthcoming season being equally productive.

Your Committee trust that the progress of our art-science will still be indebted to the exertions of the South London Photographic Society.

This report was accepted, and it was agreed to receive the Treasurer's report at the next meeting.

The following were elected to serve as officers and committee for the next year:—*President*—Rev. F. F. Statham, M.A., F.G.S. *Vice-Presidents*—Messrs. Sebastian Davis, G. Wharton Simpson, M.A., F.S.A., and V. Blanchard. *Committee*—Messrs. Croughton, Dunmore, Brooks, Elliott, Henderson, Howard, Hunter, and Price. *Treasurer*—Mr. Noel Fitch; and *Secretary* Mr. Edwin Cocking.

Mr. HENDERSON then read a paper on the blistering of albumenised paper (see page 605).

After some observations by the Chairman,

Mr. CROUGHTON spoke of one sample of paper that gave blisters having been cured by treatment with methylated spirit.

Mr. BROOKS considered that blistering of albumenised paper was greatly owing to the paper being unequally dry before albumenizing.

Mr. COCKING asked how the washing water was kept. His own cistern was made of cement.

Mr. HENDERSON said that he kept his water in metallic tanks. He further stated, in reply to an observation, that he was certain that many cases of blisters arose from acid toning and alkaline fixing. Some makers, he was aware, kept their paper in a damp cellar previous to albumenizing it, so as to soften the sizing of the paper in a slight degree.

Mr. FOXLEE spoke of some examples of paper which gave small blisters by myriads when placed in the hypo. When

such blisters were removed, they showed a brown stain underneath, evidently a combination of silver and sulphur. Another kind of blisters arose when the prints were placed in the washing water. The more highly the paper was sized the larger would these blisters be, and the greater their number. A rolled paper gave the most. Old and decomposed albumen was a more fertile source of blisters than when new albumen was used.

Mr. HOWARD recollected reading some time ago, in some of the journals, that if a print were not transferred at once from the hypo to the water, but were at first placed in a much weaker solution of hyposulphite before being washed, no blisters would occur.

Mr. BROOKS corroborated this from his own experience.

Mr. FOXLEE spoke of having once met with a sample of paper that nothing would cure of blistering but an acid hypo bath. The cure being worse than the disease, he did not adopt it, except by way of experiment.

Mr. C. E. ELLIOTT said that the desire for a highly glazed surface was the primary cause of blisters. The paper was hard sized, so as to keep the albumen on the surface, and as it had an imperfect hold of the paper, it was liable to rise in blisters. There was much impure hyposulphite of soda in the market, and that he considered was also a fertile source of blisters.

Owing to the lateness of the hour, it was agreed that the discussion be adjourned till next meeting; and after a vote of thanks to Mr. Henderson, the meeting separated.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE monthly meeting of this Society was held at the Memorial Hall on Thursday evening, the 14th inst., Rev. Canon BEECHY, M.A., President, in the chair.

The minutes were read and passed, and Messrs. J. B. Robinson and Robt. Laing elected members.

The meeting then adjourned to the large hall to hear a lecture by Mr. Brothers on the "Solar Corona," illustrated by means of the lantern. Mr. Brothers gave a short history of solar investigation, and showed photographic copies of a number of drawings of the corona made by Whipple and other scientific men, and pointed out their points of coincidence with his own photographs taken at Syracuse, and demonstrating that the corona belongs to the sun, and to nothing else.

The lecture was exceedingly interesting and instructive to the large audience present, and Mr. Brothers was frequently applauded.

At the close of the lecture Mr. Coventry exhibited a number of transparencies on the screen, including some fine pictures taken on collodio-albumen plates by Mr. Okeli, in South America.

C. ADIN, Hon. Sec.

Talk in the Studio.

TOTAL ECLIPSE OF THE SUN.—Lord Lindsay sends the following to the *Daily News*:—"I have received the following telegram from Mr. Davis, photographer, who accompanied Mr. Lockyer's party to Ceylon:—"Five totality negatives, extensive corona, persistent rifts, slight external changes.—Mangalore Bekul."

JUDICIAL PHOTOGRAPHY.—Under this heading M. Adolphe Beau sends the following to the *Times*:—"Sir,—The Tichborne case having prominently brought forward photography as a judicial evidence, may I ask a small space in your valuable paper to express that which a long experience in photographic portraiture induces me to conclude on the subject? Photography is, unfortunately, considered by the general public as a mechanical art, giving, I should almost say, fatal results; hence the conclusions drawn with regard to likeness. At all events, the mere experience of every one ought to give sufficient proof that its productions, in many cases, not only differ essentially from nature itself, but are oftentimes a misrepresentation of it. What the public little know is what diverging representations effects of light may produce. They may, indeed, change the form; so that a sitter placed in a definite position can be represented in many different aspects, and that without either changing in any way his attitude or the relative position of the camera. However strange this may appear at first enunciation, it is nevertheless perfectly true, and proves more than many a demonstration that photography properly understood should be rather the study of the effects of light than that of

cameras and chemicals—alas! considered too much as the means for producing likenesses. I will quote a few instances to illustrate what I advance. For example, a face lighted with the sunlight will at a certain angle show some deep shadows, which, the sun being obliterated by a passing cloud, would be annihilated, and therefore modified into an even surface. In that case the representation of the features would appear more full, and should some eventual light be thrown from underneath by the reflection from the pages of a book, or the white of a shirt front, or a looking glass, a certain flatness would be the result. It would require pages to explain these mere incidental conditions, which are only a portion of a great many, and I think it unnecessary to insist more for the present. I hope, however, I have explained that a face placed in a definite position will, when lighted with the sunlight, show certain shady lines, that will give it—say a more oval appearance, while the penetrating soft white light of a passing cloud would, in erasing, as it were, those shady lines, make it show more round, and if any reflected light was brought to bear upon it it would assume a flatter aspect. Photographic portraiture, artistically and physiologically practised, subjects the same features to so many transformations that Proteus of yore might by comparison incur the reproach of sameness. *A bon entendeur, salut!*"

PHOTOGRAPHIC COLOURING.—We quote the following from the police reports in the daily press:—At Marylebone Police Court on Thursday an application was made to Mr. Mansfield by a Madame Leroux for his advice. From the statement made by the applicant it appeared that an advertisement was inserted in a low-priced daily paper in these words: "Persons wanted to colour photographs. No previous knowledge of painting required. All photographs will be sent free of any expense by book-post. Specimens on view daily from 10 to 4, or a list of prices will be sent on receipt of a stamped directed envelope —, photographic publishers." In answer to this advertisement, applicant's niece went to Messrs. —, who asked to see some specimens of her painting. They sold her a box containing a few water colour paints, and charged her 12s. 6d. for it, although they did not insist upon her using their paints. Two photographs were submitted to the Messrs. — for their approval. One was coloured by applicant's niece with the paints sold by the advertisers, and a second coloured by applicant's brother-in-law, a Belgian artist, who painted it with the colours he ordinarily used himself. Messrs. — declined to employ applicant's niece, on the ground that her colouring was not satisfactory, and she then, by the advice of her friends, asked to have the money which she had paid for the box of colours returned to her, because the paints were of the commonest sort and not worth more than a shilling. Messrs. — refused to return the money. The box of colours had been shown to the salesmen of several well-known colour manufacturers, who all agreed that a shilling would represent their full value. Inspector M'Hugo stated that the advertisers had been carrying on business for a long time, and were looked upon as a respectable firm, but as numerous complaints of a similar nature to the present one had been made to the police, the applicant had been recommended to come to the magistrato for his advice. Mr. Mansfield said the case was not one with which he could deal as a criminal charge. Applicant must take her remedy in the county court, where the judge would have power to order the money for the paints to be returned, since they were evidently not worth more than a shilling.

