J. B. Heywood, Neg. Boston, Mass. — R. H. Snelling, Print

Col. John Boyd. — Otis Kimball, Esq. — Moses Kimball, Esq. — Col. N. A. Thompson.

THE HEYWOOD GROUP.

THE

PHOTOGRAPHIC AND FINE ART JOURNAL.

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THOMAS CRAWFORD.

The following brief biography of this great sculptor, we appropriate from that excellent *family paper* "LIFE ILLUSTRATED."

CRAWFORD was born in this city, March 22d, 1814, and from an early age manifested a remarkable fondness for art, which his father lost no opportunity of encouraging. He caused him to be first thoroughly instructed in drawing and carving, and then placed him with Mr. Frazee and Mr. Launitz, from whom he acquired the art of modeling in clay. His tendency being manifestly toward the plastic arts, in 1834, at 20 years of age, he was sent to Italy, and established himself in Rome, where he was so fortunate as to gain admittance into the studio of Thorwaldsen, to whose instruction and friendship he became indebted for much of his subsequent success. The purity of form and severe classicism of this eminent master are reflected in many of his pupil's works.

"After a few years of study, Crawford established his studio in Rome, and soon received abundant employment. He executed busts of the late Commodore Hull, Mr. Kenyon, the English poet, Sir Charles Vaughan, formerly Minister at Washington, and many others. One of the most felicitous and characteristic is that of the venerable Josiah Quincy, executed at the request of the students of Harvard University upon his retirement from the presidency of that institution, and now placed in the College Library. In 1839 he designed his famous group of "Orpheus," one of the finest productions of his chisel, and which is said to have elicited fromThorwaldsen the remark that it was "the most classic statue in the studio of Rome." It was extensively exhibited in this country, and subsequently purchased by the Boston Athenæum, in whose sculpture gallery it now stands, and where may be seen "Cupid and Psyche," an exquisite group in marble by the same sculptor. His ideal busts, of which "Sappo" and "Vesta" are good examples, are models of purity and grace. Some of his other most celebrated works are the "Genius of Mirth," "Adam and Eve," "David, as the Conqueror of Goliah," "David before Saul" (a bas-relief), "The Shepherds and Wise Men presenting their offerings to the Saviour" (a bas-relief containing twenty-four figures), "Christ Disputing with the Doctors" (a bas-relief containing twelve figures), "Christ and the Woman of Samaria" (a bas-relief), "Christ Blessing Little Children," "Christ Ascending from the Tomb," "Christ Raising Jairus's Daughter," &c., &c. The execution of his bas-reliefs is delicate and spirited, and the religious subjects, especially those in which the person of the Saviour is introduced, are marked by singular propriety and dignity of treatment.

"His genius, however, was eminently progressive, and his crowning works were destined to come last. In 1855 his noble statue in bronze of Beethoven, confessedly the only one yet designed which is worthy of the subject, or which gives an adequate idea of the original, was received in Boston, and deposited in the Music Hall of that city with appropriate solemnities. With his last great work, the Washington Monument, ordered by the State of Virginia, comprising a bronze equestrian statue of Washington on a lofty pedestal, with statues of Henry, Jefferson, ond other illustrious Virginians, surrounding its base, the public have long been familiar from numerous published descriptions. The statue of Washington has elicited flattering encomiums from all who have seen it, including some of the most distinguished art critics of Europe, and is doubtless one of the most successful works of its kind of modern times. It is of colossal size, and was cast in the celebrated foundry in Munich, under the personal superintendence of the artist. The accompanying statues have been designed, but not all executed. Among other designs which Mr. Crawford has made latterly, we may mention statues of Channing, Washington Allston, and Henry Clay.

"Mr. Crawford was married some years ago to Miss Ward, of this city, a sister of Mrs. Samuel G. Howe, of Boston, the author of "Passion Flowers" and "The World's Own." He has left several children. For the last year or two he has been the victim of a dreadful disease, which has deprived him almost entirely of sight, and caused him to renounce his art altogether. Last spring he was induced to leave Rome, and place himself under the care of Dr. Fell, of London, a young American physician who had acquired some reputation for his treatment of cancers. For a while the sufferer seemed to obtain relief, but the efforts to remove the cancer, at the sacrifice of the eye itself, proved entirely unavailing; the disease penetrated to the brain, and after months of anguish, which he bore with singular patience, he was relieved of his sufferings by death. Mr. Crawford was of a frank and generous disposition, and his death will be mourned not less by the large circle who enjoyed his friendship, than by those who admired his genius.

"The loss of such a man in the maturity of his powers, although not yet in the maturity of his fame, to a nation still young in art, can scarcely be over-estimated, and it would be difficult at this moment to point to a successor who is worthy either by what he has done, or by what he promises to do, to occupy his place. Whatever our painters may have accomplished, it is through our sculptors that we have asserted our first substantial claim to be recognized as a nation capable of producing great works of art, and the names of Crawford and Powers are household words where other names in American art are unknown or ignored.

"The funeral of this celebrated American sculptor, took place on Saturday. His remains were brought from England in the ship *Southampton*, and reached this port on Tuesday last. On the following day they were conveyed to the residence of his brother-in-law, Mr. Campbell, No. 158 Grand st., whence they were removed on Thursday to St. John's Church. There they were visited by numerous friends of the deceased, who undertook to adorn the coffin with tasteful memorials. The coffin itself was rather a novelty. It was made in London, and presented a striking difference to the coffins usually made in this country, being covered with the finest black broadcloth, and richly studded with bosses and ornaments, painted deeply black and highly varnished. The effect was rich, but intensely sombre. On Saturday the lid was covered by the friends aforesaid with the choicest flowers—*immortelles*, forget-me-nots, camelias, laurel, myrtle and lavender—woven into wreaths, or scattered promiscuously, just as the friendly hand had dropped them. Over the silver plate bearing the inscription was laid a cross composed of the choicest of these flowers. The inscription was: "Thomas Crawford. Born in New York, March 22, 1813. Died in London, October 10, 1857."

"The church was filled on Saturday with the personal friends of Crawford, and with hundreds of citizens who, not personally acquainted with him, honored his genius and his memory. We noticed Dr. Cogswell, Dr. Francis, Wm. H. Appleton, John Van Buren, David Dudley Field, Caleb Lyon, John Jay, Louis Gaylord Clark, Charles Elliot, Professor Botta and a host of the artists now resident in the city. The pall-bearers were Hon. Charles Sumner, H. T. Tuckerman, G. W. Curtis, Professors Greene and Lieber, and Messrs. Hicks, Kensett and Rossiter, the artists. Mrs. Crawford, widow of the deceased, was present, with his sisters, Mrs. Campbell, and her husband. The funeral service was conducted by Rev. Dr. Berrian, assisted by Rev. Drs. Dix, Weston and Young. Portions of the service was chaunted by the choir, which included Mesdames Bouchelle and Stoepel. The entire ceremony was that of the Episcopal Church for the Burial of the Dead. Rev. Dr. Weston, with the relatives and pall-bearers, accompanied the body to Greenwood Cemetery, where it was placed in a private tomb. A monument will be erected over the spot in the course of the ensuing Spring.

"Previous to the removal of the body from London, a funeral service was performed over it, by the rector of the Church of St. Gabriel's, Pimlico.

"At a meeting of the Artists and Amateurs of the city of Baltimore held at Carroll Hall on Thursday evening, Nov. 12, 1857, Col. J. R. Johnston was called to the Chair, and J. K. Harley, appointed Secretary.

The Chair appointed a Committee of five, consisting of Gen. Ward B. Burnett, Elisha Lee, James K. Harley, D. R. Woodward and William Rinehart, to draft a preamble and resolutions expressive of the sense of the meeting in reference to the death of the distinguished sculptor, Thomas Crawford, of the city of New York.

After retiring for a short time, the committee submitted the following preamble and resolutions, which were unanimously adopted:

Whereas, we have heard with deep regret of the death of the American Sculptor, Thomas Crawford, of New York, and for the last twenty-three years a resident of Italy, who, by his industry, originality, and brilliant genius, with the advice of the immortal Thorwaldsen, inscribed his name upon the Temple of Fame with those of the most distinguished artists of modern time, and who was alike distinguished for his frank and manly character and eminent degree of social virtue, therefore

Resolved, That we express an unfeigned sorrow at his early demise in the midst of a professional career, in which he was daily adding fresh laurels to the wreath that fame had already placed upon his brow.

Resolved, That we especially regret his death at this time, as after more than twenty years of industry and assiduous study of the art in a foreign clime, he has been denied the high satisfaction of witnessing the results of his labor in connection with the extension of the Capitol at Washington, and of being welcomed to the shores of the home of his youth by the cheering voice of his admiring countrymen.

Resolved, That in calling the attention of our youth to the career of one, whose unflagging spirit and classic genius has made his name as durable as marble, we would remind them that his moral character was as pure as the Parian which will carry to the future his fame.

Resolved, That we deeply sympathise with the family, relations, and friends of the late gifted Crawford at his early death in a foreign land, and that the Chairman be requested to forward to them copies of the above proceedings.

Resolved, That all the city papers publish the proceedings of the meeting.

From the Liverpool Photographic Journal.

ON THE FADING OF POSITIVES.

BY THOMAS A. MALONE.

We promised to remark upon Mr. Sutton's paper on the fading of postives. If the reader will now take our last number in hand,* or No. 36 of the present volume of *Photographic Notes*, he will the better follow our remarks. The subject is an important one, and we are glad to have an opportunity of discussing it. It is a matter which certainly ought not to be left in so unsatisfactory a conditions. In France it has been proposed by some timid indivuals to aviod all allusion to the question, for fear of prejudicing the public! We in England like to know the worst of a bad business, and would not tolerate a journal that would make things pleasant outside when all was supposed to be rotten within.

We are about to review Mr. Sutton's paper chiefly because we take more interest in this question of fading than in any other relating to our art. Something must be done. Another year must not pass without an earnest public discussion of the whole question. Already the retailers of photographs admit that people admire, but do not buy *extensively*, of photographs, solely because they have no guarantee that a print for which fifty shillings is asked may not become waste paper in a few months. Is not this the literal truth? We avow that we ourselves abstain from the purchase of a tempting subject because we do not know the history of its manipulation. We have seen one of the large continental photographic workshops, and we declare that we have no faith in pictures *prepared for the market* in the off-hand way we have witnessed. We believe that more pains are now being taken, but this, like many other questions, is one of degree, and who is to say where the line is to be drawn.

Mr. Sutton's first paragraph is imperfect. We have photographs which fade without forming a colored substance. We shall have to classify faded pictures according to their minute physical appearances.

Certainly a pale yellow image is no longer a true photograph.

We have no proof of the exact nature of this yellow substance, and we do not believe that it is permanent against all time and natural agencies. Dr. Percy spoke of a sulphide of silver dense enough to form a good picture: he could not mean that a scarcely visible film suited any subject pictorially. Why must we say that it is only the assumed yellow sulphide of silver that is permanent? We know nothing precisely about the comparative merits of black and yellow sulphide of silver. There is some confusion here.

Not *the* process of fading, but *a* process of fading, can be shown by the sulphide of ammonium. This toning and fading process is of our discovery, and if it be worth having it is rightly ours. The action of "hydrosulphate of ammonia" was unknown to photographers till we made our experiments. Mr. Shaw is the only early photographer besides ourselves who tested the action of a sulphuretted compound, and *communicated to others* the result. The manner in which sulphide of ammonium acts is yet unexplained. Saying it is due to an excess of sulphuration tells us nothing; it may be the oxidation of a sulphuretted compound which generates the destructive substance: even a *hyposulphite* may be formed, and be partly the cause, but no one would call this an excess of sulphuration. The best way is to say that we do not know the steps taken by the respective elements which exist in and about the picture. The "hideous" color of a newly fixed photograph may be removed by heating strongly a damp photograph which has a trace of hyposulphite left in it. Is this sulphuration? It may be so; but if so, sulphuration need not cause a photograph to fade, for we have *toned* pictures of the date of 1844, which have not faded, though kept in an ordinary book. Hydrosulphate of ammonia, as sold, is a very uncertain substance. We

* See p. 368, no. xii. vol. x. Photographic and Fine Art Journal.

have in this journal explained the mode of preparing it: it will be seen that it is not likely to be uiform in strength. Besides it is acted upon by the air if kept in an imperfectly stoppered bottle. Hyposulphite of ammonia is said to be formed by the action of the air, so that unless care be taken the experiments will be vague.

This sulphurating to a maximum is an assumption, and Mr. Sutton is doubtless too good a logician not to know that "what is gratuitously assumed, may be as gratuitously denied." That sulphur toning takes the picture on the road to destruction we admit, but it does not follow that a man will go the whole course because he sets out dangerously. Keep the toned picture from a smoky, toning *atmosphere*, and it may stop on the road unharmed. We admit that the sulphur toning is an obscure matter. We have old toned prints which are still good, and that constitutes our stumbling-block. If gold tones *without sulphur*, let us use gold, but do not let us therefore say that a sulphur picture must fade and a gold toned picture is permanent. We simply know but little about it.

With regard to the influence of organic matter on the fading, we are also tolerably ignorant. We are glad that Mr. Sutton has discovered that even the developed pictures may not resist sulphur. We, long ago, faded one of his "permanent prints," with sulphide of ammonium, in the presence of several chemists. We know of no permanent prints. Permanent prints are like the indelible marking ink, which the quick-witted French chemical student converted into "delible ink," by a touch of cyanide of potassium and iodine, or some such agency.

Without pretending to know the nature of the hideous brick-red image, we may say that we think the organic matter about it does render it less stable, but we must not build on a mere hypothesis, let us say we do not know all the facts of the case.

Now for more suppositions. We once, in conversation with Mr. Talbot, asked, "may we not suppose, &c.;" to which he good-naturedly replied, with a smile, "You may *suppose* anything you please." We felt the rebuke. There was no need to add—supposing proves nothing. But seriously, this matter is too grave to allow of any loose chemistry being brought near us. It is a rule in chemistry to ignore the existence of any oxide or sulphide which cannot be shown by analysis to exist, and this is a safe rule. We know that we have much to discover, but we cannot therefore allow the justness of any mere assumption. The onus of proving the existence of a bisulphide of silver rests with Dr. Taylor and Mr. Sutton. Any one may utter guesses, and give a chemist a twelvemonth's work to demonstrate their futility. This is not said to discourage speculation, but to point out the weakness of reasoning from mere surmises. What is it then? Why, it may be one of five hundred things not yet dreamed of in our poor philosophy! Has it been shown that the yellow compound is or is not an allotropic substance? Here is more mere guessing.

We would ask Dr. Taylor to produce, chemically, this yellow double salt. The equivalents of sulphur and silver are known, and hydrogen can easily be oxidized. Can water be obtained from this yellow salt by the oxidation of its hydrogen? These are questions that we ought not to be asked to solve.

The explanation of a theorist is often satisfactory enough, if we will only "adopt" his "notion;" but here lies the difficulty. We may adopt a thing that is false. Again, we say, the onus of proof lies with the theorist. Form this yellow sulphide, and we will gladly analyze it.

In our time, we have had the notion that a sulphate might be formed, but we have long left off guessing, and determined to wait for more light. We have proved, by experience, that a positive, faded by iodine, can be very fairly restored by boiling it in potash; but a positive, faded by time, is not so restored. From this we do infer that the ordinary fading is accompanied by the formation of a soluble salt, for what little restoration takes place is of a blurred character in the one instance, and of a well-defined character in the other. This is reasoning from experiment.

The mode of analysis suggested would not prove that a sulphate had been formed. A hyposulphite *might* be formed; so much for hypothesis. Moreover, testing is not so easy as one might imagine; *traces* of sulphur salts are difficult to analyze *qualitatively*.

The remarks about light and darkness are vague; we do not understand the fact well. Theory about fires is very loose. Sulphur exposed to damp air forms sulphuric acid; this would dissolve the silver, not sulphurate it. See how loose this is. We talk about sulphur and sulphuration in a very vague way. Mr. Sutton is not alone in this respect.

Sulphur, as sulphate of lime, is wilder guessing still. Show us that sulphate of lime can blacken, or in any way sulphurate silver. As to sulphide of sodium, ultramarine is never put into cream colored papers, which yet yield fading pictures.

We believe the sulphur compounds, in an impure atmosphere, have much to do with certain cases of fading, and we believe and know that a red picture will tone itself in the atmosphere, but not with gold certainly: with what then, but sulphur?—and if a print can tone by atmospheric sulphur, why cannot oxidation and more sulphur destroy this self-toned print? Let not this point be evaded. It is with us a strong position, and we wish we could be fairly dislodged from it. As to the removal of all traces of sulphur, we used potash with a view to aid in this matter, and we have still something to say about the use of potash; but we shall follow our own prescription and not talk about matters which only may or may not be founded in realities. The difficulties of analysis are very great where such minute quantities are concerned, and one had need give themselves up entirely to the subject or thing, not always practicable in this world of mixed duties.

The *chance* of prints, made by the ordinary method, lasting, is this: certain prints made in a wholesale way in 1844 have, as regards some of them, remained without the slightest deterioration to the present day; indeed, one might affirm that some of them have been *temporarily* improved. This, again, is a strong position, and we can never retire from it as long as these said prints remain in their present satisfactory condition. We say that any theory that fails to explain *fully* this fact still leaves us in the dark. Do we then confide in the old method? By no means: but we point to it to warn those who think they prove everything by saying, "here is a picture fourteen years old *by my process*, and it is unfaded." We reply, "here is one as old as yours, by the original process; and if one escapes why may we not learn how to enable all to escape?" You reply; the majority of yours fade, and the majority of ours stand good. Granted for a moment, and only for a moment; but your process is inferior in its results, and may yet require to be kept from the atmosphere; and so we may as well begin by protecting the superior results obtained by the old and unexplained method.