To Correspondents.

AF DAVID.—We have not seen any of the class of coloured pictures you describe, nor heard of them; but we should imagine, from your description, that they are coloured with some kind of transparent colours—probably aniline colours—and then varnished. This would give to the un instructed eye something of the effect of oil painting, and would be, as you mention, very rapidly executed.

W. W.—Messrs. Anthony add two drachms of powdered alum to the amount of solution, made by dissolving three pounds of nitrate of silver. 2. The phrase "honeycomb markings in the collodion film" is somewhat indefinite. Sometimes the cracking of the film is in honeycomb markings; sometimes a gelatinous collodion laced with cadmium assumes markings somewhat of that kind for irregularity in the thickness of the film. 3. You may continue to use the carbonate of silver in the bath.

F. R. (BEDFORDSHIRE).—A photographer who makes a copy of a copyright photograph is liable to all the pains and penalties involved in the Act, no matter by whom he may be ordered to do it. Receiving an order from another person is not admitted an excuse for breaking the law. Thanks for your experience regarding albumen, which we shall note.

J. W. S.—We have never experimented in the matter you name. You do not state what character of colour you desire. It is probable that some of the aniline colours will best answer your purpose.

PALETTE.—We know nothing personally of this matter, but should imagine sale of the boxes the chief object. A complaint was recently made before a magistrate by some who felt victimized in having made the purchase and secured no employment.

GREAVES.—The coarse effect, which is due to meanness, may arise from several causes—most probably the use of the toning bath too soon after mixing. The use of a bath containing nitric acid is sometimes the cause, and sometimes the quality of the paper.

R. DIGITON.—The YEAR-BOOK will be sent when ready. The plan of daily filling up the bath, we have no doubt, will work well.

J. S.—We do not know of any cement strong enough to join the edges of a broken negative firmly. You may cement the broken pieces upon another plate of glass by means of Canada balsam, and, by printing in diffused light, avoid the breakage showing much.

D. D. (Belgian Subscriber).—Chrome alum is the sulphate of the sesqui-oxide of chromium. 2. We have had no personal experience with the special lenses you name. The manufactures are about equally good. 3. We do not know the composition in the glass in question.

C. JENNER.—The stains are the result of traces of the fixing solution, left in and under the film. The hyposulphite solution with which the negative has been fixed has been saturated with silver, and traces of it have been left in the film. This being decomposed by the action of light, causes the mottled brown stains which are present in the film of the negative.

KNOW-NOTHING.—Rapid development is most suitable for lantern transparencies. A good lantern transparency does not require either so much exposure or development as an ordinary transparency. When finished and laid on a piece of white paper, it should appear as a good positive, the blacks quite black, the lights quite clear and without fog. See recent article in the PHOTOGRAPHIC NEWS by Mr. Blanchard, as to the best mode of producing and toning such transparencies.

A. C.—We have not seen examples with the name you mention, but we believe it to be the cameo vignette or cameo medallion. 2. Good paste is as good a mounting material for carbon prints as any. 3. The method you refer to is by no means the best to secure the end in question. Read article on page 62 of our last YEAR-BOOK. 4. The carbon prints you enclose are very encouraging examples as a beginning.

SEPTIMUS HENDERSON.—No account of the lady's mode of working has ever been published, and we only know common and indefinite report to the effect that she uses a very slow and comparatively speaking imperfect lens, requiring several minutes' exposure for each portrait.

AN EXPERIMENTALIST.—We are much interested in your specimens, and will take an early opportunity of giving the subject more full and careful attention than we can under the immediate pressure of duties at this period of the year. We may remark that we doubt very much whether any existing patent will effectually fetter you in working out your plans. In the meantime, if you send us more details, we can form a more accurate opinion, and will express it when we have examined the matter more fully.

JUSTITIA.—In our own experience some printed pictures lose most in toning and fixing. The subject is worth discussion, and we will shortly open the question in our pages.

A. G. G.—We are not familiar with the substance ourselves. As you will see, the allusion is in a quoted article from a foreign source. We believe it is a South American product. It should be spelled Carmanba wax. You will find it referred to in Brandes' Dictionary. 2. You will find some account of the matter on p. 601 of our last Volume. 3. We have no practical experience in the manufacture of a xyloidine which shall be soluble in benzine. We doubt whether any sample is so soluble without the aid of ether. We should proceed with an experiment on starch in the same manner as on cotton. We have much pleasure in giving you any information we can.

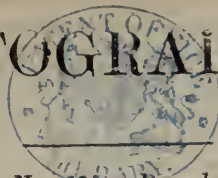
J. MARTIN.—We shall have pleasure in answering the reference.

R. TUDOR WILLIAMS.—Thanks. If not in the YEAR-BOOK, in the NEWS. Rather late for the former.

Several Correspondents in our next.

Advertisements and communications for the Publishers should be forwarded to the PHOTOGRAPHIC NEWS Office, 15 Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.



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PHOTOGRAPHY AND WOOD ENGRAVING.

MR. T. J. GULLICK, in his very excellent and comprehensive report upon the present state and progress of wood engraving as illustrated at the late International Exhibition, remarks on the application of photography as an aid to the draughtsman on wood, which may interest photographers by the incidental criticism on the art capabilities and shortcomings of photography. He observes:—

“Since the introduction of photography, wood engravers (again including draughtsmen, as in many other cases) have had recourse to its aid very freely, especially for representing objects of art and industry, contemporary events of an ordered ceremonial description, and—less advantageously—portraits and landscapes. But the practice is beset with dangers, unless the inevitable imperfections, as well as the qualities of unapproachable excellence, in a photographic reproduction, are thoroughly well understood. The dangers and defects to be guarded against may be briefly stated as follows:—1. The danger of introducing unnecessary details. 2. The obscurity of the shadows. 3. The optical distortion whereby the nearer planes are magnified. 4. The exaggeration of the high lights by radiation, and the reflective power of smooth textures—causing, for instance, the eyes sometimes to stare vacantly, and the smoother epidermis of the lips to appear blanched. 5. The very serious falsification of colour-values, arising from the disproportionate actinic power of diverse-coloured rays, in consequence of which blue ‘comes out’ nearly white, whilst yellow and red translate nearly into black. This last defect explains the funereal aspect of photographic landscapes, the yellow factor of green appearing almost black. The absence of a selecting power in the camera should also be carefully borne in mind. Photography has had hitherto little chance of being extensively adopted as a substitute for wood engraving. For subjects required to be developed in the ‘dark chamber’ of an artist’s brain, such as illustrations of an author’s inventions, rivalry from the camera is obviously out of the question. Even the valuable new invention of heliotypy, and other processes by which the ‘positive’ photograph may be printed in the ordinary permanent manner, are too cumbersome—too much dependent for success on the ‘negative’—to be extensively adopted.”

It is matter for congratulation that several of the drawbacks to the art value of photography are gradually (and have been for some time) disappearing. Obscurity of shadows, optical distortion, and exaggeration of high lights, are faults of purely technical character, and are within the power of the skilful photographer to avoid. Obscure or opaque shadows, and exaggeration or spreading of high lights, which are due to unsuitable chemicals and bad lighting, are no longer necessary conditions. The skilful

photographer, availing himself of the various aids which experience has placed within his reach, secures detail both in lights and shadows, and avoids equally a mass of black shadow, opaque and obscure lack of exposure, from or of reflected lights, and a mass of chalky white without half-tone. He is sparing of pure white except in points surrounded by delicate pearly demitints; and equally so of black, except in small proportion in the deepest shadows, sufficient to give spirit and brilliancy to his image. With modern optical appliances, judiciously chosen to suit the work, distortion is reduced to a minimum or avoided altogether. Even the irregular action of diverse coloured rays, which bear an imperfect relation to chiaroscuro of the picture, may now be very largely overcome. The reproductions of the Autotype Company very admirably illustrate this. An example before us, in which the deep blues and bright yellows of a picture by Cave Thomas might have been expected to produce a result altogether falsifying the relation of tints in the picture, proves how much of even this last most troublesome difficulty yields to the judicious effort of the skilled operator. The comments of an accomplished and trustworthy critic like Mr. Gullick are, however, at all times suggestive and instructive, and we commend them to the consideration of our readers as referring to the powers of photography generally in its pictorial applications.

PERMANENCE OF SILVER PRINTS.

BY M. CAREY LEA.*

AT brief intervals the question of the permanency of ordinary silver prints comes up again and again for discussion. The loss, when the fading takes place, is almost always serious—often irreparable—and those on whom it falls are apt—and not unnaturally—to express themselves with indignation.

This subject is one that I have paid careful attention to, at intervals, through a series of years, and I here repeat the conviction, which I have before expressed, that a well-made silver print on albumenized paper is perfectly permanent, if kept with any ordinary care. A print placed in an album or portfolio, or laid between the leaves of a book, and left in an atmosphere no damper or otherwise more contaminated than that of an inhabited room, ought to last indefinitely. If it does not, it is my conviction that the fault is with the maker of the print, and not with the process. I shall be able, I think, in the present paper, to give some interesting proofs of the correctness of this opinion.

Seven years ago I printed some silver positives by different processes, cut them to pieces, toned these pieces in

* Philadelphia Photographer.

various ways, and then subdivided them, and heated them in various ways with destructive agents. All of these specimens so treated, as well as the originals for comparison, were fastened into a note-book, and the mode of production and after treatment carefully registered. After this interval of between seven and eight years, the originals themselves (by which I mean the portions of the prints which were not subjected to any destructive agency) are fitted to give useful information as to their resisting powers to time.

The first conclusion which follows from a careful examination of these specimens is, that not a single specimen produced by any of the ordinary methods of printing and toning has faded.

The treatments in question were—

a. Sensitized on a forty-grain nitrate bath, fumed five minutes with liquid ammonia, and toned.

1. Lime toning.
2. Alkaline chloride.
3. Benzoate of ammonia.
4. Citrate toning (no longer in use, Hardwich's toning bath).
5. Toning and fixing bath (water 8 ozs., hyposulphite 2 ozs., gold 1 gr.; mixed hot, and used two or three hours after mixing).
6. Ammonio-nitrate bath, fifty grains to the ounce, toned with—
6. Benzoate toning.
7. Lime toning.
8. Alkaline chloride.
9. Citrate.
10. Same treatment as 5.

All of these were washed for fifteen hours, and none show any indications of fading; and I therefore cannot avoid the conclusion that when prints have been made by any of these methods, and after a longer or shorter interval give indications of perishing, there has been a grave want of care on the part of the printer. The fault lies, as every one knows, in the employing of hyposulphite that has been previously used, in fixing too many prints in a given quantity of hyposulphite, and in insufficient or badly managed washing. These sources of fading have been so often pointed out, and so constantly dwelt on, that it seems impossible but what they should be universally understood.

The wrong that has been done to photography by a neglect of these simple precautions has been incalculable. Even at the present day, no one feels any certainty that a purchased photograph will last more than a year or two. There should be some way of reaching and of punishing those who impose on the public with half-washed, sulphur-toned prints.

My specimens also include prints treated by less ordinary methods. Sulphocyanide toning and printing seems uncertain. Some of the specimens have kept very well, others have turned very dark in the whites. The use of sulphocyanide has so completely passed away that it seems scarcely worth while to revive the subject, or I could perhaps point out what were the treatments that gave the best results as to permanency.

Developed Prints.—Some developed prints on plain paper have stood extremely well. Mr. Sutton at one time published a process (I think with serum of milk, but am not certain) which gave developed prints free from the disagreeable red colour which generally characterizes this class of prints, and showing a pleasant sepia tone. Prints made in this way have proved quite permanent, whether kept after a simple fixing, or toned to a still darker shade with alkaline chloride. Anything like sulphur toning should itself, as might have been expected, seem injurious. I do not recollect the particulars of this development process, and have lost the reference to the original paper. It is, however, the only positive development process I have met with in which a good shade is got without gold toning; and as it appears to give permanent pictures, it might be worth reviving. Much, however, will always depend, I think, in

the absence of gold toning, on the pureness of the paper these prints were developed on a pure linen paper. As between developed prints and sun prints, however, I think the chances of permanence will always be in favour of the sun prints, so far as there may be any difference.

PHOTOGRAPHY IN THE TICHBORNE CASE.

WE continue our extracts from the evidence of photographic experts in the Tichborne case. Unfortunately, like the bulk of the evidence, it involves many words for little matter. We condense the report from a daily contemporary.

WM. SAVAGE, examined by Mr. Giffard—I live in Winchester, and am a photographer by profession. I received from Mr. Bowker a photographic copy of a Daguerreotype to copy. I copied it and have the copies here (trade book of copies produced). I took negatives on glass as usual from the photograph furnished to me (original Daguerreotype handed to witness). I never saw this; I copied from a copy of it.

Can you tell whether the thumb has been rubbed out?—It has been sadly maltreated.

The Judge—The whole of the lower part?—The margin all round, but more especially near the hand, has been what we call abraded. The hand, in fact, is obliterated by friction.

Mr. Giffard—Have you seen the plaintiff's thumb?—I have.

Do you detect the same peculiarity as in the photograph?—I do so; but in a very slight degree. It appears to me that the paper photograph I copied from had been taken with a lens which did not cover the plate properly. Hence the margin of the picture would be somewhat dim and mystified. This is why it does not appear more distinct.

Cross-examined by the Attorney-General—You say this copy has been abraded?—Yes, all round. This negative is proof of it, for there is no scratch or roughness here; it is perfectly clear to the margin.

But is it your judgment that the margin of this oval (the Daguerreotype) is abraded all round?—Yes.

Have you anything made from this negative?—Yes, the copy in my book.

The Attorney-General—Was the photograph from which you took your negative taken from a negative which represented this in a different state?—Just so.

Do photographs lose in transmission the one from the other?—Not if they are taken properly.

Supposing the operators to be fairly competent, would the intermediate photographs remain intact?—Yes; but the copy of a photograph printed on paper would be tolerably smooth; but when we copy that paper we cannot avoid copying the texture also, and that gives a roughness or grain over the whole of the photograph.

Did you multiply copies of this?—No, not till very recently; not till the commencement of the trial. I was requested not to do so, and did not.

And the negative you preserved?—Yes; we always do so.

And I suppose you can multiply any number of copies?—Yes, if care is taken of the negative.

Perhaps you mean that personally, so I'll hand it back to you. (Laughter.)