The honorable course is to admit that we are very ignorant in this matter, and to tell the public that they must share with us in it. We will do our best, according to our knowledge, and having before us the fact, that pictures of old date are still sound, we are not justified in asserting that any given picture will fade because it was not made by our process.

The difficulty is to furnish the guarantee. Self-asserted authority is valueless in the long run. The matter must be settled with the public, and not simply by them or against them.

We believe we have now as fairly as possible arrived at Mr. Sutton's last paragraph; and as his remarks have been somewhat desultory, so is our comment. He ends by deprecating the use of hot water in fixing. Now, the chemist knows, that when he can use hot water to wash a precipitate, it is to be preferred, and on this ground we advocate hot water for washing, say water at 100° Fahr. We believe that the washing is accelerated by using a hot liquid, apart from any question of solubility; at all events, if probabilities are to guide us, cold water must be considered inferior to hot: the question is important, though to many it may seem to be only secondary.

If, in our remarks, we have said anything that may appear to mar the general character of our criticism, we beg that it may be overlooked. We desire to obtain credit for being in earnest in this matter, and we are very glad that Mr. Sutton's fearlessness has given us this opportunity of assisting to keep alive the discussion of this fundamental question. In justice to ourselves, we ought to add that the whole of our remarks have been noted down with a "running reed," and without time for minute revision; but we do not by this, wish to imply that we doubt the truth of the positions we have taken up, but simply beg of the reader to excuse the manner in which we have proceeded.

From the Liverpool Photographic Journal.

PAPER FOR PHOTOGRAPHY.*

To return to our sizing operation: the paper is put into an oblong vat containing the warm size, a few sheets at a time, until a considerable mass has been immersed. A flat board, placed perpendicularly in the vat is then forced up against the mass of sheets, which are also on their edges, to squeeze the whole into close contact; the excess of size is then run off and the mass of sheets removed ready to be pressed, the adhering gelatine, now beginning to solidify, being first scraped away. After undergoing a moderate pressure the sheets are parted, and again hung across the horse-hair lines to dry. As before from three to five sheets are suspended together, and the previous remarks respecting the conditions under which the sheets dry apply here also. This drying stage of the manufacture is a very important one. If the moisture is removed too rapidly, as by fire heat, or in very hot weather, the sizing fails, as may be discovered by dipping a sheet so dried into water. This test will show that the paper is still absorbent over the greater part of its surface, and consequently useless for either writing or photographic purposes. In frosty weather the sizing is also likely to fail, but from what cause does not clearly appear. In very damp weather, long continued, failures occur probably from the gelatine undergoing a species of decomposition. Again, during thunder-storms the paper sometimes suffers injury, as shown by the water test.

From these statements it will be perceived that the sizing is a very delicate and uncertain operation, and yet probably our ultimate success depends *chiefly* upon this stage of the process being well got over. One can now see why machine-made papers, escape many of the difficulties which attend those of hand make, and one would be inclined to recommend the use of the machine for photographic purposes, did we not know that as a rule machine-made papers are liable to be more spongy in their texture, through the difficulty of imitating by a machine the felting "shake" of a hand-workman. Besides in machine-made papers a different sizing mixture is generally adopted, which interferes with the keeping qualities of the sensitive paper. Flour and resin, or a resin soap with flour, and with or without alum, is said to be used, each maker having a formula of his own. These materials appear to aid sensibility, for it should be observed that the "Turkey Mill" paper already spoken of was less rapid than the Frence papers which appear all to be machine-made. If we could once get well made sheets from a uniform pulp, we might soon learn the influence of the sizing materials, and devise a method of combining all the known good qualities, unless indeed sensibility and long-keeping are incompatible qualities. On this point we have not enough evidence. All analogies drawn from the case of the Daguerreotype are likely to be fallacious.

The paper, after being suspended for a week or ten days, may be removed and pressed, and then hot-pressed or glazed by being placed between polished copper or zinc plates, or between glazed mill-boards, several of which are passed at once, and repeatedly, between rollers, which exert a powerful pressure upon the surface of the mass which is drawn through them. The amount of glaze depends chiefly upon the number of times the mass is sent through the rollers. If the pressure exerted be extreme, the paper appears full of pin holes, occasioned, I think, by the crushing of the lumps, which we have seen must be formed in the couching operation; and this was the evil I alluded to as being made evident at a later stage of the process. I believe these crushed parts will absorb and be acted upon differently at every stage of the photographic operations; and I doubt very much the policy of very high glazing. I think hot-pressing should be chiefly relied upon; but we want exact experiments upon these points.

We have now gone through the operations necessary to the production of a sheet of paper fit for photographic purposes; and do not let it be forgotten that paper has been made, of good quality, by the process I have described. We want first of all simply to study well the present method, endeavoring to reform it at those points I have indicated as being doubtful. Let us once obtain, *with certainty*, a paper equal to the *old* "Turkey Mill" specimens, and much will have been accomplished. Further improvements would then soon follow.

I have only to state that our linen paper passed through all the stages satisfactorily until it came to the sizing, here it totally failed. It *resisted the size*, although repeatedly dipped and dried between each dipping. The strength of the size was varied, and the dippings continued until the paper became *size-stained*, and yet, on finally testing it by immersion in water, it was found to be bibulous over the greater part of its surface. I now saw how unwise I was in permitting myself to be overruled with regard to the *boiling in alkali* at the first stage. I have no doubt that such boiling would remove the resin or gum-resin, or *fatty* or glutinous substance, whichever it may be, that belongs to the *woody fibre*, but which is quite distinct from the *cellulose*, of which the flax fibre chiefly consists. I may add, that a small portion of a sheet which seemed to take the size better than the rest, was iodized, prepared, and exposed in the camera; it gave a very characteristic result, and showed clearly that flax might be made to yield a paper having every good quality that we could desire. So far the experiment was not an entire loss, although it failed for immediate practical purposes.

We shall, for the present, bring this subject to a close, having pointed out all that is known with certainty respecting the best materials for ensuring a good sheet of paper. Besides the negative paper made of linen, we had some paper made for positives, by the advice of the manufacturer, and for this a material called *government canvas* was used. It was a fine kind of sail-cloth, and made a very strong paper. Some positives printed on it at the time are good to this day, although they have been kept in a portfolio with others which have faded. I am inclined to think that the nature of the paper has something to do with the fading of positives. The fact stated by Mr. Ross respecting hard-sized paper is, in accordance with our experience, gained from the printing of Mr. Talbot's pencil of nature; but then all pictures on this hard-sized paper have not stood the test of time. We are in this subject met by such conflicting evidence that a sound observer must hesitate in assigning any one cause as *the cause* of fading. The removal of the size from the finished prints has been recommended; but against this we have the fact, that pictures with the size in them, in a very insoluble condition, remain good, when others, on a paper feebly sized, fade altogether. So far am I from fearing the presence of good size that I have recommended sizing the picture anew, after a solution of potash has been used to tone the picture. Time alone can tell us who is right in this matter. If size is injurious, what shall we say of albumenized prints? The size may effect us this way: it may either aid or check, as the case may be, the action of certain atmospheric impurities, but we have already said the paper question requires a searching investigation. There are a few miscellaneous points which remain to be noticed respecting the paper manufacture. First, as to the presence of spots which appear in the finished picture. These, of course, arise from the presence of foreign substances. Particles of iron or brass may be present from the rag-sorters overlooking covered wire, buttons, &c., even pins are sometimes overlooked and go into the engine to be beaten up with the stuff; bone buttons, hooks and eyes, and such-like fastenings

* Continued from p. 368, vol. x. no. xii.

often pass into the pulp; and if they are not torn to pieces completely, they abrade the brass bed of the engine sufficiently to introduce particles of metals into the pulp; these particles decompose the silver solution and furnish wide-spreading spots. Our linen paper became foul from a peculiar cause: the water of the spring which supplied the engine contained a certain quantity of carbonate of lime held in solution by free carbonic acid. This lime became deposited upon the wood-work of the vat (and indeed upon every part of the wood-work exposed to the water) in consequence of the expulsion, by constant agitation, of the loosely combined part of the carbonic acid. This deposit, after reaching a certain thickness, sometimes scales off during the beating operation, and becomes broken into a thousand pieces, and is interspersed throughout the pulp, and this happened to us. At the outset I objected to the presence of this deposit, but I was told that it could not be removed; and, indeed, to remove it would be no easy task: it adheres so closely to the wood that the scales bring away an impression of the grain of the wood. The deposit is, moreover, very hard. Again, the paper may become foul from the felts having been carelessly left exposed to dust and dirt, and washing is here not a sufficient remedy. The felts used for our linen paper were unfortunately, as it turned out, in a dirty condition: being finer than those usually employed, they had lain by and contracted dirt which no washing could remove. These felts were actually cleansed at the expense of our linen paper!—a most provoking piece of experience, for which the maker was in some degree to blame. Another source of impurity may be found in the bleaching house. I have seen, at a very large establishment, metal pipes and taps projecting over the wooden vats which contain the pulp and chloride of lime; and I have seen these taps green and corroded from the chlorine vapor condensing in the water which was leaking out at bad joints and running into the pulp, carrying with it chlorides of the metals used in the pipes and taps. I think I have now stated quite enough to justify the assertion that the process of manufacture must be remodelled if we are ever to get paper pure and uniform in its character. I may also mention that I suggested that distilled water might be necessary for washing the pulp and for sizing, but I was, at the time, assured that the suggestion was impracticable. Now, however, there is an admission made that distilled water may be had at an economical rate. Indeed at present all the water used at the Feversham powder-mills in refining saltpetre for gunpowder is distilled expressly from large iron stills, and all the water used in the actual manufacture is carefully distilled, as I was informed on visiting the works, yet gunpowder is cheap enough, this nicety notwithstanding.

I propose next to give the method employed in printing the plates used to illustrate the pencil of nature.

From the Jour. of the Phot. Soc.

REMOVAL OF SPOTS FROM COLLODION.

To the Editor of the Photographic Journal.

Sir,—In the practical applications of photography I have frequently been tempted to exclaim, with Lady Macbeth, "Out! damn'd spot;" but no, 'twas there; removal was destruction. In collodion, specks of dust *will* gain a habitat, and there they lurk, ready, when poured upon the plate, to fix themselves, and lend distortion to the fairest face.

The same evil will sometimes result from spots of dust in the spirit varnish, and thus many good negatives are ruined for printing; the spot being certain to locate itself somewhere about the human face, to the total destruction of its *divinity*.

Now, Sir, if we wish to avoid a *bulb* for a nose, or a blot for a mouth (except where these really represent originals), we must exclude with the utmost care all those *insane atoms* from our chemicals: to effect this I have devised a very simple *filtering apparatus*, viz, a *gas jar* inverted over a dish of water, and within it a bottle containing a funnel, and the funnel a filter. Now we may unstop the jar, and pour into the filter whatever we wish to cleanse from the "bottoms" or dirt it may contain. Collodion will filter through in a very short time, and with but little loss, even with a surrounding atmosphere of 60° or 70° F.

C. Wray, M.R.C.S.

From La Lumiere.

ON THE SOLUBILITY OF PYROXYLINE.

BY M. H. DE LA BLANCHERE.

There are many things to be said on the most simple manipulations of every-day photography. M. Van Monckoven, after describing how to rectify ether and alcohol, and to make good pyroxyline, states that a solution of this in the mixture of alcohol and ether ought to be of a light yellow tint, owing to the pyroxyline itself being similarly colored.

Being desirous of studying the properties of a quantity of colorless pyroxyline which had been sent to me, I dissolved equal weights, in the proportion of 3 per cent, in two liquids, one consisting of commercial alcohol and ether, and the other of the same solvents, as perfectly rectified as possible; they were then well agitated and allowed to stand. Some days afterwards I noticed that one of the solutions was perfectly colorless, with only a very slight nebulosity, whilst the other was of a perceptible yellow tint; the colorless solution was the one which had been made with the rectified alcohol and ether.

Whence arises this reaction? Mr. Hardwhich, in the Journal of the Photographic Society of London, vol. iii. p. 182, remarks, when speaking of freshly iodized collodion, that the first coloration which is perceived is probably due to the ether, which may develope an oxidizing principle and become acid even when the liquid was originally alkaline. He does not however consider that the brown coloration of old collodion is entirely due to this cause; the pyroxyline has some part in it; for if the iodide only is dissolved in the alcohol and ether, the liberation of iodine is much slower: neither is it owing to the presence of free acid in the pyroxyline, for the same thing frequently takes place after it has been soaked in weak solution of ammonia. These facts led the above clever experimenter to imagine that the pyroxyline itself decomposes when in contact with an alkaline iodide, and he founded this opinion on some experiments which confirm this hypothesis, but which do not bear upon the present subject.

But cannot the pyroxyline itself decompose under certain conditions when in contact with the *alcohol and ether*? The above-mentioned commercial samples had not the least acid reaction, any more than the others which had been perfectly rectified: they merely differed in the presence of a little water.

Is it an action of the elements of this water, decomposed by the pyroxyline; or is it a reaction of the pyroxyline on the liquids which contain it? In the first place, pyroxyline is insoluble in water; but I remarked that the solvent power of the unrectified liquids was the greater of the two, for after standing for a month, the clear part of the *colorless* liquid measured 13 cubic centimetres, whilst that of the *yellow* solution measured 40 cubic centimetres. Here then is a singular action: the presence of a liquid facilitates the solution of a body in two other liquids, when this body is insoluble in the liquid in question.

The two solutions were decanted and diluted with their own volume of rectified ether; the yellow color of the one still remained. I then resolved to study the effect of this coloration on the sensitiveness of the idolized collodion which could be made therefrom. The two samples of collodion were therefore idolized with equal portions of the same kind of iodide, and after allowing them to settle for twenty-four hours, I proceeded to take consecutive and alternate pictures with them, under as near as possible the same conditions.

I could not find the least difference in the adherence of the two films to the glass, nor in their resistance to the shock of a stream of water. The yellow collodion was as sensitive as the colorless one, only the pictures taken with the latter seemed to have more half tone; the same exposure giving a little more detail. The pictures from the yellow collodion seemed as if they were taken on a rather less strongly iodized film, although in this respect the two samples were identical. The contrary ought to have been the case if the yellow color had been caused by a liberation of iodine, as then the pictures would have been more vigorous and the high lights more opaque.

I should state that these points of difference were so minute, that it required the greatest attention in examining the results of the experiments to detect them; and in ordinary operations they would have been overlooked. The two collodions have remained several weeks without any change of properties, and have not got beyond a deep orange tint. They have been tried in this state, but have shown nothing of importance.

The conclusions which I draw from these facts are—that the color of the collodion is (as is well known) no criterion for its goodness; that this color depends upon modifications, perhaps only isomeric, of which we are yet ignorant; so that notwithstanding the respect to which bulky volumes are entitled, I think they attach too great importance in recommending the ether and alcohol to be highly rectified, when satisfactory results may be obtained with articles of a good average quality. The first are more costly and difficult to obtain, more liable to adulteration, and in fact of less uniform composition than that which is met with in commmerce in large quantities, provided of course that this is of good average quality, as I consider ordinary sulphuric ether to be, if carefully selected and without too acid reaction, and alcohol of 36°, if free from any foreign odor.

I conclude by stating, for the satisfaction of my conscience, that a photographer of the present time requires no little mental discrimination in experimenting with the thousand-and-one new drugs and inventions which constantly assail him: far from being of any assistance, they are injurious in complicating his *material*, and he should be very particular in opening the door of his workshop to them, under however high-sounding and pompous a name they announce themselves.

From the Liverpool Photographic Journal.

THE REFLECTING STEREOSCOPE.

The following note by Professor Wheatstone, although read before the London Society some four years since, has not yet found its way into our pages. A recently published *Essay* having described the reflecting stereoscope to be an obsolete and unmanageable instrument, we are the more anxious to direct attention to the various modifications of the original invention. We can assure our readers that the reflecting stereoscope will never become obsolete, or be "*merely confined to the experimental purposes of the philosopher.*" Such a fate is much more likely to attend the rash assertions of the writer of the essay alluded to above.

"The most perfect and generally useful form of the stereoscope is that with reflecting mirrors, described in my earliest memoir 'On Binocular Vision,' published in the Philosophical Transactions for 1838. Pictures of any size may be placed in it, at the proper point of sight, with the proper convergence of the optic axes, and it admits of every requisite adjustment to make the pair of binocular pictures, coincide correctly.

"I have described, in my second memoir, a portable stereoscope which folds into a small compass, and which is well suited for pictures not exceeding six inches by four. I have since constructed an instrument, very convenient for carrying about, which is adapted to exhibit pictures of the largest dimensions usually taken, as well as smaller ones, and which may be made use of either for mounted or unmounted pictures. When closed it occupies a space of nine inches in length, five in breadth, and four and a half in height: when expanded the instrument is two feet in length, one foot in height, and nine inches in depth. The base and sides consist of jointed bars on the principle of the lazy-tongs: the two mirrors fold together back to back, and, by means of a hinge on their support, fall into a groove on the base fitted to receive them. On the top of each of the expanding sides a clip nine inches in length receives the picture (which there is no need to mount on cardboard) and holds it by the pressure of a suitably disposed spring; and a similar but detached spring clip is applied to the lower end of the picture in order to keep it flat and in a vertical position.

"The picture being fixed in the clips, so that their reflected images shall appear single and coincide in all their parts, the accurate adjustment to the sight of different persons is effected by sliding to and fro the pillar which supports the mirrors; the optic axes being caused to converge more as the mirrors are moved towards the eyes, and *vice versa*. As the height of the sides is variable through every degree, the pictures are easily adjusted to the same level by pressing on the side which is highest. The length of the base being also variable, the pictures if it be required, may be placed at different equal distances from the mirrors. If the pictures are not straight with respect to the sheets of paper on which they are placed, one end may be brought lower than the other merely by drawing down that end so that it shall not enter the clip so far as the other.