Is the face of a Daguerreotype delicate?—Yes; so much so that a camel's hair pencil-brush applied to it would injure it unless applied with the greatest care.

Would the mere presence of dust if it were exposed for the purpose of photography in a dusty room injure it, or scratch it?—No, not if it was removed by the breath or covered up.

If it were placed in the frame with dust on it, and allowed to travel about, would that scratch it?—No, not unless it were rubbed between paper or glass.

The Lord Chief Justice—Supposing there were dust on the face, and a person wiped it off with his hands?—That would scratch it.

Or if he took a camel's hair brush?—That would scratch it, unless he was very careful.

Or a cloth?—Yes, even a silk handkerchief would be too much for it.

The Attorney-General (handing some broken pieces of a gutta-percha or bone frame)—Would any portions of that frame getting in and then the Daguerreotype being moved about produce friction?—No, unless the photograph was loose, and came actually out of the frame.

But if small fragments had got in, would that produce scratching?—Yes, if there was friction.

The Judge—This abrasion, as you call it, seems to be particularly apparent on the left, and there is the mark of somebody's thumb with even the lines of the skin visible.

Witness (examining the Daguerreotype)—Yes, that is so; but that is an impression of grease from the thumb.

Is it rubbed more to the left than elsewhere?—It is, my lord.

And is not the upper part of the hat a good deal rubbed?—Yes,

my lord. (After further examination) Oh! the thumb mark is on the glass, my lord, and not on the picture face. (Laughter.)

What I mean is, supposing some bits of the broken frame got between the glass, and the Daguerreotype travelled about, would there be scratches?—No, the scratches in that case would be more general, and not at all like these.

Then do I understand that the scratches are round the edge especially?—Yes.

The Judge—But there are some scratches about the hat.

The Attorney-General—And in various places. There are some on the face.

The Judge—What do you say, Mr. Savago?—I cannot imagine these scratches to have been done accidentally.

The Attorney-General—Are there or are there not scratches all over the body?—Yes, but they are very slight.

In taking this Daguerreotype out of the frame would not a not very skilful person injure it?—It must have been a very unskilful person indeed to do these scratches.

But it might be injured?—Not unlikely.

In taking photographs from a Daguerreotype, how long has it to be exposed?—According to the light, sometimes one minute and sometimes five.

About the same then as photographs from the life?—Yes.

The Attorney-General—When did you multiply copies?—Since May.

For whom?—For general sale.

From whom did you receive permission to do it?—Mr. Bowker.

Did you apply for permission?—He was frequently in my studio, and suggested I might do it.

Re-examined by Mr. Giffard—This Daguerreotype is taken on copper-plate silvered.

(The witness was here handed a specimen Daguerreotype, and requested to try and rub any portion of it out. He tried to do so with his handkerchief and a piece of blotting paper, but could not do so.

What is the result?—Merely scratches. You can't obliterate anything by rubbing.

The Judge—Is the silvering done in the same way now as it was twenty years ago?—I do not thoroughly understand it, my lord.

The Judge—I daresay the process is different now.

Mr. Giffard—I daresay the whole process is gone out.

The Judge—But you don't understand the process, Mr. Savago?—No, my lord.

A Juror—When you mentioned the effects of the camel's hair brush, did you mean that the same remark would apply to this specimen?

Witness—Yes; a coarse camel's-hair brush would leave its mark.

The Judge suggested that the difference between the bona fide Daguerreotype and the specimen might be accounted for by a different quantity of silver.

Mr. Giffard—Is this abrasion in the Daguerreotype of young Tiehborne a kind of thing that could be produced by the action of a camel's-hair pencil, or by the thumb?—Certainly not.

Is this (a transparency) what you copied from?—No.

The Attorney-General—As far as you can judge, was the positive from which you took your photograph from that negative?—No, sir. My negative is taken from a paper photograph.

Was it taken from this transparency?—Yes.

Are there any abrasions there?—No.

Does it appear to have come from the Daguerreotype when it was in its pristine condition?—Yes.

The Judge—Can you tell whether that was taken from a Daguerreotype?—It was.

The Attorney-General—Is that negative (the transparency) well taken?—It is a very excellent one.

And, as far as photography can, it would represent the Daguerreotype as it was?—Yes.

And the prints taken afterwards would substantially represent the Daguerreotype?—Yes.

The Attorney-General—I may state, my lord, that this is the negative taken by Mr. Mayall, and from it all the photographs have been taken.

The Judge suggested that Mr. Mayall should take careful copies.

The Attorney-General—Fifty have been taken already.

In further re-examination, the witness said when Mr. Mayall took the photographs, the Daguerreotype must have been perfect.

The Judge—That is as clear as the sun.

The Attorney-General wished the jury—who at first seemed to think they had had enough of the photographs—to examine the negative, which they did.

Mr. J. T. TAYLOR, examined by Mr. Giffard—I understand both photography and the Daguerreotype process. I have examined the Santiago Daguerreotype and find that the nail of the thumb of the left hand is abnormal. I have examined the claimant's thumb, and the thumb in the picture must have been taken from a precisely similar thumb, and on the same hand. The thumb in the abraded Daguerreotype has been rubbed out, and by some person who is not a photographer.

Why do you say that?—A photographer would have removed it by more delicate manipulation; either by a soft skin charged with

powder, or, if he had been more experienced, he would have applied a little eyaude of potassium, which, by warming the plate gently, would have dissolved it, by the application of a camel's-hair brush.

Assuaging, of course, that his object was to erase it?—Certainly.

Would any amount of ordinary rubbing have done it?—No.

Would accidental touching by the thumb or rubbing with a camel's-hair brush have done it?—No; a very violent friction must have been used, because not only has the detail of the picture been obliterated, but the silver itself has been scratched.

Would the rubbing of any of the bits of frame, as described, account for it?—Certainly not.

Cross-examined by the Attorney-General—When were you asked to give evidence in this case?—This morning.

And was that your first acquaintances in the case?—No, that was last Thursday. Colonel Wortley asked me if I would like to look at the photographs, and I said yes, and then I was asked to give evidence.

By Colonel Wortley?—I am not sure; formally I was asked by the solicitors.

Who was with Colonel Wortley?—No one, I believe. He was with me in my office.

Then Thursday was your first connection with the case?—It was. My first communication was with Colonel Wortley. It was naturally a subject in which all photographers take a great interest.

Had you no conversation with Colonel Wortley before Thursday?—Yes, on Wednesday night.

Did he bring a number of photographs with him?—No. He appointed to meet me here.

Were you here when Colonel Wortley gave his evidence?—No.

How long were you here with him on Thursday?—About half an hour.

Who were present?—Colonel Wortley, Mr. Spofforth, and the claimant.

Any one else?—There were some persons coming and going into the room, but I don't know who they were.

Have you seen Colonel Wortley since?—I see him so often.

When did you see him last?—Yesterday.

Who was there then?—Mr. Spofforth and the claimant.

Mr. Baigent?—No, I have only seen him in court.

I suppose you would agree with the last witness that a carefully printed photograph represents for all practical purposes the original Daguerreotype?—Yes, for all practical purposes, but there would be some loss.

But all the marked characteristics would be the same?—Yes.

The Foreman of the Jury—We should like the witness to be shown what is called the Paris photograph. (This was done). Is the thumb of the left hand visible in that photograph?

Witness—Yes.

The Foreman—Is there the same peculiarity there?—Yes.

To a greater or less extent?—Less, I think.