"The instrument is furnished with a pair of ordinary spectacle lenses, No. 24. If the pictures were so placed that their reflected images coincided when the optic axes made an angle of 15°, corresponding to the distance of twelve inches, no lenses would be requisite, as the distance of the binocular image, the convergence of the optic axes, and the adaptation of the eyes to distinct vision would have their customary correspondence. But, for reasons I have elsewhere stated, a much better effect is produced, and the objects appear larger and more distant, when the pictures are so placed that, to cause their most distant corresponding points to coincide, the optic axes are parallel, or nearly so; in this case, however, in order to see the objects distinctly, the rays proceeding from them must be rendered less convergent, and for this purpose lenses are necessary.

"The lenses are moveable in a vertical direction, in order that they may be fixed at the proper point of sight; the effect of a stereoscopic picture greatly depends on its being thus viewed, though it is a circumstance which is very generally disregarded."

From the Jour. of the Phot. Soc.

MR. LONG'S DRY COLLODION PROCESS.

16 De Beauvoir Terrace, Culford Road, London, Aug. 12, 1857.

To the Editor of the Photographic Journal.

SIR,—I feel so pleased with the success of a photographic tour which I have recently made through Belgium, that I cannot resist the temptation to make known, for the benefit of my brother photographers, the means by which such success has been achieved.

In common with every photographer, I have longed for the day when collodion in the *dry* form, easy of preparation, could be employed in the field. The complicated nature of the preparations hitherto employed for out-door work has deterred me, and, I believe, very many others, from trying them to any extent; and, therefore, I found with much satisfaction that Mr. Long, of Fleet Street, had discovered a process, at once simple of preparation, and certain in working.

Having been assured that plates prepared by this new process had preserved their sensitiveness for at least a fortnight, I resolved to try it in my Belgian tour, and at once prepared a number of plates, 15 inches by 11, for the purpose.

I had no time for testing the keeping power of the plates before my departure, and, as the development could not be made until my return to England, it will easily be imagined with what anxiety I worked this, to me, unknown process.

My tour for a fortnight's duration having ended, I returned to London, and began developing. To my great delight, I found all that Mr. Long had said, in favor of his process, fully realized. Picture after picture (I took twenty-eight) came out with great beauty, and, so far as the process is concerned, I have not had a single failure.

As the season for photography is now passing away, I am anxious to see others try this beautiful and easy method. The plates were prepared according to the formula given in Mr. Long's book of instructions; *i. e.*, first coated with collodion, and sensitized in the usual way, then covered with a preservative film of refined gelatine and citric acid, which is allowed to dry; and this is all,—they are then ready for the camera. The developer is common gallic acid, to which is added a little alcohol and nitrate of silver.

I have found that the development may be deferred for at least three weeks after exposure, and my candid belief is, that the plates may be kept for months without deterioration.

If you should be disposed to find a place for this communication in your valuable Journal, and thus make known to the photographic world how, with but little trouble, and scarcely the shadow of a doubt as to success, they may pursue their delightful art on their travels, I shall be very glad.

I send my card, and beg to state that it will give me pleasure to afford any further information which may be sought on the subject. G. R. SMITH.

From the Jour. of the Phot. Soc.

ON THE SEPARATION

Of Iodine, Bromine, and Chlorine, and the comparative degree of Affinity of these Elements for Silver.

BY FREDERICK FIELD. ESQ.

Extracted rom a paper read before the Royal Society, June 18, 1857.

Although both bromide and iodide of silver are decomposed by the action of chlorine at an elevated temperature, yet chloride of silver is completely decomposed by bromide of potassium, and both the bromide and chloride of silver by iodide of potassium. Even the action of hot strong hydrochloric acid has but little influence upon the iodide of silver; many days of continuous boiling are necessary for its entire decomposition. I believe that it has been the opinion of chemists that chlorine possesses an affinity for silver superior to all other elementary bodies, and we are told in Gmelin's Handbook that all salts or silver, even the insoluble ones, are converted into chloride by solutions of metallic chlorides. From the following experiments it appears to me that bromine has a greater affinity for silver than chlorine, and iodine a still greater affinity than bromine.

When a mixed solution of bromide of potassium and chloride of sodium is added gradually to a solution of nitrate of silver, not in excess, no trace of chloride of silver is precipitated, as long as any bromide remains in solution.

If to a similar solution, iodide and bromide of potassium and chloride of sodium be added, iodide of silver and nitrate of potassa are formed, the bromide of potassium and chloride of sodium remaining undecomposed.

When bromide of potassium is poured upon chloride of silver, an entire decomposition ensues, bromide of silver and chloride of potassium being produced.

When iodide of potassium is added to chloride of silver, iodide of silver and chloride of potassium are formed; and when iodide of potassium is added to bromide of silver, there is a similar decomposition, the iodine replacing the bromine.

When chloride of silver in excess is agitated with a solution of iodide of potassium and warmed for some hours, no trace of iodine can be detected in the solution; when however chloride of sodium is poured upon iodide of silver, no decomposition occurs, neither is there any action upon bromide of silver with the same salt: and when bromide of potassium it added to iodide of silver, there is no alteration in the union of the elements.

From a number of experiments made in illustration of the preceding statements, I deemed it possible that the separation of chlorine, bromine, and iodine could be accomplished by this reaction.

The method which I have devised is simply this:—After weighing three equal portions of the salts to be analysed, they are placed in three flasks with ground-glass stoppers, and about an ounce of water is added to each; nitrate of silver being then added, slightly in excess, to the three, the stoppers are replaced, and each flask agitated violently. The precipitates subside in a few minutes, leaving the supernatant liquid perfectly clear, They are then filtered through separate funnels, and washed with hot water. No. 1 is dried and weighed. No. 2 is digested in bromide of potassium, dried and weighed; and No. 3 in iodide of potassium, dried and weighed.

To test the method, a mixture was made of 5 grains of iodide of potassium, 5 grains of bromide of potassium, and 5 grains of chloride of sodium. The following is a comparison of the theoretical and experimental results:—

	Experiment.	Theory.
Iodine	3·69	3·81
Bromine	3·51	3·34
Chlorine	2·92	3·02

From the London Art Journal.

THE FAMILY OF FIVE.

How much character there is in the hand! How individual it is! It has its physiognomy and phrenology as well as the head. It is peculiar to man, and is the direct agent of his mind: no wonder then it should be impressed with his character. Our greatest portrait-painters have been the most careful with their hands. Sir Joshua with their *pose*, and Vandyke and Sir Thomas Lawrence with their *pose* and drawing. We instinctively recognise the appearance of the hand as a part of individual character. We see the hand of Cromwell broad, somewhat coarse, with swollen veins: somewhat flat too, but instinct with vigor, grasp, and decision: that of Newton definite and precise, but more delicate; motive, but attenuated by study. As there is great individual character shown in the handwriting, so I see it also in the hand.

Actions and positions of the hand become habituated to individuals. From its structure it is capable of a great variety of these. It is also affected by employment, and when ground and hardened by physical labor, is less delicate, sensitive, and expressive of thought; as indeed is the mind itself. Both are apt to get, as it were, deadened and case-hardened by physical daily labor. So, doubtless, one sees in a man's hand a token of his condition. Without palmistry, it in some degree tells his fortune.

The hand is a family of fingers, with an united interest and common object: a family of five, with each characteristic and individual in itself. Children in their nursery legend associate them in one litter, and run them over from the thumb to the little finger, singing, "This pig went to market—this pig stayed at home; this pig had some roast beef—and this pig had none; and this pig cried, 'wee, wee,' for a bit." In this is seen a common object—the obtaining of the family beef, and also a diversity in the parties concerned; for as with a family, so with the fingers—a strong likeness runs throughout, but the individuals are different in character, tendency, height, width, size, and office.

Thus the first, or forefinger, is the most active and intellectual. The index finger, as it is called, as being used to point with and indicate, and from its assisting more in gesture than any other. It well has its name, too, of "first" and "fore" for it is first and foremost in almost everything that the hand does, especially in its finer and more delicate offices. Thus, in conjunction with the thumb, it chiefly holds the pen and pencil, while it is the whole hand that grasps the sword, the hammer, or the plough. In nothing, that I recollect, that the hand does is the forefinger left out, but with its close assistant, the thumb, is always a-doing when anything is to be done. These two are quite *d'accord*, and it is fortunate they are so, as one without the other would be comparatively useless. As it is, they transact the principal business of the family; the others following their lead, and doing all they can to assist them. Thus, in holding the pen or the pencil, they are the chief agents, yet the middle finger is a very substantial assistant, and follows all their movements, while the fourth finger also gives her support, and even the wee wee little finger comes in now and then to steady the whole hand on the paper.

The hand, indeed, is an example to family circles, all its members so thoroughly pulling together. Without weakening this, however, there are little predilections and pet friendships among them, such as exists between the middle and fourth finger. It is common to see these with their tips whispering as it were, close together like two sisters in a family who are nearest the same age. The two are especially affected to each other's society, and in almost every action they are found of the same mind. Such sociability is not so much the character of the little finger, which, perhaps, being the small one of the family, fancies he has none of his own standing to play with, and so amuses himself after his own fashion. The young gentleman is apt to have a strong will of his own, and is indeed somewhat eccentric and independent; and this the more inasmuch as he really has a muscle all to himself, the *extensor minimi digiti*, which occasionally sticks him out all by himself. He is a good little boy in the main, however, and is generally very happy to help his brother and sisters, as we have seen, in the affair of the pen and pencil.

But to return to the elder branches: I always fancy the thumb to be the sturdy boy of the family, somewhat short of his age, perhaps, but making up for this in strength, and regarding with great deference and affection his elder sister, the first finger, and always prompt to assist her. This eldest sister appears the most *spirituelle* of the family; also much the most a woman of business and of the world, although in stature, to be sure, her next kin and nearest sister has somewhat outgrown her. The middle and fourth fingers are, as I have said before, the two who keep closet together, very seldom separated at any time. Yet, for all this, they are ever ready to assist in what has to be done, setting thus an excellent example to all younger sisters.

These diversities of character are more strongly developed in the right hand than in the left, although in both a greater readiness in action distinguishes the first finger and thumb from the rest. The powers of the members of either hand, however, are capable of being assimilated to a greater degree than might be at first thought, as may be seen in instrumental playing, where all are brought into constant action on pretty nearly an equality.

But to quit this fanciful personification of the fingers, I would add two or three purely artistic remarks on their form, and on that of the hand. In cases where grace and beauty are the principal objects, it is desirable, I think, to make the middle finger markedly predominate over the first and fourth, and that the little finger and thumb should be rather small; presenting thus a pleasing taper form, and combining sufficient length with delicacy. In this case, however, it might be said that beauty would err from the scholastic, but not very tenable rule, that utility and beauty are identical; for a hand is perhaps more useful and strong when it is in some respects like that of a monkey, with its thumb and fingers all more of a length, and is more suitable for playing on musical instruments. Such a hand could not, however, in my idea, be as beautiful as one possessing the former proportions.

In a man's hand I would, however, keep utility and strength more in view, and not venture to vary the lengths to the degree I would in a woman's hand; but in this respect charactor is the guide. In a Hercules or a Samson the fingers might be of a slightly more even length than in an Apollo. In the left hand of the Belvidere Apollo the little finger is small.

Of all the fingers only one is truly straight, having its two sides alike, viz., the middle finger; the other fingers incline at their points towards the middle finger, forming, either with or without the thumb, a tapering group. This is to be noticed not only when the hand is open and straight, but in all degrees of bending and being closed. The thumb also can hardly be said to be straight, as its two sides, where it joins the hand, are not alike.

Beauty in the hand is also connected with the gradual lessening of the lengths of the parts from the wrist towards the end of the fingers, which gradation is best observed in a bent hand, beginning with the space from the wrist to the knuckles as the first and largest measurement; from the knuckles to the first joint of the fingers as second, and as less than this in the proportion of about two-thirds, which proportion holds also in the decrease of the next spaces, viz., from the second to the first joint, and from the second joint to the end. Thus the length from the tip to the second joint is two-thirds of that from the second joint to the first, which is two-thirds of that from the first joint to the knuckle, which in turn bears the same proportion to the first bend of the wrist. There are small diversities in this respect in the different fingers, but a gradation closely approximating to this holds with all. A false idea of grace has led to making the tips, or end joints, of the fingers too long, as if by an afterthought; but faithful delicacy and beauty does not admit of a true balance being destroyed, but requires the parts to be duly and naturally tapered in length, as well as width.

The Greeks, in their statues, frequently cut the nails rather straight across; that is to say, they did not make them follow the line of the tips of the fingers, nor that of their own growth from out the finger. I venture not to be convinced of this being either most reasonable or most graceful. The nail is Nature's protection to the end of the finger; in some handwork it wears away conformably with the shape of the tip. I confess I like the nails as close, or closer, at the angles as in the centre, by which means an even curve is obtained, repeating very nearly that of the tip of the finger, and beautiful as well as convenient, affording a double line—a kind of little rainbow arch—as the finial to the finger.

There is a due medium in length of nails, in which beauty and utility coincide. The nail is wanted just a little protruding, so that it may pick up things, but not too long, for fear it should tear. I have seen some fingers in statues look as if they had been bitten to the quick: whereas, on the other side, the only defect in Vandyke's hands is that the nails are often too long, projecting beyond the ends of the fingers: but this may have been the fault of the fashion of the day and the sitter, and not of the painter. I like best the line of the tops of the nails to be round, and close at the corners; the whole nail thus having a filbert, oval shape, with the little white moon at the base peeping up from below into an ellipse of a pink-tinted sky.

There is something to me very uncomfortable, as well as unbeautiful, in a projecting edge of nail; it becomes a danger instead of a protection. The Chinese—that strange people who do everything that other folks do not—cultivate them into long talons, that is, many of the so-called upper classes do, to show they do not work; a practice resulting in a very bird or wild-beast-like appearance—fierce but useless, and on a par with the hideous faces they paint on their war-junks to frighten the barbarians. The infatuated devotees of India, who dedicate a limb to their Creator by rendering it useless, and with this object keep a joint in one position till it becomes stiff and grown together, have a favorite position for an arm, which they will hold and tie in an upright position till nature fixes it there, with the hand and fingers clenched, which become equally fixed and immovable. In this position the nails continue to grow, which they do quite through the hand, and issue forth at the back, hanging in long strips. Fortunately we do not do such things here, the strongest manifestation in the way of nail growing being the schoolboy trick, that cherishes some pet nail till it grows so long as to be made into a pen, and written with.

Each joint of the hand has a different character: the knuckle has a sort of petella shape, with a tendon running over it, as at the knee; the next has a somewhat heart-shape, with the point downwards; and the last is like a double bean. These are most seen when they are bent: when straight they are not so apparent, and in women and children they sink into dimples, either simple or complex.

Among the many points to be observed in hands, it may be noticed that in those that are most graceful the sweep of surface across the back of the hand is not one round, but sinks in somewhat along the metacarpel bone of the fourth finger. In perfectly beautiful female form, the hand is also so proportioned to the wrist, and so pliable and capable of being compressed into a long hollow, like a rolled leaf or a pholas shell, as to be easily drawn through the bracelet. Everybody, mothers especially, acknowledge the great beauty of little babies' hands, although they do call them "puds,"—being an abreviation, I suppose, for puddings,—alluding to their fatness. But there is nothing merely puddingy in a beautiful infant's hand, although the roundness of the form is carried to the extreme consistent with beauty, which, however, is again harmonized by the smallness of the scale. On the contrary, there are a vast variety of little sweeps and deviations of line in it not coinciding with segments of circles, but of various characters that in their aggregate produce the most agreeable flourishes of form all over it imaginable, and result in a most varied, beautiful, and graceful image. A dear little child's hand, in all simplicity and *abandon* of repose lying on the white coverlet, is a perfect little nest of love to a mother's heart: and, with a true sense of the bathos of the addition, I may say also a perfect study to the artist, both in form and color, pink as a shell, and soft and graceful as a flower.

I hope I shall not, however, lose with mothers by saying, that, artistically, a beautiful woman's hand is still a more perfect object. The curves that draw this are of a character more truly productive of beauty than those which describe the former. They are less of circles and more of ellipses, and the more lengthened comic sections are more graceful in the outline of objects than the shorter ones. I may be perhaps allowed, *en passant*, to make the observation that the varieties of the perfect sweeps of the conic seetions might well, in artistic views of form, accompany, if they did not supersede, Hogarth's line of beauty. For my part, I invariably see elliptic or parabolic curves in every beautiful form of nature I meet with, and in none more than in a beautiful female hand.

There is "in the trade," as the plastermen call it,—that is to say, sold generally in the plaster cast shops, and more or less good according to the mould in which it has been made,—a beautiful female hand, well known by the name of the "Italian lady's" hand. It also has been said to be the hand of the Marchioness Brinvilliers,—a celebrated criminal mentioned in the "*Causes Celebres*," who committed so many dreadful murders by poison that she seems to have been possessed by the fiend indeed. One would have been sorry to think that so exquisite a hand could have done such evil deeds, and mixed the potion for so many deaths, and one is glad to know that there is no real foundation for this pedigree. The true origin of the cast seems, indeed, to be lost, further than that it came at first from Italy. It bears on it intrinsic evidence to the artist's eye, in the individuality of its parts, that it is not wholly a work of Art, but moulded from life: yet the texture and minor marks of common nature are not on it. What seems most probable is, that the original cast was moulded from an exquisite example in nature, which was afterwards somewhat touched on by an experienced artist. It is in the highest degree delicate and refined, though pulpy, and reposed, though vital and motive; and we are at liberty, I hope, to believe, in spite of dreadful stories, that it originally belonged to a good, amiable, and refined woman, in all respects an ornament to her sex.

Add a drop of distilled water to an ounce of collodion; that will most likely remedy pin-holes.