But the thumb is very prominent in the photograph, is it not?—Yes. I see in this photograph the eyes have been put in or touched.

Is there any trace of touching in the thumb or hand of the left arm?—(After application of the microscope, I now see the peculiarity of the thumb very strongly marked; and there has been a slight touching on the nail, but the effect has been to reduce the abnormal peculiarity, and render it less apparent.

The Judge—Do you mean it was touched after the photograph was printed?

Witness—Yes, I am speaking of the print and not of the negative.

The Foreman—Is the touching you refer to on the negative?

Witness—This individual copy has been touched.

The Judge (handing another photograph to witness, which he said was another copy of the same negative)—Has the hand of this been touched?—In the thumb nail there are four longitudinal marks to make the thumb more artistic.

Were they put in by touching?—Yes, in this individual print.

What were the marks in the other photograph?—They were very slight, and might have been caused by a delicate wash. I see the same longitudinal marks.

Is there anything else?—No, except that the artist has allowed a small clot of the pigment employed to rest on the flesh outside of the thumb nail.

Can you form any opinion whether that was there by accident or design?—It was done by design to increase the artistic effect.

Is this touching in both photographs perceptible to an ordinary person looking at them with an ordinary magnifying glass?—Yes, my lord.

Take the Daguerreotype and tell me is the hand which appears to have been obliterated the same hand you refer to in the Paris photographs?—Yes, the same hand.

Is the Paris photograph a good and accurate one?—It is a tolerably good photograph, not such a photograph as would carry a medal at any exhibition, but a fair average photograph.

In the Paris photograph does the light fall on the left thumb?—Yes, my lord. It has been a top-side light.

In the Daguerreotype is the thumb exposed to the light, or under the shade of the hand?—The thumb there was so far back that it is under the shadow of the body. The light was so imperfect that there is hardly any delineation.

That is not what I ask you. Is the thumb under the shadow of the hand?—It is.

Now, what about the light?—The light when this was taken was in an artistic sense imperfect, being too much diffused.

Would that bring out the part in shade more or less distinctly?—It would have no special effect upon the distinctness. The indistinctness in the Daguerreotype is due not to defective light, but to defective focussing, whereby the head and face are sharp, but the lower part of the body and hands slightly out of the focus.

What is the effect?—To lower the quality of the definition.

Would you kindly use language that others than photographers use?—It makes the picture more "fuzzy." (Laughter.)

Do you mean indistinct?—"Fuzzy" seems to be a popular word.

Does it produce distortion?—Only the distortion of want of sharpness.

Does it interfere with the size?—No.

You say the face is sharp?—Yes, my lord.

What do you say to the ear?—It is quite sharp, but there is no detail. The half-tone is gone, and the result is it is hard and patchy. By hardness I mean that there is a sudden transition from the light to the shade.

What is the effect of that?—To show the object indistinctly. You merely see the outline, and not very perfectly.

Correspondence.

MR. GORDON'S PRINTS AT THE EXHIBITION.

MR. DEAR SIR,—The prints I lately exhibited at Conduit Street, and of which you make such favourable mention, were not from gum-gallic negatives, as stated in the NEWS. They were produced by another method on which I have been working for a long time past, and one which I consider as very superior to gum-gallic.—Faithfully yours,

R. MANNERS GORDON.

WALLICH V. HENDERSON.

SIR,—Endowed as I am with a disposition peculiar to my countrymen, I cannot allow Dr. Wallich's letter which appeared in your last impression to remain unanswered. All that I desire is that the truth, the whole truth, and nothing but the truth should be known concerning the matter between Dr. Wallich and myself.

In the first place, the Doctor seems inclined to catch at straws when he says "that the negative was intrusted to me to produce one enamel, not two, and that he kept the second copy sent on approbation to avoid my retaining a copy from a registered negative."

Why did Dr. Wallich not say, when he delivered the negative, that it was registered, and I was not to keep copies, or when he sent the cheque as payment for the two?

He admitted in court that he had not given me notice that the picture was a copyright, or that I was not to keep copies. Then he goes on to say "that the Act declares it penal for any one to attach any name, initial, or monogram other than that of the producer of the original picture or negative to any photographic or other copy taken from it." I can prove that I gave Dr. Wallich full credit for having produced the negative, that the said notice was removed by some one on or before the Monday following the opening of the Exhibition; the object of the person who removed the notice I am at a loss to understand. On my inquiring of the attendant at the Exhibition as to whether he had seen any one remove a notice from my frame, he replied in the negative, at the same time stating that notices had been removed from other exhibitors' frames. This should be inquired into by the Photographic Society.

As Dr. Wallich and myself are evidently each wishing to have the last say, the best thing Dr. W. can do is to

publish all letters directly or indirectly bearing on the subject of dispute; I will do likewise, in order that we may both be represented to the photographic world in our true colours.

I may here remark that I am now sorry that the case was withdrawn. Had my witnesses been called, I do not doubt that the magistrate would have dismissed the case. Apologizing for the trouble, I remain, yours respectfully,

A. L. HENDERSON.

MESSRS. MEVES BROTHERS.

SIR,—The particulars given in your columns of 22nd inst. respecting Madame Leroux's complaint against our firm, before Mr. Mansfield, requires an explanation. The said Madame Leroux's niece (Miss Addison) on the 22nd of November called at our establishment and had her photograph taken. She then made enquiry respecting the colouring of photographs as advertised by us. She was shown the specimens on view, and the special style of colouring required by us, before we could give her colouring out to do, for which she would receive remuneration. It may here be observed, the photographic style of colouring which we advertise for is not artistic, but extremely amateur, and is meant more especially for those who have a liking for colouring in a strictly amateur sense, and meant to fill in two or three leisure hours per diem as disposed. We are constantly forwarding photographs to be coloured, and with the practical hints we give gratis to those who have purchased our colours, with attention and a little application on their part, the colouring becomes easily attainable, and is a very agreeable way of occupying oneself, and, at the same time, remunerative. Many have practised and attained excellent results who have had, and now have cut, large numbers to colour for payment. Miss Addison, then, bought her colours and guide, with which a coloured specimen of the style required, with photographs for practising upon, were included, with a perfect understanding of what was indispensably requisite, being previously personally informed to purchasing, it was quite optional on her part to do so. She brought in her specimens of colouring, which were very inferiorly done the first time, and was told the defects, and requested to practise a little time to rectify such. She called a second time, but had not given herself reasonable time for improvement, and was pointed out again the defects, and every possible information for her especial advantage was given her to remedy such. On her last visit (it was after Madame Leroux had appealed to Mr. Mansfield on her niece's behalf) she had made no progress; apparently she deemed it not worth her while to practise and endeavour to perfect herself in doing them. Certainly, we could not give her colouring out to do on her specimens submitted to us, as she was quite incompetent for undertaking such, of which she herself must have been fully cognizant. Miss Addison purchased her colours on the afternoon of the 27th of November, and the complaint against us was made on the 7th of December, within ten days, inclusive, of that of purchasing, thus not giving herself time to gain much proficiency. As to the artist referred to by Madame Leroux of forty years' standing, we can most assuredly state that the photographs submitted to our inspection by Miss Addison were done in no way eligible for sale, and we should pause before giving out colouring on such specimens. Ours is a perfect *bona fide* business, being established in Albany Street for eight years as art photographers.