If a positive collodion portrait be placed in a good light, it may be easily copied by a camera and a negative produced.

OUR PHOTOGRAPHIC ILLUSTRATIONS.

Our photographic illustrations this month, we consider decided improvements on our former efforts. In comparing these with the, so-called, plain photographs of the practical photographer, it must be borne in mind that ours do not receive the *slightest touch* from the brush or pencil. They are what they purport to be, true photographs. When this comparison is made, we have no doubt all will consider ours of the present month, quite equal to any printed. The first is

A GROUP;

Negative by J. B. Heywood, of Boston.

Containing portraits of four of Boston's celebrities. This negative and several positives we have received from Mr. Heywood, place him in the front rank of American Photographic artists. The second is the

RESIDENCE OF THE LATE GENERAL WINCHESTER,

(Near Cambridge, Massachusetts);

Negative by Messrs. Whipple & Black, of Boston;

And is a fine view of a charming piece of American scenery. We wish we could induce our photographers who send us negatives, to accompany them with descriptions, biographies, &c. It would greatly enhance the interest of the picture given.

Both these pictures were printed by the following formulas:

SALTING SOLUTION.

Filtered Croton water	1 gal.
Gelatine	180 grs.
Chloride of ammonium	180 "

The gelatine is first dissolved in hot water—just sufficient to effect the solution—and then the balance of the water added, and the chloride ammonium put in. The whole well shaken.

NITRATE SOLUTION.

Nitrate of silver	1 ounce.
Filtered Croton water	1 fluid lb.

Four ounces of the solution poured off and aqua ammonia added till the precipitation is re-dissolved, then pour back the four ounces, and add seven drops C. P. nitric acid, and filter. Float the paper.

TONING BATH.

Filtered Croton water	1 gal.
Hypo. soda	1 lb.
Chlo. gold (Burgess')	180 grs.
Chlo. silver	2 oz.
Chlo. lead solution	2 "

The usual manipulations observed; the solution being, however, filtered every other day. In toning, the prints were not permitted to pass beyond a lilac tint, which was obtained in from fifteen to thirty minutes, according to the strength of printing and the temperature of the atmosphere. A cold bath tones much slower than a warm one.

After toning, the prints were well washed off with a sponge on both sides, and put into running water, where they remained twenty-four hours—were then taken out again, well sponged, and hung up to dry.

The title being printed, they were passed through a plate press.

The paper used was Canson, and like all he now sends to this country, a decidedly miserable article. Out of one ream we lost one hundred and eighty sheets, caused (to appearances) by some greasy substance in the tissue of the paper. It will also be perceived that it is very coarse grained.

A parchmentized photograph will require to be submitted to pressure between rollers before it will be perfectly smooth. The spots are owing to some imperfection in the paper—probably imperfect sizing.

From the Liverpool Photographic Journal.

CHORLTON PHOTOGRAPHIC SOCIETY.

The fifth monthly meeting was held in the Chorlton Town Hall, on Thursday, the 8th of October, the Vice-President in the chair. After the usual preliminary proceedings, the following paper was read by Mr. Hooper, on—

"THE RESULTS OF HIS EXPERIENCE IN THE PRACTICE OF SEVERAL PRESERVATIVE PROCESSES."

Having recently been occupied with a series of experiments to test the value of certain processes for out-door photography, that have been brought before the public with considerable pretensions to excellency, I think it may not be unacceptable or unprofitable to place the results before the present meeting. Those that have chiefly occupied my attention are the dry collodion processes of Mr. Barnes, the gelatine process of Mr. Long, baked dry collodion plates, and a few others.

I have carefully tried the process as published by Mr. Barnes, and the result in my hands has not been satisfactory, only being able by it to obtain a good negative occasionally. The great amount of care required in every stage of the manipulation, will, I think, prevent its being generally adopted. Finding these plates were not always to be depended upon, I commenced experimenting on the process of Mr. Long. The success I have met with from the first has convinced me that that process will, ere long, be generally adopted; the plates being easily and quickly prepared, and keeping well, is a great advantage.

I will briefly enter into the details of the process, and then develop the four plates before you, three of which were exposed yesterday. The remaining plate I purpose printing on in your presence, in order that you may see how a transparent picture is produced by gaslight.

I have tried various sorts of collodion for this process, and find none answer so well as a very old and thin collodion not over iodized. The film on the plates I am to develop is so very transparent that it would seem almost impossible to obtain intensity on such. We shall see, however, that such is not the case, for any amount of intensity can be obtained with that transparent film. If a thick collodion be used instead of the kind I have just named, a blistering film is likely to be produced, and which will probably disconnect itself entirely from the glass before the development can be completed. In carrying out my experiments respecting the collodion necessary to ensure freedom from blisters, I have found that almost any negative collodion will do if treated in the following manner:—To one ounce of negative collodion (made from gun *cotton*, that made from gun paper not answering so well) add half an ounce of æther and half an ounce of alcohol, and of iodine dissolved in alcohol sufficient to make the collodion a very dark color; a small bar of zinc immersed in this for some hours will make it colorless, and admirably adapted as a substitute for old collodion. Almost all the different collodions I have treated in this manner have passed from the contractile to the powdery or porous kind. With respect to the manipulatory part of the process, it being the same as for wet collodion negatives up to coating the plate with the gelatine solution, it will be unnecessary to describe it. The gelatine solution I prepare and apply as directed by Mr. Long in his treatised on the subject.

If applied warm upon a thick film, there is not that tendency to blister as when used cold; but with the thin collodion made as I have before stated, there is no tendency to blister, even when used cold. This solution should not be prepared many days before wanted, the results not being so good if kept above a week. Before removing the plate from the sensitizing bath, it should be raised and lowered several times, to get rid of all appearance of greasiness of surface; when taken out it should be slightly drained, and the preservative solution poured over it, beginning at the extreme edge of the plate, and made to flow to the opposite edge, carrying all the superfluous silver solution before it; let this run off the plate into the waste pan or sink; a fresh supply of preservative solution is then poured on and off several times, taking the precaution to run it off at a different corner of the plate each time, so as to bring every part of the sensitive surface under its influence.

I should have stated it is necessary to wipe the back of the plate with blotting-paper when removed from the nitrate bath, to prevent any solution running down and mixing with the gelatine solution afterwards applied. I find the exposure required for plates preserved in this manner is nearly one-third longer than for those prepared by the collodio-albumen process. The development of the picture may be deferred for several days after being exposed; in many other dry processes I have found the plates required to be developed the same day as exposed. I cannot state how long this part of the process may be deferred, having only kept them five days, the results then were as good as those in which the whole of the manipulations had been completed the same day.

Before developing, the plate must be soaked in water, to remove the gelatine on its surface; this takes from two to five minutes; when the gelatine is got rid of, place the plate in a saturated solution of gallic acid, to which has been added from three to six drops of a thirty-grain nitrate of silver solution—the development takes from twenty minutes to an hour or two, depending on the amount of exposure the plate has received. The advantage of employing gallic acid without the addition of pyrogallic, is, should the exposure in the camera have been too short, the solution does not decompose, however long the development may be continued; another advantage it possesses is, that should a thick collodion have been used and blisters formed thereby, I find when the plate is finished and dry, there is no appearance of blisters having been on it; had pyrogallic acid been mixed with the gallic, and decomposition taken place, every blister would have been visible on the plate after drying.

Those of you who have read the work of this process, published by Messrs. Bland and Long, will perceive that I do not differ materially from the formulæ therein named; the only difference I have made is to use a very thin collodion, and to develop with a saturated solution of gallic acid, instead of gallic and pyrogallic mixed, and with a less quantity of silver solution added to it than is there recommended. Having described this process, I would state—any person who can work the negative process with wet collodion, will be certain to succeed with this.

Before concluding this paper, I would say a few words on another process, which was published about two years since, and which I have employed during that time with much success; I allude to the collodio-albumen, which, for rapidity, excels every other; the exposure in the camera takes from two to three times that required for wet collodion plates—one operator gets a more sensitive surface than another, caused by the different manner in which the plates are dried, a plate dried spontaneously, or at a low heat, being more sensitive than one dried at a high temperature. The cause of the great sensitiveness of collodio-albumen plates, as compared with others, is, I think, to be attributed to the formation of the double iodide produced in the film when the albumen (containing an iodide of any kind) is poured over the iodide of silver on the plate; it is not necessary to employ collodion as a base; I have found a layer of iodized-albumen answer the purpose, and to be equally as sensitive;* what is required is, some body to retain the iodide of silver on the plate, for the iodide in the albumen to act upon. I have floated iodized paper on albumen prepared for the collodio-albumen process, dried it, sensitized, washed, and again dried it; it answered the purpose and required less exposure in the camera. In all my experiments with paper, (substituted for the collodion), I found the picture visible when the paper was removed from the dark slide. The extra sensitiveness may be the result of the roughness of the paper surface; in order to satisfy myself on this point, I albuminized some paper for positives (the albumen containing eight grains chloride of barium to each ounce); I also coated a plate with the same albumen, when printed on; the chloride of silver on the paper

* Mr. Talbot discovered this fact, and availed himself of it in his rapid process.—Ed. L. & M. P J.

was acted on more rapidly by the light than that on the glass. As in the collodio-albumen process, the plates having to go through so many operations, are very prone to blister, and during hot weather, if kept a few days, generally turn brown, it is not surprising that so many try to find a substitute; of all, that have yet been brought before the public, none can be compared to that of Mr. Long, the plates are so easily prepared, and certain of producing good results.

During the reading of the paper some excellent specimens were shown, and several negatives most successfully developed.

A vote of thanks having been accorded to Mr. Hooper for for his essay, the proceedings terminated.

From the Jour. of the Phot. Soc.

PHOTOGRAPHIC SOCIETY OF SCOTLAND.

Edinburg. 23rd August, 1857.

To the Editor of the Photographic Journal:

SIR,—In the notice of the proceedings of the last meeting for the season of the above Society in this month's number of the Journal, it is stated that "Mr. Tunny exhibited pictures printed on glass, parian and porcelain by *his newly discovered process*," and that I "also showed specimens of a process giving very similar results to those of Mr. Tunny." As this would lead any one to infer (what is the very reverse of the truth) that Mr. Tunny had made a great discovery, and that I had been attempting to imitate it, I beg to state that I examined his pictures minutely, and looked in vain for any specimen either "on parian or porcelain," and that those exhibited by me were what they were represented to be, and the only photographs on porcelain produced at the meeting.

In justice to myself I have to request the publication of the following letter, which gives the history of Mr. Tunny's so-called discovery: it refers to the fact of his being consulted as a friend upon the value of my invention, and then shortly after setting up himself as the inventor of an anonymous paragraph in the Edinburgh newspapers.

"90 Princes Street, Edinburgh, 16 July, 1857.

"*Mr. M'Craw.*

"DEAR SIR,—Having been the unintentional cause of the dispute between Mr. Tunny and you, I am perfectly willing at your request to give in writing a thorough explanation of the matter so far as I am concerned.

"When (contrary to your wishes) I mentioned your discovery to Mr. Tunny, he never hinted that he had been engaged with anything of the same kind, but joined me in congratulations of sympathy for your prospects, and with such seeming sincerity that I was completely thrown off my guard, and gave him all the information necessary to put any photographers upon the track. I advised him at the same time to procure a licence from you, as porcelain was the very thing to substitute for paper; he acknowledged it was; I then left him, flattering myself I had secured another customer for you.

"Some three or four days after at my request you showed Mr. Tunny a specimen in my presence, when, for the first time, he gave some indefinite hints about having been engaged in experiments of the same kind. On the following evening, he brought me two pictures something similar to what you had shown him, at the same time pathetically bewailing his fate that you should have had the start so completely.

"These are the simple but unanswerable *facts* of the case. What my *feelings* were, when I read Mr. Tunny's paragraph in the *Express* of next morning, I would rather decline stating, and now remain,

"Sincerely yours,
(Signed) "JAMES ROSS."

"P.S.—Regarding the paragraph now going the round of the papers, it seems to me merely a mistake of the name, as Mr. Tunny had no pictures upon porcelain at the meeting of the Photographic Society; the specimens he showed were all transparencies on white glass, with the exception of one, which was upon Dutch tile. All the porcelain pictures exhibited were your own doing.

"You are at perfect liberty to make what use of this you please.

(Signed) "J. R."

But Mr. Tunny has a frailty for making discoveries where others have been before him. In No. 22 of the "Photographic Notes" he actually claims to be the inventor of the collodion process, gives a slice of the credit to Le Gray, and says, "But I for one have never doubted that Mr. S. Archer was an independent discoverer of a similar process." Now this comes with a very bad grace from Mr. Tunny, as he was profoundly ignorant of the mode of manipulating with collodion until *I taught him Mr. Archer's mode with Mr. Archer's materials*, as unsought and gratuitously as it was given to me in the summer of 1851, and it was not until long after that he succeeded in showing anything presentable in the way of a collodion negative. As to Mr. Tunny's last discovery in the paragraph alluded to, he catches at my idea, and in imagination applies it to a long list of materials possible and impossible; but all that he has to *show* is a few nondescript pictures on glass, such as any photographer could get up on a day's notice, but which would puzzle a philosopher to put to any use; the account *naively* says, "These pictures may be *looked at* as transparencies or in the ordinary way;" but it must be confessed it is difficult *to see* them.

WILLIAM M'CRAW,
Patentee and inventor of the New Porcelain Process.

From the Liverpool Photographic Journal

APPARATUS FOR WASHING POSITIVES.

At the meeting of the Norwich Photographic Society, on the 2nd ult., an ingenious apparatus, for the purpose of washing positives, was exhibited and explained by Mr. Thompson. It consists of a gutta-percha tray, about thirty inches in diameter, into which the prints are placed: this tray, which is large enough to wash fifty stereoscopic prints in, is supplied with water from a horizontal pipe, having a siphon-shaped bend at the end to allow of the water flowing into the tray in a perpendicular direction, and provided with a stop-cock worked by a long rod instead of the ordinary thumb-piece for turning the plug. The tray is provided with a siphon which empties itself into a small tin bucket, three inches in diameter, open at the top, and having a small hole at the bottom; this bucket is attached by a jointed piece to one end of the long rod before alluded to, while at the other end is fixed a balance weight. Upon turning the supply tap the water flows through the horizontal pipe and stop-cock into the tray; and when nearly filled the siphon begins to act, the water running through into the bucket, which, as it fills, becomes heavier and sinks down, turning the stop-cock and shutting off the supply of water. The siphon acts until the tray is empty, after which, as the bucket becomes empty, the water running through the small hole at the bottom, the balance weight on the other end of the rod falls down, and opening the stop-cock again allows the water to flow into the tray, which is thus kept alternately filling and emptying as long as the supply of water from the main tap lasts, without any attention being required. We should observe that a piece of perforated gutta-percha is fixed across the end of the tray in front of the siphon, to prevent the prints from stopping it up. The inventor conceives that considerable advantage is to be derived from this invention; its action is far superior to a continuous stream, as there is the certainty of getting a perfect change of the water each time the tray is emptied, which may be as often as three hundred times in the space of twelve hours; and the prints are not liable to be doubled up and damaged against the side of the tray as when a continuous stream is used, being by this invention kept constantly in a rotary motion, except during the few seconds each time the tray is emptied.

From the Jour. of the Phot. Soc.

LATERAL MOVEMENT FOR THE STEREOSCOPIC CAMERA.

To the Editor of the Photographic Journal:

Sir,—In taking views for the stereoscope, with a single lens camera, I employ a very simple arrangement for shifting the camera laterally, which appears to me in some respects greatly preferable to Mr. Latimer Clarke's sliding table, or any modification of it.

In the ordinary camera it is customary to have a plate, or socket, in the bottom, to receive the screw by which the camera is fixed to the stand; in my stereoscopic camera I have *two such sockets*, placed laterally, and 2¼ inches apart. This is the whole apparatus. In operating, I have only to transfer the screw from the one socket to the other between the exposure for the two pictures (re-focusing, of course, and providing for the requisite convergence), to secure the same result contemplated by the sliding table.

This arrangement requires a little more time than the common one, and is hardly suitable, therefore, for portraiture; but in taking views with a dry process, a minute or two's interval between the first and second picture is of no consequence. The recommendations of my arrangements are—1. Economy in price, and in trouble of carriage. 2. *A great increase of steadiness.* 3. Ease and certainty in adjustment. W. L.

PHOTOGRAPHY AT THE MARYLAND INSTITUTE FAIR.

Baltimore, Nov. 5, 1857.

Friend Snelling:—The Maryland Institute Fair is over, and I send you the result of the premiums awarded to photographers and ambrotypists.

Mr. P. L. Perkins received a silver medal for ambrotypes. Mr. P. had a fine display of pictures on exhibition, both plain and colored photographs. His life-size pictures in oil were effective, both in color and position. Mr. P. does the largest business in painted pictures in Baltimore, and from the many pictures he turns out, I should judge he pleases. As a practical man, Mr. P. has no superior; he is eminently successful as an ambrotypist. And with his operator, Mr. Shaw, who is a student of the best galleries in London, Mr. P. must succeed. He has just finished one order for plain photographs of the Ravel Family of 400 pictures; many of them in character. One a large group of the Martinetti Family about 20 in number, is the most perfect group I ever saw of so many. Mr. Shaw is a valuable acquisition to our city, and I hope he will not leave us; for when we have a good operator others try to compete, and thereby we have more good pictures than we should otherwise have.

Mr. J. H. Whitehurst received a silver medal for painted and plain photographs.

His collection, take it as a whole or separate if you please, was fine; some of the life-size heads in oil were better than we have ever seen. Mr. W. made a better display this year than he ever did at any preceding exhibition. He has removed to his new gallery on Baltimore street below Charles; and although he has the finest gallery and the most complete operating rooms in the city, there is no business done. But that is easily accounted for, as people can live without pictures these hard times, but they cannot do without bread. Mr. Bushnell is the operator for Mr. W.; he does not work himself. Mr. B. is well known as an operator of much merit.

Mr. Israel got a diploma for photographs and ambrotypes. Much injustice was done Mr. I., for his display was equally fine with Mr. Whitehurst and Mr. Perkins; and his cabinet pictures of the Durand Opera Troup, with many others I could name, are entitled to much praise and credit. His display of painted work was small. Mr. I. is his own operator, and his works show that he stands high in the art.

Mr. Perkins, brother to Mr. P. L. Perkins, made a fair show in ambrotypes, but received nothing.

Mr. Pollock still keeps pace with the times.

Mr. B. F. Hawkes has the rooms formerly occupied by Whitehurst on Baltimore street; no business of note is done. Mr. Dan. Bendham is his operator; he is lately from Richmond, Virginia, where he formerly had a gallery.

Mr. Davis, on Baltimore street below Calvert, has a neat little gallery; he takes nothing but ambrotypes.

Mr. Walzl, the daguerreotype and ambrotype stock dealer, has a gallery in connection with his sales room; some of his pictures I have seen, and are very good.

Mr. Tuttle has opened a new gallery on Baltimore street below Charles. Mr. T. is not only a clever gentlemanly man, but a good operator.

Mr. Dan. Stiltz, who lately had a gallery corner of North and Baltimore streets, has closed it for want of patronage. Never were times so dull in the picture trade as at present.

Mr. Elisha Lee, as an amateur painter of photographs, succeeds well: if industry and perseverance is any recommendation, he has it. Mr. Clark is painting photographs for Mr. Israel. Mr. Wilson is coloring pictures for Mr. P. L. Perkins.

The artists and amateurs of Baltimore held a meeting at Carroll Hall, (*Col. John R. Johnston's* studio), on Thursday evening. The proceedings* I take great pleasure in sending you, were for the purpose of expressing sympathy for the death of Crawford, the great American sculptor, who lately died in London. The number of artists are few in Baltimore. And as the late riots of the city has degraded the city to such a fearful extent there is likely to be less. I hope by the next letter you get from me, I can send you the joyful news of business being better. Respectfully yours, J. R. J.

From the Jour. of the Phot. Soc.

THE OXYMEL PROCESS.

London, 7th September, 1857.

To the Editor of the Photographic Journal:

Sir,—At the commencement of this summer I began to practise the oxymel process, but I could never obtain a negative sufficiently dense without giving the plates an exposure of from six to eight minutes; and I therefore commenced a series of experiments with a view of increasing the sensitiveness of this process. I have reduced the time of exposure to twenty to thirty seconds, and by minutely following the details of my manipulation, I feel confident that any one will be able to produce similarly rapid results; as the same time I claim for this process nothing new, as I am only an humble follower of Messrs. Shadbolt, Maxwell Lyte, and Llewelyn.

I will describe the process as I use it for plates 5 inches by 4, only remarking that I have taken large pictures by it with perfect success. I clean my plates on a board with a mixture of tripoli and whiting, washing off under a tap; as, in all preservative processes, absolute cleanness of the glasses is essential. I use Hardwich's collodion, with a 30-grain nitrate bath containing an almost infinitesimal amount of free acid. I immerse the plate as soon as possible after coating with collodion, and allow it to remain for not more than two minutes at 60° Fahrenheit; it is then well drained, and about half an ounce of oxymel poured on at the corner adjacent to that by which it is held, allowing it to flow quickly over the plate, and pouring it off at the opposite corner.

The *same* oxymel is then poured on again and allowed to remain on the plate half a minute and then drained off. After the plate is raised for the oxymel to drain off, it must not be allowed to resume a horizontal position till the picture is taken. This is most important, as the plate is sure to blacken if the oxymel be again allowed to run over the surface of the plate. The plate must not be exposed before it is quite dry: with my lens of $1\frac{7}{8}$ inch diameter and $\frac{1}{4}$ inch stop, twenty-five seconds has frequently been sufficient to cause solarization. If the plate before it is oxymeled is washed in a 10-grain silver bath, it may be kept several days, and the exposure will not exceed one minute under the same conditions.

* See article Thomas Crawford, p. 1.

To develope, take 4 drachms of the following solution and 1 drop of the nitrate of silver bath.

Pyrogallic acid....................	1 grain.
Acetic acid.......................	10 drops.
Alcohol..........................	5 drops.
Water...........................	1 ounce.

This is to be poured over the plate as quickly as possible, when the picture will almost immediately appear as a beautiful positive. The developer is then to be poured off, and 3 or 4 drops more silver to be added to it. Meanwhile the picture will continue developing, and on the developer being again poured on it, will attain perfect opacity in the high lights, while the shadows ought to remain quite transparent. The picture should then be washed under a tap, and fixed with hyposulphite of soda, 4 ounces to the pint, when by reflected light it should appear like a good positive just beginning to fog, and by transmitted light the sky should be of a yellowish black, which prints beautifully, and the middle tints very well defined.

The oxymel I always use is prepared by Mr. Barber, Chemist, Lower Road Islington, and is very pure and good. I can confidently recommend it to any one who will try this process.

In conclusion I would say, that so much certainty can be obtained by this method of manipulation, that I can generally guarantee that five plates out of six will turn out well.

A. R. M.

From the Philosophical Magazine for Sept. 1857.

ON THE MEASUREMENT OF THE CHEMICAL ACTION OF LIGHT.

BY JOHN W. DRAPER, M.D.,

Professor of Chemistry and Phisiology in the University of New York.

The recent experiments of Professor Bunsen and Dr. Roscoe encourage the hope that the attention of chemists will before long be particularly directed to photo-chemistry, which undoubtedly offers at this moment one of the most promising fields of research.

To be satisfied what a boundless opportunity for investigtion is here presented, it is enough to recollect that in the decomposition of carbonic acid by the solar rays lies the starting-point of all organization, both vegetable and animal; and that if it were not for that effect, the whole surface of our globe would be a mere desolate waste, presenting no appearance of life. Besides this relation to the world of organization, the influences of light are now recognized as occasioning combinations and decompositions not inferior in number or importance to those produced by heat and electricity.

Impressed by such considerations, I devoted a great deal of time some years ago to the study of the chemical action of light, as the readers of this Journal know. But at that period the attention of chemists was so completely absorbed in the department of organic analysis, and in the application of the discoveries so made to vegetable and animal physiology, that it seemed impossible to divert it even to the fundamental fact which in reality is at the bottom of all those investigations. Organization implies the prior action of light. The time has now probably come when the wants both of chemistry and physiology will require the conditions of that action to be determined. The field of organic analysis has been pretty completely reaped; there is not now much to be done except by gleaners.

Even among those who have devoted themselves to experiments in optical chemistry, the tendency has been to the improvement of the art of photography, rather than to the examination of facts which are at its scientific basis. A great amount of information, destined ere long to be advantageously used, has, however, in that way been indirectly obtained.

It is quite evident that in the contemplated inquiry the first thing to be done is to invent some means for measuring with exactness the chemical force of light. More than twenty years ago I commenced making attempts with that view. These were first by the comparison of stains made on paper covered with chloride or bromide of silver. Subsequently I described in this Journal (Phil. Mag., Dec. 1843), under the name of Tithonometer, an instrument which is well adapted to such inquiries. It consists of an arrangement by which there may be obtained from hydrochloric acid decomposed by a voltaic battery, a mixture of equal volumes of chlorine and hydrogen. This mixture will remain without any change in the dark; but on exposure to the rays of a lamp, the two gazes unite in proportion to the quantity of the incident light. So great is its sensitiveness, that an electric spark, which lasts, it is said, less than the millionth of a second, affects it powerfully even at a distance, and sometimes occasions an explosion which destroys the tithonometer.

By the aid of this instrument may be illustrated the change which I discovered that the sun's rays occasion in the properties of chlorine, and likewise the preliminary absorption of light which is necessary before chemical actions ensue. It is this period of preliminary absorption, in the case of the iodide of silver, which is of such interest in the art of photography—the period during which invisible impressions are made on the daguerreotype plate and collodion film; capable of development in the one case by vapor of mercury, and in the other by pyrogallic acid or protosulphate of iron.

The tithonometer is the instrument of which Professor Bunsen and Dr. Roscoe, in an improved form, have made such excellent use. In its original construction I can still recommend it to those who are disposed to engage in these enquiries, as possessing extraordinary sensitiveness; and if suitable corrections for variations of temperature and pressure be applied, of sufficient exactness.

To such I would in addition suggest another means for measthe chemical action of light. It will be found well adapted where extreme sensitiveness is not desired. It is an aqueous solution of peroxalate of iron. This substance, which is of a golden-yellow color, may be kept, as I found, for more than three years (probably for any length of time) without exhibiting any change, if in total darkness; but on exposure to a lamp or the daylight, it undergoes decomposition, carbonic acid gas escaping, and the lemon-yellow protoxalate of iron precipitating. If set in the sunshine, it actually hisses through the escape of gas. The ray which chiefly affects it is the indigo, the same which affects the tithonometer, and the silver compounds used in photography. This ray, to produce its effect, undergoes absorption, as may easily be proved by causing a sunbeam to pass through two parallel strata of peroxalate, when it will be found that the light which has gone through the first portion is inoperative on the second.

Other properties which the solution of peroxalate of iron presents, strongly recommend it as a photometric agent to the chemist. Unlike solution of chlorine, it may be very conveniently confined in glass tubes by mercury. In its use there are two points which must be attended to:—1st, the lemon-yellow protoxalate must not be permitted to incrust the side of the glass exposed to the light, and thereby injure its transparency; 2nd, the solution of peroxalate must be kept nearly at a constant temperature, for its color changes with the heat. At the freezing of water it is of an emerald green; at the boiling, of a brownish-yellow. With these variations of tint its absorptive action on light varies, and therefore its liability to be changed.

It may be remarked that the peroxalate of iron is an excellent photographic agent. A piece of tissue-paper made yellow by being dipped in a neutral solution of it, when dried in the dark is very sensitive. Its invisible impressions may be developed by a weak solution of nitrate of silver, two grains dissolved in an ounce of water answering very well.

In the application of peroxalate of iron to photometry, several different methods may be followed. The course I have most commonly taken has been to determine the quantity of carbonic acid produced—sometimes by volume, sometimes by weight. It is of course understood, that before any carbonic acid can be disengaged, the solution must become saturated therewith; and that before we can correctly measure the quantity of light by the quantity of acid produced, this dissolved portion must be ascertained. In one of my photometers the expulsion of the dissolved gas is accomplished by exposure to a small bath of boiling water, in another by a stream of hydrogen. Both processes yield satisfactory results.

But this method, by the determination of the produced carbonic acid, is only one of the numerous plans which the employment of peroxalate of iron suggests; for instance, we might use in the determination the weight of certain metals which the solution after exposure will precipitate. Thus a portion which has been made and kept in the dark, may be mixed with chloride of gold without any action ensuing; but if it has been illuminated, the amount of metallic gold precipitated is in proportion to the incident light. On this principle I commenced an attempt to determine the hourly and diurnal illumination of a given locality. At the bottom of a hollow metal tube, arranged as a polar axis, was placed a bulb containing a standard solution of the iron salt, and at the close of the proposed periods the weight of gold it could reduce was ascertained. There is something fascinating in determining the quantity of light which the sun yields us by the quantity of gold it can produce. Upon the whole, however, I would recommend to those who are disposed to renew these attempts, to select a method depending on the volume of carbonic acid, for it is always easier to make an observation than an experiment.

Among the important results which may be expected from these new modes of photometry, and which will doubtless be furnished at an early period, are the hourly, diurnal, and annual quantities of the sunlight. These are not only important in a meteorological point of view, but also as respects physical geography, and the great interests of agriculture. The sum of vegetable organization is in all climates and localities a function of the light distributed thereto. Even so far as heat is concerned, the indications of the thermometer are of little use. It is not the intensity, but absolute quantity which should be measured. To each plant, from the moment of its germination to the moment of its maximum development, and the completion of its physiological functions, a definite quantity of heat and also of light must be measured out. As respects the heat in such inquiries, it is not the thermometer but the calorimeter which should be used; and as to the light, the phototers here recommended determine its quantity, but not its brilliancy, and therefore answer the indications required. And since it is the light of the sun, and not the temperature of a locality, which is the effective condition of vegetable growth, we see how important, even in agriculture itself, these proposed determinations really are.

I hope that these remarks may draw attention to the ploblem of the chemical action of light. To those who are disposed to devote themselves to such inquiries, I recommend as a photometric means a mixture of chlorine and hydrogen were great sensitiveness is required, and in other cases the peroxalate of iron.

From the Liverpool Photographic Journal.

LIVERPOOL PHOTOGRAPHIC SOCIETY.

The second meeting of the session was held on Tuesday evening, the 21st ult., at the Royal Institution, Colquitt Street, Liverpool. Mr. Corey, Vice-President, in the chair.

Among some beautiful specimens of the art, circulated among the members for their inspection, were several excellent miniature portraits by Mr. Keith, the Honorary Secretary. The back-ground was a delicate light color of great softness, and the portraits, which were finished in the style of enamel painting, stood out with great effect. Mr. Leith said he had brought them for the purpose of showing the advantages possesed by his new operating room in Castle Street, over the old one, the former being constructed of tinted glass. The portraits were much admired.

The Chairman having referred to the exquisite photographs by Le Gray, exhibited at the previous meeting, for the purpose of eliciting a discussion on the probable means adopted by that artist in taking such instaneous views, as enabled him to depict the effect of the curl of the wave, upon the sea-shore,—

Mr. Keith suggested that instead of the usual cap to cover the lens, a perforated sliding disc was used, by means of which the lens could be uncovered and covered in the fraction of a second.

Mr. Corey was inclined to think, as far as the mechanical contrivance was concerned, that that would answer the purpose; but they would agree with him that no negative hitherto produced by the agency of pyrogallic acid could be obtained with so short an exposure as that involved by the passage of the disc in the front of the lens. It was clear therefore, that some other agent as a developer must have been employed, exceedingly expeditious in its action. He was confirmed in his belief because the development was just as sharp in the fore-ground as in the distance; but this could not be obtained by pyrogallic acid. He was convinced, therefore, that these pictures were taken in the first instance as positives, by the influence of iron, and then converted into negatives.* They knew that by a very moderate light pictures might be obtained by iron, almost with instantaneous exposure. Mr. Knott, one of our most experienced operators, had said that he could never produce a negative with fore-ground and distant perspective clearly rendered with anything else than iron.

The Rev. Mr. Banner said he had taken views almost instantaneously with pyrogallic acid. He thought he would have been entirely successful, but he could not get his camera sufficiently quickly covered.

The Chairman read a letter from Mr. Archibald Robinson, Honorary Secretary of the Bombay Society, enclosing the names of four members who are to represent that Society as honorary members of the Liverpool Photographic Society. They were ordered to be entered on the list.

Mr. J. B. Forrest announced that a member of the Society would bring forward, at a future meeting, a paper on "The Bath," and what another member would read a paper on "Winter Photography." The same gentleman having mentioned incidently that the collodion film adhered so tenaciously to ground glass that was almost impossible to scratch it off.

Mr. Keith stated that Mr. Frith formerly made some experiments on polished ivory, finding the action very slow, he scraped the ivory with a piece of glass, and he then obtained a very rapid impression.

The Rev. Mr. Banner exhibited and explained his portable stereoscopic camera, which, with the chemicals in a box, weighed about six pounds. He had two light tripods, on one of which he rigged up a small dark room, placing a sort of bag over the upper portion, the floor of this unique "dark room" being formed by a board which had also the effect of imparting additional rigidity to the tripod. On this board his materials, including bath, developing dish, bottles, &c., were placed, and he had free and ample access to them by means of a wide sleeve on each side of the bag. At the top of the bag was an aperture, ingeniously shaded, through which he could see into the room to guide the operations, and ascertain when the pictures were fully developed. The whole "room" was not more than a few inches square, and yet he found it as comfortable to work in as if he was in his own house. He always washed the pyrogallic off inside the "room." Some photographers said it did not matter, but he thought they were in error, as the acid turned black immediately it was exposed to light. The camera might be either placed at the top of the dark room or upon a separate tripod. He preferred the latter plan. Instead of screwing the camera on the tripod, he secured it by a stout elastic band.

The Cairman called attention to a series of prints published by the Architectural Photographic Society. They comprised prints from negatives by the most eminent English and French photographers, including Robinson and Beale, Bisson Freres, Fenton, Bedford, &c. Subscribers of £1 1s. and upwards would be entitled to select about eight for every guinea, and he stated that subscriptions would be receieved by Mr. Ellison, of 36 Bold-Street, the local agent. He proceeded to expatiate on the

* By the agency of bichloride of mercury, and afterwards ammonia.

striking and singular beauty of the pictures, which certainly were fully entitled to the admiration which they elicited.

Mr. J. A. Forrest made the following interesting and important observations on

EXPERIMENTS IN BURNING PHOTOGRAPHS INTO THE GLASS.