The art of colouring photographs, to the generality of amateur colourists, is mostly unknown; that is, how to obtain the proper effects. We have lately added such to our photographic business, and could employ numbers of hands in colouring such, which, we may state here, we do; however, we are often compelled to decline photographic colouring received from the profession and otherwise on account of not being able to obtain proficient colourists to do the same. If necessary, we could undertake to produce

receipts of colouring where proficiency has been obtained under our system through the special information contained in our guide and subsequent observations. Colouring has been given out to such colourists as referred to above, to the extent of half-a-gross per week; for some time likewise of those who are in regular receipt of colouring, who have purchased our colours, &c. We may here state, on receipt of eligible specimens from non-purchasers, we have sent out, and continue to do so, regular colouring. This, as before stated, we are prepared, if necessary, to substantiate by our books.

In conclusion, we may state, had the colours not been used, and Miss Addison had not considered herself eligible to undertake such colouring, we should have had no objection in returning the money she originally paid; but, under the circumstances of the case, the request was unreasonable, for the colours had been used, likewise the photographs painted; therefore, we could not, in justice to ourselves, entertain her proposal. Often persons on receipt of the colours, guide, photographs, &c., have imagined themselves not eligible to undertake the colouring, knowing they have no amateur taste and no aptitude for colouring of the most unpretentious character. When we have been corresponded with, intimating such, we have returned the money, when the colours, guide, photograph, &c., have not been used, and are eligible for resale. The insertion of this explanation will oblige us. MEVES BROTHERS.

70, Albany Street, Regent's Park, December 23rd, 1871.

ALBUMEN IN PHOTOGRAPHY.

SIR,—I have read Mr. Hart's letter in your last impression animadverting upon something I stated in my paper on albumen. It is not my intention to enter into a lengthened controversy on any subject, as I have neither time nor inclination for it. I leave the matter after this letter for the judgment of the photographic profession. If the subject of my paper provokes further investigation, I shall be glad, as I believe it to be important.

I must first state that I adhere to any statement I made in my paper, and I have no doubt my friend, Mr. Blanchard, will abide by his. My statements were the results of analysis, and Mr. Blanchard's were derived from observation.

I cannot quite make out what statement Mr. Hart wishes to rebut. Certainly not that prints fade, for he gives another reason why they should. It cannot be that I did not find sulphur in albumen. At first it appeared to me on reading the letter that it was supposed Mr. Blanchard had made a statement to me without ascertaining the soundness of the foundation for it. This idea, of course, I dismiss. In order to play the role of "Athenasius contra mundum," as Mr. Hart would do against "several great names in photography," the special article of the creed to which he objects should be precisely stated.

Supposing that the letter is designed to prove that the sulphur is not in a free state, I must confess that the argument fails to convince. His conclusion is "helped" by the words given by him as a quotation in inverted commas, "the chief feature lies in the fact that the amount is always the same." I presume that this is intended as a quotation from my paper. The sentence, if so intended, exists but as a misquotation. I particularly mentioned averages.

As to mixtures, we are told that their component parts "can be detected by the eye through the aid of a microscope." I think not. The sensitized collodion film is a mixture (that is, the iodide and bromide of silver do not enter into combination with the collodion). Can the microscope separate the atom of iodide from the bromide, and again these from the collodion in which they are embedded? Or again, when albumen is salted and applied to the paper, can it distinguish the atoms of the chlorides? May not sulphur be dissolved in precisely the same manner as the chloride, and be deposited when the albumen dries

without being microscopically detected. As the proportions of sulphur in ovalbumen vary, there must, in some cases, be an excess, and this excess is surely held in solution. What becomes of the phosphorus to be found in the albumen? I know of no chemist who regards it as entering into combination with the albumen. Of one thing I am certain, viz., that sulphur present is unoxidized, and, being in this condition, is in a fit state to enter into combination with silver as a sulphide. The reason for a practical conversion into the sulphide is apparent to any chemist. I am not a spiritualist, but I *do* believe in occasionally an uncombined element.

I am quite aware that butyric acid and other organic acids are formed as albumen decomposes, but I am equally aware that the sulphur and phosphorus are expunged in the shape of disagreeable gases, unless they enter into more stable combinations. I wished to show that as sulphur was present in albumen, fading might result; Mr. Hart does not appear to deny it, but brings another enemy to attack the stability of our silver prints.

In the presence of moisture *all* albumen will more or less decompose, and butyric acid might be formed in any paper. In strongly smelling paper, accepting Mr. Hart's reasoning as to precipitates, surely the white organic compound of silver would be formed *at once* on sensitizing, and ought to be visible on the finished print. Does it begin by being dark coloured and end by turning white?

It is generally admitted that if hyposulphite be left in a print, it fades rapidly. Is this due to butyric acid, or to the decomposition of the hyposulphite and the formation of sulphide? If it be due to the sulphide of silver in our case, and this be yellow when visible, may not the sulphide of silver be of the same colour in the case where it is formed from the sulphur in the albumen.

I do not believe that sulphides assuming a yellow colour reverse "nature's laws." It used to be a "law of nature" that the sun went round the earth; that law is altered now. The latest researches seem to point out how imperfect is our knowledge of the colour of any metal, particularly in a fine state of division, much less can one claim to know all about the colour of their compounds.—Yours faithfully,

W. DE W. ARNEY, Lieut. R.F.

Talk in the Studio.

JUDICIAL PHOTOGRAPHY.—Mr. H. Baden Pritzhard has written the following to the *Times* in reference to M. Beau's letter:—"That a photographic portrait must necessarily be a true likeness of the model is, without doubt, a most popular fallacy, and I am very glad indeed that M. Beau has pointed this out in your impression of yesterday. A photographer who is at once an artist and a practised manipulator can, by varying the lighting and pose of the sitter, easily bring about the most contradictory results; and a most striking illustration of this was recently afforded at the Conduit Street Photographic Exhibition by M. Grasshoff, of Berlin, who showed thirty pictures of one and the same model, of which it was impossible to say that any two resembled one another. Our Home Office, it will be remembered, has recently issued instructions to governors of prisons for the photographing of all criminals, but unless some explicit and simple directions are given for the carrying out of the order, the portraits furnished will, I feel sure, prove but sorry means of identification." M. Beau has also further written as follows:—"May I beg the favour of adding a few remarks to my former letter on the subject of photographic portraiture as judicial evidence? Before discussing with advantage the details of a result, it would be well first to be clear upon the cause of its production. I quite agree with Mr. Taylor in his depreciation of the much to be regretted practice of "rotouching" negatives, which, if coupled with a wrong effect of light, may entirely annihilate the resemblance. I take this opportunity of calling attention to a widely spread popular error attributing to the perfection of cameras and chemicals the almost entire credit in the result, while on

might rather say they have nothing to do with regard to the likeness—no more, indeed, than the pen and the ink with the literary merit of a manuscript. Pen and ink are necessary implements for writing; but has it ever crossed anybody's mind to attribute to them the merit of the composition? With an inferior camera and with doubtful chemicals a most striking likeness may be produced, while the best of both, aided by the most scientific manipulation, might give atrocious representations of humanity. Chemicals and cameras are the means of mechanically representing the form, but the whole art of photographic portraiture lies in the expression, which alone the effect of light can truthfully bring forward. I do not speak of architectural and landscape photography, in which, when a view of the subject has been fixed upon, the physiognomy is sure to be maintained, without a possibility of modification; but in portraiture it is quite different, and the only thing to ask from the chemicals is not to destroy what the light has produced. I might multiply the instances. Does a mirror produce the image? Certainly not, but it propounds it, and the quality wanted in it is simply not to distort the features; but if a grimace is made, the mirror must reproduce it. So with the camera and chemicals. The effect of light is the true agent in portraiture, and the treatment of the sitter is the art. Therefore, it is the quality of the image that light, managed with artistic skill, is expected to produce, and it would require a very clever hand to rectify, as it were, nature, or, rather, render nature more like itself. All these technical details would necessitate examples to substantiate them, and it is only by a sharp controversy on the subject that the public may be enlightened and brought to a proper knowledge of what a photographic portrait really is, or what it should be. Then a vast and encouraging study will be open to would-be photographers. It is almost a case of mind *versus* matter; too much matter has heretofore invaded the photographic field, and it will only be by gradually instilling mind, in lieu of a great part of the matter in possession, that photography will occupy its place among the fine arts."

NEW USE FOR FERROTYPE PLATES.—(By W. Klausner).—Have found a new use for ferrotype plates, *i. e.* the large size ones, 10 by 14. The wet spell we had some two weeks ago gave me much trouble with the skylight, water coming in fearfully. Of pails and dishes we had not enough, and washtubs had to be brought to receive the unwelcome drip, drips. Seeing a pile of these black customers on the table, an idea struck me. Big shears were procured, and this worthless material cut into strips the long way, about one inch wider than the bars of the skylight. Now began the work of tacking them on, beginning each from the top, and bending the overlapping edges up. Lo! what a charm! Nary drop had the impudence to fall down, but was kindly led out. This mode is a very simple one, costs but little, can be done quickly, and is effective.

To Correspondents.

OUR NEXT VOLUME.—In sending forth the last number of the present volume, and offering our friends the warmest greetings of the season, we take our usual occasion to refer to our work for the coming year. Besides the ordinary features which have characterized the PHOTOGRAPHIC NEWS, and which will be retained in the future, some new arrangements are in progress which will, we trust, be received with favour. The same regular staff who have hitherto contributed to the NEWS will continue to do so, and contributions may be expected from the pens of Messrs. Adam-Salomon, H. P. Robinson, F. Bedford, V. Blanchard, W. England, Dr. Anthony, Dr. Vogel, Dr. Liesegang, Dr. Phipson, Dr. Wallich, Col. Stuart Wortley, Lieut. Abuoy, Captain Waterhouse, Messrs. Dallmeyer, Cherrill, A. de Constant, Mayland, Bovey, Woodbury, E. L. Wilson, Ernest Lacan, Spiller, H. Baden Pritchard, S. Fry, J. R. Johnson, F. R. Window, R. M. Gordon, O. G. Rejlander, Earl, F. Piercy, F. Eliot, G. Croughton, W. J. Stillman, W. Faulkner, Tudor Williams, Hughes, Henderson, Preston, Crookes, Gulliver, Brooks, Wilkinson, Burgess, Foster, Eastham, Martin, Hart, Cocking, Cooper, Arthur Taylor, Slingsby, Beattie, and several other gentlemen whose experience gives value to their communications. We shall avail ourselves of every facility to render the NEWS as acceptable as it has hitherto been, and to make it worthy of the position it has acquired as the recognized

organ of photographers. In closing the labours of the present year we wish for all our friends, contributors, correspondents, and readers a happy and successful new year.

BLAIR TESTIMONIAL FUND.—Arthur Taylor, Marseilles, £2.

VENATOR.—There are very many substances by which paper can be made transparent, and many by which different experimentalists in this branch of coloured photography have succeeded. Canada balsam, Venice turpentine, wax, stearine, spermaceti, paraffin, varnishes, almond oil, boiled oil, &c. We cannot tell you which is best. If you search through the volumes of the NEWS, you will find many recipes. Mr. Briggs's article in the YEAR-BOOK three years ago on the "Emolio-type" will give you some valuable hints. In all cases it is desirable to remove the size from the paper by means of soaking in hot water before applying the balsam, &c., in order to secure even transparency. 2. The zinc process has many advantages for small operations. You will find some details on the subject in our forthcoming YEAR-BOOK. 3. The chalk will not contain gold unless it has been precipitated, and is so mixed with the chalk. If so, add nitric acid, which will render the chalk soluble as nitrate of lime, which may be washed away.

J. BURTON.—We fear that the experiment would be dangerous, except in the hands of a skilful chemist.

A. BOISSON.—We do not know where Cox's gelatine is to be obtained. Can any of our readers tell our correspondent?

SEPTIMUS HENDERSON.—We have not heard details of the precise mode employed by the German and Russian photographers in vignetting with a dark background into a dark margin, but there are several methods by which the operations may be effected. The simplest would consist in vignetting the negative in the camera. The figure would be placed in front of a dark background, and a dark screen with an oval aperture of the proper size interposed between the figure and lens, so as to permit just sufficient of the figure to be taken on the plate; the surrounding edges, being protected from light, would produce the effect in question.

ARTHUR TAYLOR.—Thanks. We shall look with interest for further details of this etching process.

F. N. D.—The proportion of soluble cotton necessary to make intense collodion depends much on its quality. With some samples four grains to each ounce of solvents will give sufficient body, whilst with other samples twice that proportion will not be too much. Cotton made at a high temperature, as a rule, gives a limpid collodion, even when a large proportion is used, and such a cotton generally favours intensity. The salts of cadmium tend to make a collodion thick and glutinous, whilst alkaline salts tend to limpidity. As a general rule, we prefer equal parts of ether and alcohol.

R. L.—The law does not make it necessary to place any intimation upon it to the effect that it is registered, and the copyright preserved. In all cases it is the duty of persons wishing to copy to ascertain for themselves whether a picture is copyright or not.

G. T. R.—Your sunned down sky being of a warmer tone than the foreground is, doubtless, due to the fact that the foreground was printed in diffused light, and the sky sunned down in the sun. As a rule, the exactly opposite effect is desirable. The picture is good in many respects, but the negative has been a little under-exposed.

F. S.—In all cases that we know anything about the cameo vignettes are charged higher than ordinary cards, as, of course, they ought to be, as they necessarily involve more labour. The amount charged varies in different establishments.

W. W.—To test a solution with litmus paper, you should allow the latter to remain immersed a minute or two. 2. The amount of carbonate of soda you add is much in excess of what is required. In neutralizing a solution with carbonate of soda, bear in mind that if tested with litmus immediately the soda has been added, a false result may be obtained, the carbonic acid liberated acting upon the test paper. The solution should be permitted to stand awhile before applying the litmus. The brown powder is probably oxide of gold thrown down by the soda. 3. Yes; a steel knife may be used. 4. When copper is added to an iron developer, it is generally recommended to dissolve the copper salt and the iron salt in two different solutions, and then mix them. 5. There is no objection whatever to mixing the protosulphate of iron with the ammonia sulphate. 6. The solution will probably work well, but it is somewhat weak for winter. It is not a fifteen-grain developer, as the ammonia sulphate of iron only contains about two-thirds of its weight of sulphate of iron, the sulphate of ammonia having no developing action.

W. E. BOVEY.—Next week. The pressure on our space, and late hour at which copy arrived, compel the letter to stand over.

R. N. L.—Thanks.

Several correspondents in our next.