In the course of the summer, on the publication of M. Sella's process, I was induced to try some experiments with a view to arrive at some process that would enable me to fix the photograph by burning in the impression in the furnace with a coating of glass over it. From the specimens I exhibit to-night it will be for you to say how far they are encouraging. I regret exceedingly that my brother photos cannot try the experiments themselves, as very few have the opportunity of a furnace in which to try them. I may, in passing, however, give them some encouragement, for out of these trials I find if you grind a piece of opal glass very finely, afterwards collodionize, sensitize in the usual manner, and lay a negative upon it by superposition you will receive a very beautiful impression by transmitted light, and after being fixed, washed, and dried in the usual manner, you will discover that the film adheres most rigidly to the glass, and scarcely any amount of rubbing will take it off. This is a plan that any one may follow out on a winter's evening by gas light, and no doubt would look remarkably well in a hall lamp, or you might have your staircase window filled with landscapes taken by yourselves or friends. Any silver stains by this process can only be removed by regrinding the surface with fine emery. I will now proceed with the more immediate object of the evening. In or about the year 1280 it was discovered that the salts of silver, when laid upon glass and exposed to a temperature of about 750 degrees of heat, gave a beautifully transparent yellow, and during the time known as the Decorated and Perpendicular Periods, from the quaint and formal description of the figures, it was this metal produced the brilliant glories around the heads of the saints in church windows, and is handed down to us in its pristine beauty, and with the prospect of remaining the same for ages to come; but in that day the discoverer did not think of the part the salts of silver should play in the nineteenth century, nor of the difficulty we should experience in making our work as permanent as his. My object this evening is to elaborate a few experiments on glass positives that have been permanently burned into the body of the glass, and to lay open a new field to the intelligent photographer. I do not consider the matter by any means perfect, but I think the specimens I now exhibit are highly encouraging, and leave little ground to doubt that it will soon lead to this very desirable end. It has been patent to all the members of this society, that in conjunction with Mr. Berry, we laid before you in the early part of this year a specimen, which if not entirely fixed into the glass, was nearly so. Since that time I have been occupying my spare moments in following it up. The great difficulty we always met with was the destruction of the image in the furnace, and the residue became a pale yellow, with complete obliteration of the fine lines. I found, however, that the yellow was only developed by a continued heat, and in this position I left it, and resolved to try the chromic salts with a flux or glass film over them. The process I found best in this direction to produce the photograph was the following:—Float a solution of starch over a piece of glass; then pour upon it, when partially dry (in the dark) a solution of chromate of iron: allow it to dry, and print in the usual way by a negative laid on the coating. When taken from the pressure frame wash and strengthen with sulphate of iron. When this is done on opal glass, say a stereoscopic print, it has a very beautiful effect, and the delineation is quite equal to the salts of silver; but the greater barrier to its success is the contractile nature of the starch, which breaks up whenever exposed to heat. Having tried every vehicle I could think of, I then threw overboard the chemistry of the subject altogether, as I thought, and resolved to treat it in a mechanical point of view. Having succeeded in this direction to a certain extent, I now lay before you my plan and results thereof. Take an ordinary glass positive, varnished or plain, (I prefer the latter,) and make the following mixture in oil of tar:—

Flint glass (ground very fine)	16	parts.
Pearl ash	6	"
Borax	1	"
Red lead (or minium)	3	"
Chloride of sodium	1	"

This must be thoroughly ground and laid evenly over the plate. When dry, lay it upon a piece of iron, lute over with whiting, and expose it in a furnace to, say about 750 degrees heat, until you perceive it becoming bright on the surface. For the first minute it will gradually become black, and afterwards the black discoloration like carbon passes away, and the photograph comes out with a covering of glass before the oxide of silver has passed into its natural yellow color, and without the slightest change upon the half-tones. All this is the work of two or three minutes, and in this state may remain or become the basis of further operations in burning in the natural colors. Photographs on porcelain look beautiful when treated in this way; in fact it would be difficult to point out all the uses to which it may be applied. Thus far I had proceeded, but desirous to pursue the subject as much towards maturity as possible, I have enlarged the experiments. An intelligent friend had suggested that the whole of the chemical and organic agents were not yet exhausted, that having with infinite pains tried the effect of starch, gums, albumen, honey, gelatine, and other analogous materials, caseine had not been employed. I therefore determined upon trying organic matter in this form. Once more resuming the chemical experiments, and acting upon the previous suggestion, I boiled milk until thick, applied it to the surface of the glass like collodion, and allowed it to dry. A solution of sulphate of copper and bichromate of potash was then poured over it, and allowed to dry in the dark; exposed under a negative until a good distinct impression was obtained; then washed well until all the yellow was erased from the lights. I then used a solution of ferro-cyanide of potassium until a change took place from brown to green, washed carefully, and poured over a solution of sulphate of iron to intensify. This process is one of great promise, and does not seem to break up in the furnace like the starch. I hope by the next meeting to exhibit some specimens.

Mr. Forrest produced several specimens, showing the results of his experiments, some to be used as transparencies for hall lamps, staircase windows, &c., and others to be seen by a reflected light, with a dark ground under them. Some of the transparencies, taken on opal glass were very beautiful. They were taken, he said, with wet collodion, and he was satisfied that he could print 200 or 300 a day. Referring, in connection with the same subject, to the oxidization of the silver in the furnace, he stated that there were many combinations of silver, of which in the present day, we were completely ignorant, and he instanced a case in which one of his men, in preparing a furnrce for the production of yellow glass, neglected to withdraw the lime. The glass on being taken out instead of yellow was a brilliant purple. It was spoiled for the purpose it was wanted, but the mistake had produced a great novelty. He had since attempted to obtain the same results, but had not been successful.

A vote of thanks to the treasurer for his paper and observations terminated the proceedings.

In taking portraits it is very desirable that the whole body be brought to the same focus, or as nearly to it as may be, which will avoid the unseemly distortion which is sometimes perceived when this particular is not attended to; for instance, the knees of a sitter are nearer to the camera than the head, and unless some contrivance be adopted to obviate this, the consequence is that the remainder of the body will be out of proportion. This obstacle may be readily overcome by means of a contrivance where the sensitive surface is placed in an inclined position by using a moveable back with rackwork adjustment, and thus pictures in excellent proportions are obtained.

From The Jour. of the Pho. Soc.

THE WAXED-PAPER PROCESS.

BY MR. G. DAWSON.

Read before the North-London Photographic Association.

As probably many of the members present have given but little attention to the waxed-paper process, I shall, in the following observations, be as explicit as time will permit, and descend to particulars of manipulation, which will render I trust to every one, the path to success easy in this branch of photography. The rage has been lately all for collodion; nevertheless in points which will be obvious to all, waxed-paper presents many advantages, and will not, I think, be easily displaced by the collodion or any other known process. After an experience of upwards of five years, I can speak pretty confidently as to its merits, and I may safely say, that as respects certainity of results, neither collodion, albumen, nor Talbotype approach it; but to proceed.

(1.) *Selecting the paper.*—The best paper I have tried is the thin Canson; its quality, however, varies very much. The old make, of a creamy color and uniform texture, is very superior to the usual samples now sold. The latter are generally of a bluish tinge, and less uniform in texture. Having cut up some quires into sheets rather larger than the pictures to be taken, proceed to the selection in this manner; hold up each sheet separately between the eye and a strong light: should considerable inequalities of texture, innumerable pin-point holes, black greenish spots be visible, reject the sheet. So variable is the quality of the quires, even out of the same ream, that it will be found necessary sometimes to reject almost every sheet, while at other times almost every sheet may be retained. The sheets rejected for waxing will answer very well for salting or albuminizing as positive paper.

Having thus got some sheets which, as far as the paper is concerned, are likely to produce negatives without spot or blemish, the next step is to ascertain the right side of the paper, that is, the smooth side on which the picture is to be impressed. To do this, hold up each sheet horizontally between the eye and a strong light, so as that the light rakes along the surface. One side will thus be found quite smooth, the other traversed in all directions by minute iron-marks. A little practice will make these easy to be detected. The smooth side should be marked in pencil with initials in the corner.

(2.) *Waxing the paper.*—Unless systematically conducted, this is a very tedious operation. I have tried several plans recommended by others, but all have entailed a great waste of wax, blotting-paper, and time. That which I now adopt is, I think, very superior to any other, at least to any I have used or seen.

Take a shallow porcelain dish, rather larger than the papers to be waxed; fit this (not very closely, to allow the steam to escape) into the mouth of a tin vessel of the same shape, about 3 in. deep; filter the latter to the depth of 1½ inch with water, and place over a charcoal-fire, spirit-lamps, or gas-burners. Put 2 lbs. or so of the best white wax into the upper or porcelain; the steam from the water below is quite sufficient to melt the wax thoroughly. When this takes place, lay one of the selected sheets gently on the surface; in about halt a minute or less (longer with English paper) it will have become thoroughly saturated, when it is to be raised gently by the corner and allowed to drip. If 100 sheets are to be ultimately waxed, prepare twenty-five in this manner, for each one takes up sufficient wax to finish at least four others. Having completed the first stage of waxing, proceed then as follows:—In a folio place four sheets of thick blotting-paper, put two unwaxed on the top of these, and then one of the previously saturated sheets; over this again two more unwaxed, close the folio, and with rather a hot iron on a flat-board, and with considerable pressure move rapidly over the sheet for a minute or two. When the wax is thoroughly driven through all the five sheets, open the folio while still hot, and add occasionally a clean sheet or two where there appears an excess of wax, and one of the saturated until there are about as many as twenty in the mass. Change the position of the sheets occasionally, and iron until the whole twenty are completely saturated. Separate them while still warm. Remove the excess of wax in the following manner: in a clean folio of blotting paper, similar to the last, place say ten of these waxed sheets alternate with as many clean ones, and again iron rapidly on both sides of the folio for five or six minutes; by that time most of the excess will have been absorbed by the clean sheets, but if there are still shining patches, complete the process in blotting-paper.

Care should always be taken to have four thicknesses of blotting-paper at least between the iron and the wax, and to move rapidly, otherwise the latter will be decomposed. The sheets which have been used in removing the excess from the others can be saturated in the first folio as before.

After a little practice the above plan, which any one can modify to suit his peculiar manipulation, will be found very efficacious and economical. Very little wax and blotting-paper are wasted, and the finished appearance of the paper is at least equal to that of any other process.

(3.) *Iodizing the paper.*—This is an important operation, and one upon which a greater variety of opinion has been delivered (I believe) than on any other process of the Photographic art. I am inclined to think that almost any one of the published formulæ will, under certain circumstances, produce satisfactory results. With English paper, iodide of potassium alone is sufficient to produce all the gradations of tone; inasmuch as it has more body, so to speak, than any of the foreign negative papers, and is sized differently. Presuming, however, that Canson's paper has been waxed, rice-water, whey, or solution of gum-tragacanth, are the best iodizing mediums. I shall detail the method of preparing each.

For rice-water. Wash 4 ozs. fine rice, first in ordinary spring, then indistilled water. When the impurities adhering to or mixed with the rice have been thus removed, put it in a glazed earthenware pipkin along with 2 quarts distilled water. Place on a clear fire. The moment ebullition begins, remove, and stir with a glass rod for a few minutes. Pour off the liquid portion into a decanter or glass beaker, where it should stand for for two days, covered over from dust, to allow the sediment of rough particles of starch to settle to the bottom. At the end of this time decant off rather more than a quart of the clearer liquid, which filter through 3 or 4 folds of fine muslin, and add the chemicals—

Rice-water..............	1 quart.
Iodide of potassium.......	400 grs.
Bromide of potassium......	80 grs.
Cyanide of potassium......	30 grs.
Fluoride of potassium......	15 grs.
Chloride of Sodium........	8 grs.
Sugar of milk..............	2 ozs. avoirdupois.
Gum-arabic...............	1½ oz. "

At first the solution is of a dirty milkish color, in which state it should not be used, as the half-tones of the picture will have a rough granular appearauce; but, after two or three weeks, it will have become beautifully clear; and when used once or twice, of a pale sherry color. Gum-arabic, from many experiments I have tried, undoubtedly adds to the clearness of the picture. Why it does so, I cannot venture a conjecture. Honey, which some recommend, is decidedly objectionable. Bromide of potassium is useful in shortening the time of exposure, and may be used in large proportions with advantage. Cyanide of potassium does not seem to affect the beauty of the negative in any way. It is only useful in assisting to remove the greasy appearance of the paper, and thereby lessens the chance of air-bubbles in the exciting solution. Fluoride of potassium may be dispensed with altogether as unnecessary. Chloride of sodium adds considerably to the rapidity. Chloride of potassium, however, even in large proportions, seems to answer this purpose still better. Albumen should not be employed if the exciting solution is to be used more than once; nor should free iodine,

Whipple & Black, Neg. Boston, Mass.

H. H. Snelling, Print.

COUNTRY SEAT OF COL. WINCHESTER,

At Cambridge, Massachusetts.

when rice-water is the medium of solution. The consequence would be an immediate combination with the starch, and copious precipitate of iodide of starch.

A similar iodizing solution, in which whey is the solvent, answers remarkably well. It may be made as follows:—Take calf's stomach, quite fresh; wash thoroughly; cut up into small pieces, and preserve in a bottle of alcohol for any length of time. When wanted, pick out three or four pieces, and put into about 3 quarts of good skimmed milk slightly warmed. Stir with a glass rod, and place the vessel in a warm place. After a short time, the whey will have separated from the caseine. When this is completed, press out the liquid, which should then be boiled in an earthenware pipkin and skimmed. Strain through three or four folds of fine muslin. Allow to stand for a few days. Decant 1 quart of the upper portion, and add the chemicals, according to the following formula:—

Whey	1 quart, or 40 fluid oz's
Iodide of potassium	500 grs.
Bromide of potassium	100 grs.
Cyanide of potassium	30 grs.
Fluoride of potassium	15 grs.
Chloride of potassium or sodium	8 grs.

When this solution has stood for two or three weeks, it will have become exceedingly clear, and will have deposited some casiene, which the previous processes had not entirely separated. It is then fit for use, and will keep any length of time. It is important to observe, that the rennet of the shops and dairies contains a great quantity of salt, and that not of the purest kind. When definite proportions of salt are necessary such an article should not be used, as it may vitiate the whole results.

Some of the later writers on the waxed-paper process recommend a larger proportion of iodide and bromide of potassium, omitting the other chemicals, and using distilled water as the solvent. They speak of an amount of rapidity absolutely startling to any one who has had patience to try the different methods. I can assert positively, as the result of many hundred experiments, that no such differences of rapidity exist. At most, the difference is small; and it may be taken, I think, as an established fact connected with this process, that papers which will keep good equally well for the same number of days, and under the same temperature, are equally sensitive.

Another formula:—

Distilled water	1 quart=40 ozs.
Iodide of potassium	500 grs.
Bromide of potassium	125 grs.
Gum-arabic	1½ oz. avoirdupois.
Gum-tragacanth	30 grs.
Free iodine	2 grs.

The gum tragacanth being very insoluble, should be first dissolved in about a pint bottle of distilled water, placed on the hob or other warm place for four or five days, and occasionally shaken. Let this be added to another pint of distilled water, and add the chemicals. The color of this solution should be about the same as sherry, and when it becomes clear by use, add more free iodine. This formula I have laterally exclusively used. It does not give a clearer negative, perhaps not so clear as the rice-water or whey, nor is it more sensitive. It possesses, however, an important advantage, viz. the power of rendering the negative capable of being developed for a very long time without injury. I have some good specimens which were upwards of two days in the development.

Either of the above three formulæ will give excellent results.

When the iodizing solution is wanted, pour into a porcelain tray a sufficient quantity to cover completely ten or twelve papers. Immerse them one by one, removing the air-bubbles carefully with a brush kept for the purpose. Not more than twelve should be in the solution at once, for there is danger, even with this small quantity, of those in the centre being unevenly iodized. To avoid this risk, move them about occasionally with the brush during the progress of soaking. After soaking for at least three hours, hang up to dry, using a clip for this purpose. Many of the papers, especially if the solution is an old one, will assume a dirty marbled appearance; this does not in the least spoil them, and will entirely disappear in the exciting solution.

Many of the papers I use are iodized in the air-pump, but I do not see that it has any marked advantage over the method of carefully soaking. Indeed, unless the pump is a very good one and the whole operation conducted with the utmost care, there is a great deal more risk of failure and imperfect iodizing than by the former method.

Pour the solution into a shallow porcelain tray. Immerse the papers one by one as before; but in this case as many as twenty or thirty may be used at one time. After two or three minutes roll them up (taking care that the hands are perfectly clean) and drop into a tall cylindrical glass jar. Pour into this the iodizing solution till it reaches the top of the roll, not farther. Wedge-in a piece of strong card or wood to keep the papers from rising above the surface of the liquid. Be careful to have at least 1 inch clear space between the surface of the solution and the top of the jar, because when the air is removed, the small bubbles adhering to the paper and in its interstices expand so much as to raise the liquid almost to the overflowing point. The jar should now be placed under the receiver of the pump, and the air exhausted as much as possible. As the exhaustion goes on, innumerable bubbles rise to the surface and burst; when nearly complete, the solution will have risen to the top, and is covered with a thick cream of exceedingly minute bubbles. In about five minutes after the air has been extracted, the iodizing will be finished; but if there is any leakage about the valves or receiver, which may be known by the solution gradually falling in the jar, the pumping must be continued for that time. The air may be now admitted and the papers unrolled in the tray in which they were first immersed, and hung up one by one over a very clean tape to dry. A pin cannot be used, nor even a clip, if the air has been very much exhausted; for the penetration has been so complete as to render them as tender as so many pieces of soaked blotting-paper. When dry their texture will be as firm as ever.

Paper iodized by any of these methods will keep well for at least three or four months, possibly much longer. But I have on two or three occassions observed a falling off of intensity when using papers iodized seven or eight months previously. I do not know that this was the cause, but I was unable at the time to trace the failure to any other source.

(To be continued.)

From Art the London Journal.

MR. JOHN BIRCH.