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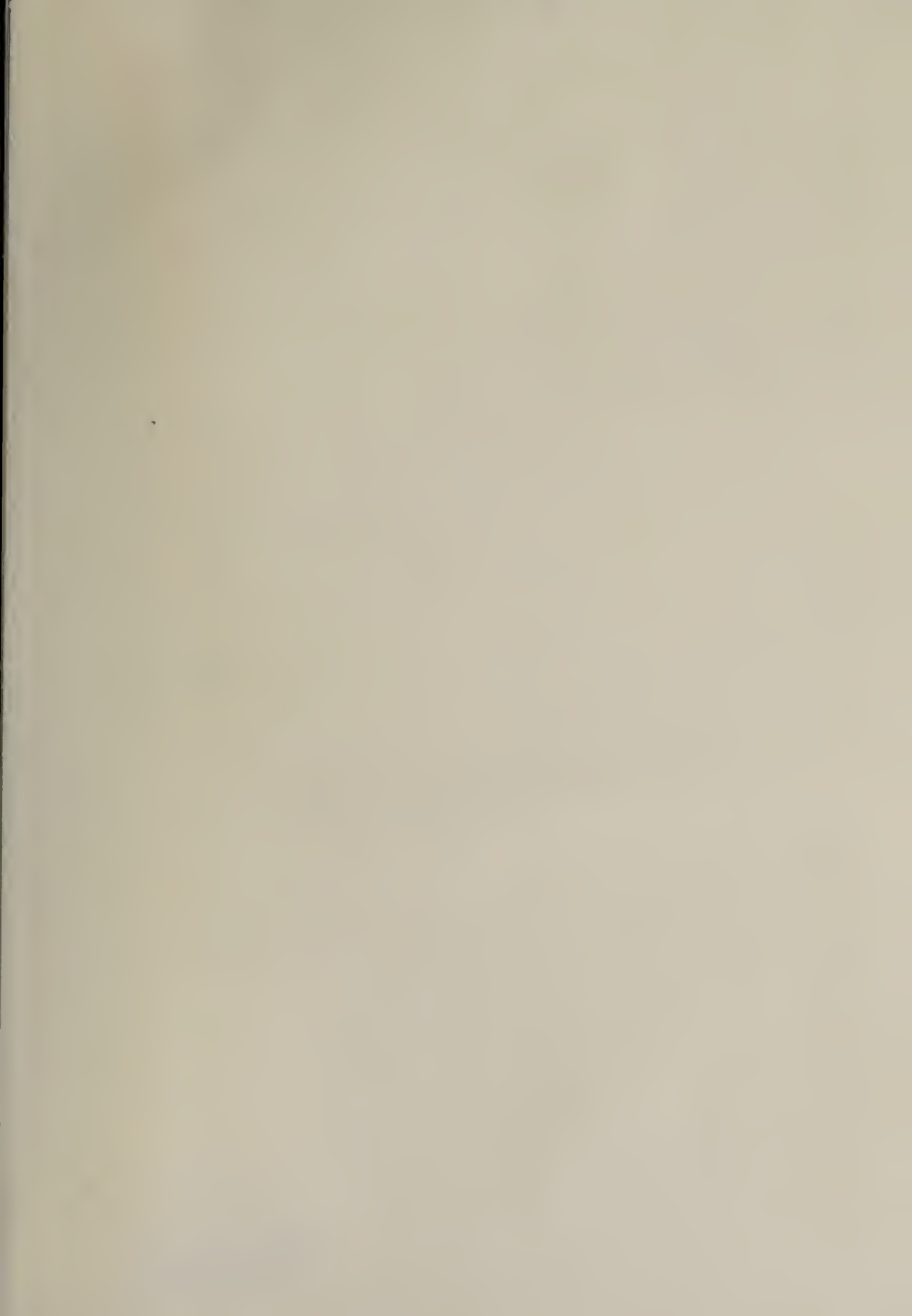
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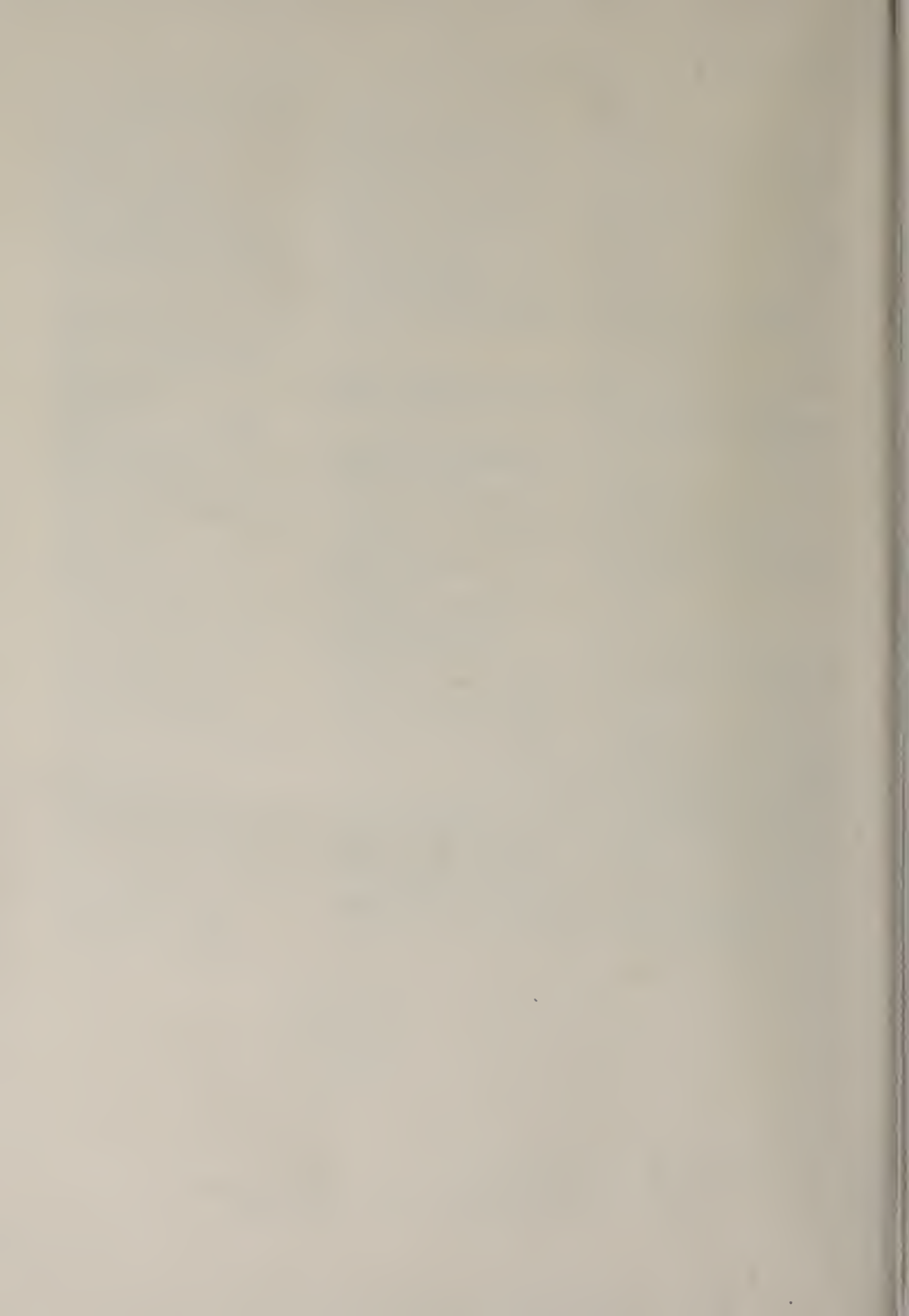
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