Mr. John Birch died at South Hackney, near London, on the 29th of May. Although but little known in the "Great Metropolis," the chief portion of his life having been spent in Sheffield, he achieved an enduring reputation in that town as a portrait and landscape-painter. He was born at Norton, Derbyshire (the birthplace of Chantrey), on the 18th of April, 1807, and, as a boy, gave early indication of his love of art, his leisure hours being absorbed in sketching the beautiful scenery of the neighborhood, notwithstanding he had never seen a print nor drawing of any description. For some time he assisted his father as a file-cutter, a business he relinguished for a situation at Mr. George Eadon's carver and gilder, Sheffield, with whom he remained seven years, and then determined to commence the arduous profession of a portrait-painter. To perfect himself in the art he went to London, and studied under H. P. Briggs, RA. Here he received many commissions to paint the portrait of the late Mr. Cocker, of Sheffield, from the original by Briggs, and was so successful, that it was difficult to distinguish the copies from the original. Mr. Birch lost no opportunity that presented itself of studying the great masters of his loved art, and accordingly became a devoted student of the works of Reynolds, Gainsborough, Cuyp, Murillo, Wilkie, Constable, and many others. In consideration of his ability, he was elected a life student of the British Institution. Several of his landscapes consist of the magnificent scenery in Derbyshire: "Dovedale," "Miller's Dale," "Matlock High Tor," and the "Entrance to the Peak Cavern," were favorite subjects of the artist's pencil. He was an intimate friend of the late Ebenezer Elliott, the corn-law rhymer, of whom he painted many portraits—in fact, Mr. Birch was the only artist to whom the poet sat. The half-length portrait of Elliott among the rocks of Rivilin attracted very great attention at the exhibition in aid of the funds of the Sheffield Mechanic's Institution, which took place at the Music Hall in 1839. The origin of the picture was as follows:—The poet and painter walked from Sheffield one summer's morning to the valley of the Rivilin, and lighting upon a most romantic spot, Elliott suggested that the rocks and gushing stream would make a glorious back-ground for a portrait. The artist soon "rubbed in" a portrait of Ebenezer Elliott, with the rocks, as suggested, for a background; and while the artist was busy with pencil, the poet took out his pen, and the lines called "Ribbledin, or the Christening," were composed on the spot.

John Birch was a man of enlarged and liberal views, and of great conversational powers. For some years past he resided in London, making occasional visits to Sheffield; during his last visit he painted about forty portraits in nine months. He then returned home, and in little more than two months died from disease of the chest, after protracted and severe sufferings. Within a few days of his disease he talked of his friend Ebenezer Elliott, and he was so unconscious of the near approach of death, that he determined upon going to Manchester to see the Art-Treasures Exhibition. He has left a widow and son to mourn the loss of an upright and honest relative.

From the Liverpool Photographic Journal.

LONDON PHOTOGRAPHIC SOCIETY.

The first monthly meeting of this Society, for the session 1857-58, was held on Thursday, the 5th instant, at the Society's Rooms, No. 1, Coventry Street, Leicester Square; the President, Sir Frederick Pollock, in the chair.

The PRESIDENT congratulated the members and their friends upon the success which had attended their efforts to obtain premises suited to the wants of the Society. He thought it was a just cause of pride that, unaided by state resources, it had achieved so much. The progress of the Society, as a scientific body, had been unexampled; and there could be no doubt of their continued success, for all classes of the community were interested in their proceedings and productions. The present rooms could be relinquished in three, seven, fourteen, or twenty-one year's time should it be found necessary to provide more spacious accommodation; but those from whom they held the rooms had no such discretionary power. They could, therefore, at once proceed with confidence to carry out all the objects of the Society.

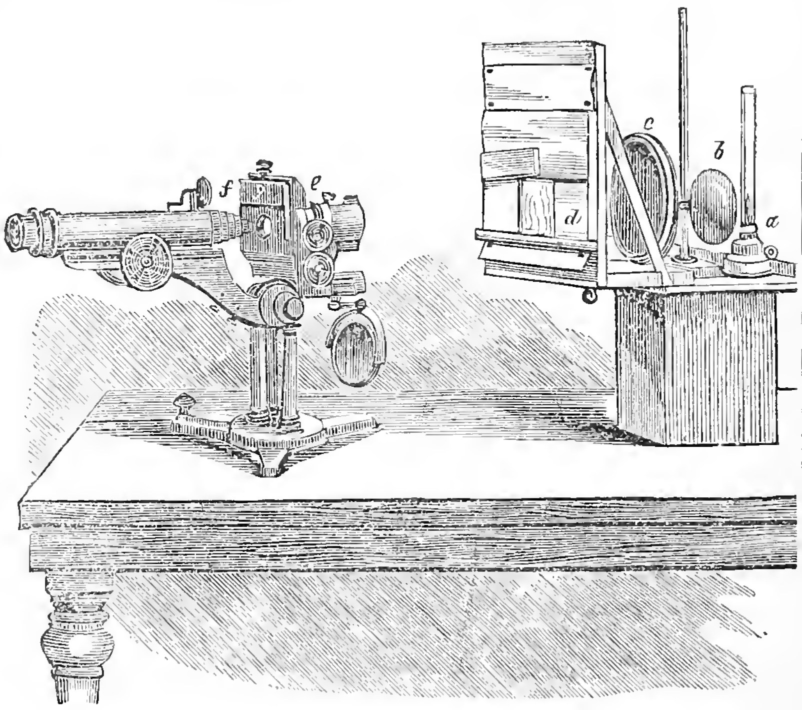
Mr. G. SHADBOLT, President of the Microscopic Society, read a paper

"ON THE MODE OF PRODUCING EXTREMELY MITUTE PHOTOGRAPHS FOR MICROSCOPIC EXAMINATION."

He said:—During the winters of 1853-54, I was engaged in prosecuting experiments relative to the peculiarities of various samples of collodion, and amonst other tests I subjected the films to inspection under the microscope. I then observed that some kinds were not only entirely free from reticulations, but that the particles of iodide of silver were so minute as to require considerable optical power to resolve them. At this point the idea occurred to me of ascertaining the relative capabilities of each sample of collodion in regard to its power of recording, pictorially, minutiæ of detail.

It was accordingly resolved that photographs should be produced of as small a size as possible, so as to bear inspection under the lower powers of a good compound achromatic microscope; and as all things were arranged by the commencement of March, 1854, the first pictures were then produced and exhibited to some friends at the house of Mr. Rosling. These pictures were also exhibited to the Society in the April ensuing, as was recorded in the Society's journal at that period.

The following diagram illustrates the general disposition of the various pieces of apparatus.



a is the source of light; *b* is a thick short-focus lens to collect the light of the lamp and throw it towards the picture, where, from the convergence of the rays, the light would form rather too small a spot; the lens, *c*, is therefore interposed so as to spread the light out to cover completely the negative *d*. The negative, for convenience sake, being pressed against a plate of glass by a spring; all in the plane at *d*. Now the end of all this arrangement is simply to give us a clearly illuminated picture of about three inches in size, which we proceed to reduce to microscopic dimensions by the microscopic *camera lens*, which is fixed in a tube at *e*; *e* being about the place of the "substage" of the microscope. Our camera lens is, of course, of exceedingly short focus, for its ground glass or collodion film substitute is to be placed at *g*, which is the usual place for the principal stage of the ordinary microscope. Wood is here substituted for metal, because it is *here* that the sensitive film has to be placed to receive the image which the ground glass has aided us to find. Now let us look at the use of *f*, the only part remaining unexplained: *f* is the ordinary part of the microscope used to magnify anything placed at *g*, our collodionized film or ground glass substitute for example. Begin by focussing the microscope till the film at *g* is distinct, then turn the "fine adjustment" screw at *f* a little, to make correction for the chemical focus, the amount being ascertained by experiment. Now leave the microscope with its final correction as it is, and look through it while, by the camera lens screw at *e*, you throw the *image* of the negative so that it shall be distinct to the eye, *as seen* on looking in the previously corrected microscope. All is now ready; remove the ground glass or its substitute, and put a slip of glass, collodionized on the spot, excited in a little beaker glass full of nitrate of silver (extemporaneously sheltered by placing it in a small plate box) in the place of the ground glass or film at *g*, having beforehand covered the lens by a cap at the tube of *e*, placed between it and the negative. Remove the cap for a few seconds, and develop on the spot; wash and fix and dry as usual.

Since then a demand for these minute pictures has arisen, and they are now a regular article of manufacture for microscopic examination.

The principle acted upon was well known; it is this:—that a ray of light refracted by any medium *traverses the same path* whichever end of the said path be made the starting point. Take as an illustration the case of ordinary photographic portraiture. The *sitter* being placed in the *anterior focus* of the lens, the *plate* is arranged so as to coincide with the posterior focus of the same lens, which latter focus is situated within a much shorter distance from the lens than is the anterior focus. These two foci are termed the *conjugate foci;* and if the sitter were placed in the short focus, an enlarged picture would be produced upon a plate located in the place previously occupied by the sitter.

Such an arrangement is adopted whenever an object is placed under the microscope for examination, a picture on an enlarged scale being formed at a comparatively long distance from the object glass, and *which picture* is still further magnified by the eye-piece. It is from these considerations manifest that if an illuminated negative photograph be made to occupy the ordinary position of the microscopic *picture in the eye-piece*, a greatly reduced image of the same ought to be formed in the anterior focus of the object glass; and this is found to occur when the trial is properly made.

There are, however, some difficulties to encounter.—*Firstly*, it is difficult to ascertain the focus in the case where the five-hundreth part of an inch nearer to or further from the lens is a matter of moment in placing the sensitive plate. *Secondly*, the lenses of microscopic object glasses, though as visually correct as possible, have not the visual and chemical foci coincident, a corresponding allowance having to be made when they are used photographically.—*Thirdly*, it is necessary to make several trials to ascertain the correct exposure for any given negative—a point of some difficulty, simple as it appears, *until* the correct allowance for the actinic focus has been determined. A good microscopic object-glass is *always over-corrected* as regards color, that is to say, the blue rays are projected beyond the red. And let it not be forgotten that the most perfectly constructed lens is a thing in which opposite errors are so opposed as to leave only a minimum of aberration: we cannot have perfection.—*Lastly*, if artificial light be employed for the purpose of illumination, it is necessary that the rays shall fall upon the negative, either parallel or slightly converging, in order that the source of light may be at least as large as the *negative* in appearance. Thus an equality of photogenic action is secured.

The apparatus was arranged as follows, viz.: Having removed the upper stage-plate of a large compound microscope, I replace it with one of wood, supplied with guide-pins of silver wire, in order to admit to its supporting a slip of glass coated with collodion and excited in the nitrate of silver bath in the usual way. If the ordinary brass stage-plate were left undisturbed, it is obvious that it, and the excited slip of glass, would be mutually destructive.

The microscope is now to be placed in a horizontal position, the objective, intended to produce the picture, made to occupy the place usually filled by the achromatic condenser on the *sub-stage* of the microscope, while *another* objective is screwed into the lower end of the body of the instrument, which is used, not only to focus with but also to make the requisite allowance for actinic variation.

The negative intended to be reduced is then arranged vertically, with its centre in the axis of the microscopic body, at a distance of from two to four feet from the lower object-glass, and with a convenient screen of card, wood, or thick paper, to cut off any extraneous light that would otherwise pass beyond the limits of the picture.

A small camphine lamp is employed for the purpose of illuminating the negative, having a good bull's-eye lens as a condenser, so arranged with its flat side next the lamp, that the refracted rays shall fill the whole of a doule convex lens of about six inches in diameter, the latter being placed so as to refract the rays of light in a parallel direction upon the negative.

By this arrangement the *bull's-eye* lens of about $2\frac{1}{2}$ inches in diameter *appears* as the source of light, instead of the small flame of the lamp.

When first I made the attempt to produce these pictures, I focussed *upon the excited collodion itself*, in order that no error might arise from any variation in the planes of the focussing screen and sensitive medium; and to effect this, a piece of deep yellow-colored glass was interposed between the lamp and the bull's-eye, lens, which was removed for the requisite interval after focussing, to allow the action of the light to take effect; but subsequently I found that it was possible to focus upon a slip of collodionized glass that had been excited, washed and dried, without removing the iodide of silver, and then replacing it by the slip intended to receive the impression.

The manipulation is thus performed, viz., the focussing glass being placed on the wooden stage with the collodion *from* the observer, the body of the microscope is accurately adjusted so as to focus distinctly the film of collodion as seen through the slip of glass. When the exact point is turned, so as to focus the objective beyond the film, *just so far as the actinic focus of the lens to be employed for producing the picture, differs from its visual one;* the last-named lens is then to be carefully adjusted, so that the image of the negative becomes distinctly and sharply defined when viewed through the microscope; and when so seen, the *actinic image* will fall in the exact plane in which the film of collodion is located. The light is then to be shut off, a sensitive film placed instead of the dried one, an exposure of from ten to sixty seconds allowed, and when removed from the stage, the picture is to be developed in the usual way by means of a few drops of the ordinary pyrogallic acid solution. The picture quickly appears as a small dark on the glass. It is to be fixed and washed as is usual with larger pictures, and set aside to dry in a place protected from dust, which last-named substance is perhaps the greatest enemy one has to contend with.

With regard to the allowance necessary to be made between the visual and actinic foci, there are various methods by which this may be accomplished; but in my opinion by far the best is that afforded by the *fine adjustment* of the microscope itself. If an over corrected objective, the actinic focus being *more* distant from the lens than the visual one, it is evident that a greater separation between it and the plate is required than for accurate definition by sight; but as the amount of variation probably differs for every individual lens, though nominally of the same power, the exact allowance can only be determined by trial; for a two-thirds of an inch that I generally use with the negative about four feet from the lens, the correction required is an elongation of the focus by $\frac{1}{200}$th of an inch; while $1\frac{1}{2}$ inch objective of similar make requires an allowance of $\frac{1}{50}$th of an inch.

The proper correction may also be made by withdrawing the negative further from the lens after focussing. I may also observe that I have noticed a curious fact with reference to the allowance for variation in an over corrected lens, viz., that the amount of it is not the same for day-light, as for artificial light. This merits further investigation.

It may also be desirable to describe the developing solution:—Two grains of pyro-gallic acid to one of citric acid, and one ounce of water, is better for this purpose than an acetic acid mixture, the resulting picture being of a more agreeable tone. The micro-photographs, when finished, may be mounted by cementing over the collodion a disc of very thin glass, by means of Canada balsam.

"A SUPPLEMENT TO MR. SHADBOLT'S PAPER," &C.

He stated that his first attempt at taking minute photographs was made more than a year after Mr. Shadbolt had described, privately, his mode of operating; and it being his wish to work by day-light, he commenced with a small camera, made for the purpose, and lent him by Mr. Thomas Ross. Mr. Jackson's description proceeds as follows:—

This camera was furnished with the usual glass for focussing, which, though ground tolerably fine, was far too coarse for anything like the precision necessary in a picture to be submitted to the microscope. I was therefore induced to construct a camera which would allow the use of a method of focussing that I had found advantageous in taking portraits of the ordinary size. The body of this little instrument is a piece of drawn brass tube, about an inch in diameter, into the end of which another tube is screwed. The tube to which the object-glass is attached slides into this inner tube, and is fastened by a pushing-screw; the sliding motion giving a rough focal adjustment, and the screw on the intermediate tube a fine one.

The plate-holder has a short tube attached to it, which slips with moderate tightness over that which constitutes the body.

When the plate-holder is removed, a brass plate is laid across the end of the body, having a tube screwed into it so as to admit of adjustment. In this tube is placed a small positive eye-piece, equal to a lens of half an inch focal length, which, for these minute pictures, might be much more powerful.

It is evident that this eye-piece constitutes, with the object-glass, a small telescope, in which the image is seen without the intervention of a ground-glass or other medium; and, when once accurately adjusted, the operation of focussing is a very simple one

The original adjustment is made in this way. The distance at which an object is clearly seen when the object-glass is applied to the microscope, is carefully measured, and it is placed in the camera at the same distance from the sensitive surface. A picture is then taken, and most probably found to be very indistinct; but, by a few trials, making use of the screw adjustment, the true focal distance is at last found; and the eye piece being adjusted by means of its screw-tube, the camera can be focussed by it again at any time, even if the negative be placed at a different distance. This method has the further advantage, that no allowance is required for the difference between the visual and actinic foci; or rather, the allowance is necessarily included in the adjustment. I use a board four feet long, which can be hung in a perpendicular direction. At the upper end of it is a simple apparatus for holding the negative, and the camera is fixed at the lower end. The light is thus taken direct from the sky; and the time of exposure varies with the weather, the density of the negative, the aperture of the lens, and the collodion.

Most of my pictures were taken with an inch-and-a-half microscopic object-glass, made by Smith and Beck; but I have lately tried one of Ross's old inch object-glasses, a single triplet of moderate aperture, and find it to answer very well. The time of exposure with this lens ranges from fifteen to sixty seconds.

A great proportion of my clearest and best toned pictures have been spoiled by the film cracking into irregular hexagons, apparently the effect of contraction, giving the appearance of a net thrown over the figure. This is a difficulty that I have not yet discovered the means of overcoming; but the tendency to it may be lessened by diminishing the proportion of alcohol, and by allowing the plate to get nearly dry before plunging it into the silver bath. These remedies, however, produce another defect almost as bad as the original; for they appear to prevent the even penetration of the film by the bath, and the result is a greyish picture covered with white spots. Any suggestion on this subject will be thankfully received.

The developer that I employ is that recommended by Mr. Shadbolt; but I have latterly used it in a peculiar manner.

On one occasion I forgot to draw out the slider of the plate-holder, and only discovered it by the fact of being unable to develop anything on the glass. As an experiment I replaced it in the camera and exposed it the usual time, when I was agreeably surprised to find a clear and well-toned picture.

Since that time I have generally poured the developer on the plate immediately after taking it from the silver bath; and after moving it to and fro two or three times, having poured it off, and placed the plate in the camera as quickly as possible. On exposing it the proper time the picture is found to be fully developed, and must be immediately washed and fixed in the usual manner. Should it, however, be too faint, the washing may be delayed until it is sufficiently darkened; but it is not generally so clear as when the exact time of exposure has been hit. I have often tried comparative experiments, and I have constantly found that this method not only saves time, but gives the clearest pictures.

Mr. Shadbolt and Mr. G. Jackson demonstrated personally the peculiarities of their respective arrangements and modes of manipulation.

Mr. W. Jackson, of Lancaster, sent a paper

"ON THE PRODUCTION OF DIRECT TRANSPARENT COLLODION POSITIVES."

Mr. Jackson stated that his attention having been called to the fact that no process with the above object in view had been published, sent an account of some experiments made by him, two or three years ago, with the ordinary negative collodion process, which, by slight modifications, yielded pictures which were positive by transmitted light. One method was to follow the ordinary process with the pyrogallic developer, but as soon as a slight development took place, the plate was well washed with water, and then re-immersed for three or four minutes in the silver bath. This plate, on being again treated with the developer, gave positive shades, while the lights, which seemed unaltered, became transparent. Another and more ready method was to allow diffused daylight to fall on the plates as soon as the image began to appear, and after pouring on the developer. The effect is not produced if the picture be too much developed. An amber-colored collodion is best, and used with ordinary nitrate of silver. Fused nitrate and colorless collodion give exaggerated high lights. Thin collodion is more sensitive than a thicker one, but does not give such deep shades. The strength of the nitrate bath was varied from ten to fifty grains per ounce; the weak solutions being most manageable, but not giving such deep shades as the stronger ones. Twenty grains per ounce, with four drops of glacial acetic acid, gave good results. The pictures may be improved by washing off the developer, dipping the plate in a three-grain solution of silver, and then applying the developer again. This must be done before the picture is fixed. Some practice is necessary to hit the right point of development previous to the reversing operation; and skies come out too strongly, unless shaded off during part of the exposure; moreover, the parts of the picture bordering on the skies often become negative.

He regarded these pictures as being curious, rather than useful. The definition was good, and the plates were more sensitive than ordinary. In a postscript he further stated, that the amount of free iodine in the collodion modified the color of the shades. He also added that the pictures could be produced in one-fourth of the time required for ordinary collodion positives. The most effective pictures were obtained when the exposure was such that the first faint development occurred soon after the application of the pyrogallic acid solution, which was not stronger than from one-half to three-quarters of a grain per ounce. The method, by exposure to light, is to be preferred; but, if the other plans are tried, the acetic acid must be omitted from the bath, and a stronger image be developed upon the first exposure. To deepen the shade, it will be best to repeat the development before fixing—a solution of nitrate of silver of twenty grains per ounce may, in this case, be used. The cyanide, for fixing, should be of the strength of from six to seven grains per ounce of water.

Mr. Malone, upon comment being invited, observed that, some four years ago, he had, by following the ordinary collodion process, obtained, to his surprise, a very good transparent positive picture, when he expected to have produced a negative. The result happened thus:—he exposed a plate in the camera to the image of a strongly-illuminated white plaster bust, for a much longer time than usual. He then developed, with pyrogallic acid, in the usual way, and fixed with hyposulphite of soda. The image, although a good one, did not seem to him, at that time, to be of practical interest. He, therefore, allowed the fact to remain without further investigation. It seemed extraordinary that light should, in excess, take away from the impressed plate the power of precipitating silver from the liquid upon its surface; and, at present, no thorough explanation is offered to the rationale of the process. The formation of a deposit in the shades of the picture, he thought, might be accounted for by the length of the exposure being such, that the shadows which ordinarily do not affect the plate, at length, throw light for a sufficient length of time to impress parts which by a shorter exposure, would remain in a normal condition. But, by what strange action does the light destroy its original work?

Mr. Fenton had met with similar results, but could not command the phenomenon with certainty. He thought the matter of greater importance than was generally supposed; he trusted Mr. Jackson would continue his experiments.

Mr. CROOKES had repeated Mr. Jackson's experiments, and from the one which gives the result without the subsequent exposure to light, he concluded that the action was not to be accounted for by a reference to the destructive action of light alone.

Mr. MALONE endeavored to reconcile the two cases by reference to what he had observed in the process of "sunning" iodized paper. He had prepared in the usual way, and in the dark, a sheet of Mr. Talbot's iodized paper; upon this he placed a strip of black paper, and so managed as to cover up half of the iodized paper and strip, the other half with strips interposed was exposed to sunshine for twenty minutes; then the other half was momentarily exposed to the light; next, the whole was treated with gallo-nitrate of silver. A *black positive* image of the strip appeared on the half that had been sunned, while a *light negative* image or the other half of the strip was developed on the half of the sheet momentarily exposed: the result was very instructive and at first sight perplexing. It would seem that the paper *not sunned* is capable of throwing down the silver spontaneously from the developer by ordinary chemical action, while the same paper sunned loses this power, unless the action of light be limited, in which case it appears to exact the ordinary chemi-affinity of the paper for the silver of the developer. The subject is a very curious one and still obscure.

A MEMBER, whose name we were not fortunate enough to obtain, stated that he had obtained a direct positive by first exposing the plate entirely to light, and then exposing it to an image in the camera, developing as usual. This is in accordance with Mr. Malone's experience; the exposure to light at first might be carried just to the verge of the destructive action, then the increase of light, from the luminous parts of the camera image, would bring on the destruction of the affinity for the silver in the developer, and a positive must result.

Mr. SHADBOLT also took part in the discussion, and thought the destructive action of light was further evinced by these experiments.

The thanks of the Society were given to the authors of these communications.

Some good specimens of collodion positives were sent to the Society from a professional photographer in Australia, with a view of showing the present condition of the art in that distant colony. The process by which they were obtained was not communicated. The donor requested that some notice might be taken of them in the Society's *Journal.* The matter was referred to the council to deal with as they might think best. There was a slight disclination on the part of some members to give special prominence to these specimens, since they were not superior to some of those produced in London and Liverpool. The donor would enhance his gift if he would give the exact details of his process.

At the conclusion of the ordinary business of the evening, the meeting was rendered a special one to consider the proposal of voting £50 from the Society's funds for the purposes of the Archer Testimonial. On the motion of Sir. Wm. Newton, seconded by Mr. Vernon Heath, the proposition was carried without a dissentient voice.

Some interesting photographs by Mr. Howlett were exhibited during the evening.

At the conclusion the PRESIDENT announced that the Secretary had kindly provide tea and coffee for their refreshment, and especially for those who had taken part in *the discussions.*

THE most probable cause for the "wavy lines of a milky color beginning about a third from the bottom and becoming more curved and wavy as they reach the top," which appear on albumen plates after they are taken from the silver bath, is the employment of a horizontal bath on which the plates are lowered face downwards, the effect is exactly that which would occur were there to be any slight hesitation or irregularity in the immersion. More solution in the bath would perhaps remedy it; but we strongly advise the employment of a bath such as Mr. Ackland recommends.

From the London Art Journal.

MR. WILLIAM BRADLEY.

The career of this distinguished artist has been so much connected with Manchester, and the features of so many of our "notabilities" have been portrayed by his pencil, that a short notice of his life and works may not be unacceptable. Mr. Bradley was born in Manchester on the 16th of January, 1801. He had the misfortune to lose his father (an ingenious and inventive man, who resided at Garratt Hall) when only three years of age, and commenced life as an errand-boy in a warehouse, at the small wages of three shilling weekly. Art draws her votaries rather from the field and the workshop than the mansion and the palace, and so she took William Bradley from the packing-room of Messrs. Weight, Armitage, and Co., and at the early age of sixteen we find him practising entire as an artist. His beginning was humble enough; he took black profiles at one shilling each, and advertised himself as "portrait, miniature, and animal painter, and teacher of drawing." He had a limited number of lessons from Mather Brown, then in a high favor with the Mancunians, in whose mind, it is said, Bradley excited strong feelings of jealousy. At the age of twenty-one he went to London where his friend Mr. Leveson treated him with great kindness. He first took lodgings in Hatton Gardon, but subsequently removed to Gerrard Street: he obtained an introduction to Sir Thomas Lawrence, who took great interest in his works, and allowed him to bring them at all times for inspection, Mr. Bradley now became established in the metropolis, but occasionally paid a flying visit to his native town. In 1833 he paid a longer visit than usual to Manchester, accompanied by his friend, Mr. R. B. Faulkner; they worked together in the studio of Mr. Charles Calvert, the landscape-painter, in Princes Street; and in the same year Mr. Bradley married Mr. Calvert's eldest daughter, and, after the lapse of a few months, again returned to town. In the year 1847 Mr. Bradley removed entirely to his native town, where he continued to labor at his profession with devoted ardor; it was, however, obvious to all that his health was shattered, and his brain more or less affected. He lived a sort of misanthropic life, frequently never stirring from his studio for months together. He died at his rooms, at Newall's Buildings, on the 4th of July, of typhoid fever. In his illness he received the devoted attentions of his wife and daughter up to the last hours of his existance. As an artist, Mr. Bradley undoubtedly possessed high talent; and though showing but little of the creative faculty, and chiefly confining his attention to portraits and fancy heads, what he professed to do he certainly did admirably, ever giving the most elevated and exalted character to the subject that came under treatment of his pencil. His heads are remarkable for skilful drawing, and he was not second to any man of the day in producing a striking and intellectual likeness. He excelled in coloring, and wrought on purely philosophical principles, reduced from earnest study of the words of the great masters. His knowledge of light and shade was profound; and his proficiency in this most difficult branch of artistic study contributed in a large degree to the success of his works. His fancy pictures are numerous, consisting mostly of beautiful female heads. Bradley's practice was chiefly based on the works of Rubens, Vandyke, Rembrandt, and Raphael, and on the principles reduced and exemplified by their followers in our early english school—viz., Sir Joshua Reynolds, Gainsborough, Romney, and Sir Thomas Lawrence; "trying," as he said on his only visit paid to the Art-Treasures Exhibition, "to do something which should have resemblance to their work, putting touches which would puzzle the many to tell the meaning of, and which, when the work was done, would please people in spite of themselves." His perceptive powers were very extraordinary, enabling him at once to detect that which constituted the success or failure of a picture. Although in the receipt of a large income for many years of his life, such were, we regret to learn, his improvident and heedless habits, that his widow and four surviving children are left in very unfavorable circumstances, The following are the names of some of Mr. Bradley's sitters:—Lords Beresford, Sandon, Denbigh, Bagot, and Ellesmere, Sirs E. Kerrison, John Gladstone, Benjamin Heywood, Robert Jeppings, and Thomas Potter; Colonel Cureton, C B.; Colonel Anderton; W. E. Gladstone, Esq., M. P.; Sir James Emerson Tennant; Sheridan Knowles, W. C. Macready, Dr. Dalton, Charles Swain, Liverseege, John Isherwood, John Brookes; Joseph Brotherton, Esq., M.P.; Pudsey Dawson, Esq., Hornby Castle; Rev. Canon Stowell: Rev. H. W. M'Grath, &c. We have only to add that the youngest son of Mr. Bradley displays a remarkable talent for drawing, and, with due cultivation and training, promises to add another name to our list of local artists. This training it is understood, the necessitous circumstances of his widowed mother preclude and it has been suggested that an appeal should be made to the public, and especially to these whose portraits have been painted by the late Mr. Bradley, to assist Mrs. Bradley in maintaining and educating her family, and especially theson referred to (now about fifteen years of age), in placing him to pursue the study of Art under proper circumstances and discipline.

From the Jour. of the Phot. Soc.

FORMULA FOR COLLODION POSITIVES.

To the Editor of the Photographic Journal.

Sir,—Having often seen queries in the columns of your Journal, as to the best mode of making positive collodion, and having had some little experience in that way, I have found the following (after many experiments) to give results superior to any I have yet seen. Put 12 ounces by measure of good sulphuric ether in a stoppered bottle, and add to it 42 grains of gun cotton, shake frequently to facilitate the solution; let it stand for a few days, when any particles of undissolved cotton will sink to the bottom, and the upper portion may be poured off perfectly clear. The iodizing solution is made as follows:—

1. Iodide of cadmium................14 grs.
   Alcohol.......................... 1 oz.

Dissolve and filter.

2. Iodine.......................... 6 grs.
   Alcohol.......................... 1 oz.

Dissolve and filter.

3. Bromide of cadmium..............30 grs.
   Alcohol.......................... 1 oz.

Dissolve and filter.

4. Make a saturated solution of common salt in water.

To iodize the collodion, pour off an ounce and a half of the collodion into a perfectly clean bottle, add to it half an ounce of solution No. 1, shake well together, and then add 10 drops of solution No. 2, and 20 drops of solution No. 3, shake well together, and stand by for a few hours, and add 12 drops of solution No. 4, let stand for a few days, and it is fit for use. Collodion made as above, gives beautiful pictures, is very sensitive, and keeps good for a great length of time. The nitrate bath is made by nitrate of silver, 30 grains to 1 ounce of distilled water; the bath should be slightly acid. Having coated the plate with collodion prepared as above, immerse in the bath for one minute *only* in moderately warm weather,—a little longer may be allowed in winter. The plate should be moved up and down two or three times in the bath before it is taken out. To develope the picture take—

Protosulphate of iron................$\frac{1}{4}$ ounce.
Water................................5 ounces.
Glacial acetic acid..................8 drops.
Nitric acid..........................2 drops.
Spirits of wine......................1 drm.

Dissolve and filter.

Fix with cyanide of potassium, ten grains to the ounce of water.

A. S. K. H.

From the Jour. of the Phot. Soc.

COLLODION POSITIVES ON BLACK LEATHER.

Crowle, October 1st, 1857.

To the Editor of the Photographic Journal.

Sir,—The collodion positive I sent you on leather is done exactly in the same way as on glass or the enamelled iron tablets: the only difficulty in the process is getting the leather to sink in the nitrate bath; this I accomplish with a gutta percha dipper turned up the lower end, and at the proper distance from the end I have inserted a piece of slightly curved silver wire through the dipper: this, when turned down, holds the leather tight in its place, and to remove it the wire only requires to be turned upwards; then, to keep the spring in the dark slide from making the prepared side convex, place a piece of glass of the same size upon the back of the leather. I think it advisable to coat the leather with two or three dressings of any of the ordinary black varnishes, on the back and edges, to prevent any organic matter the leather might contain from spoiling the bath; it also helps to stiffen it. The kind of leather I have used is such as saddlers employ, but I consider, if we could devise a plan to sink the leather (better than mine), the patent French calf would be preferable, on account of its smooth and finely polished surface; but, on account of the thin texture, it is objectionable. The only cleaning required is rubbing with wash-leather.

J. S. Overton.

From the Liverpool Photographic Journal.

MR. SUTTON'S CHALLENGE.

The following letter, which has been addressed to the editor of the *London Photogrophic Journal*, needs, at present, no comment:—

Royal Square, Jersey, Aug. 11, 1857.

Sir,—By this post you will receive three photographs, purchased by me of Mr. Sutton, and, no doubt printed and mounted at the establishment of Blanquart Evrard.

In the last number of *Photographic Notes*, edited by Mr. Sutton, is a paragraph as follows:—

"All Blanquart Evrard's prints have been mounted with starch. As I have repeatedly challenged the world to produce a faded print from that gentleman's establishment, without receiving any reply, we may conclude, without theorizing on the subject, that starch is a perfectly safe cement to employ for mounting positives.—[Ed. P. N."]

Now, Sir, that the three photographs above named, and sent herewith, *have* faded, and that very much, there cannot be a doubt; but, when I tell you that they have been shown by me to Mr. Sutton some months ago, and that he of course could not but acknowledge the fact of their having faded, you will, I am sure, equally with myself, be astonished at the mendacity of the assertion—that the world has been *repeatedly* challenged to produce a faded print from Blanquart Evrard's establishment, and *without reply*. Will Mr. Sutton have the kindness to say when and where the challenge has *ever* before been given?

If Mr. Sutton desires another proof of the want of permanence in what he calls "the permanent process," he can be supplied with the article in the shape of a photograph of rocks (a fellow-print to one of those sent herewith), to be had of his printer of the *Notes*, where such view is exposed to-day (Aug. 11th) for sale on Mr. Sutton's behalf; and, as it is the only photograph in the shop-window, the fact of its having faded seems to establish a somewhat singular contradiction of his assertion regarding the permanence of the prints in question.

I think Mr. Sutton cannot reasonably complain of the challenge so publicly given, and so repeatedly (?), being at last as publicly responded to; and I would beg to remark that, as I have the honor to be a photographer myself, I have therefore a kind of compunction in acknowledging that photographs in any case may or do fade. This, however, is tempered, with the satisfaction of knowing, that, although the prints may *not* come from the establishment of Messrs. Sutton & Blanquart Evrard, it is quite possible that they may stand the test of time as well as those that do; and really think Mr. Sutton a little too arrogant when he asserts, that *the future of photography depends upon the success of the printing establishment in St. Brelade's Bay, Jersey* HENRY MULLINS.

Having inserted Mr. Mullin's letter, we insert Mr. Sutton's reply, and a rejoinder by Mr. Mullins:—

SIR,—I beg leave to offer a few words of reply to a letter which appeared in your last number, headed "Mr. Sutton's Challenge," and signed "Henry Mullins."

If Mr. Mullins will have the goodness to turn to No. 23, page 104, of my "Photographic Notes," (to which he is a subscriber,) he will find in the second paragraph the following remarks:—

"I have only seen two faded prints by Blanquart-Evrard's process, and these have rather been destroyed than faded. They belong to a Daguerreotypist in this Island. The image has evidently been coverted into iodide of silver by the destructive fumes of the iodine which escapes from his dark room; some prints of Mr. Fenton's have been destroyed in the same way, by the same cause. One print, however, by Blanquart-Evrard, which was protected by some means, has escaped, and is as fresh as ever: it is six years old."

I need scarcely inform him that *he* is the Dagguerreotypist alluded to. I have worked for a week at his rooms, with his bromine and iodine boxes, and I remarked that they allowed a good deal of gas to escape. His room, which is large and in an airy situation, ought not to smell so strongly as it always does of these gases; in fact he is obliged, all the year round, to keep one of his three windows wide open. I need not inform your readers that the bromide of iodine is recommended in Blanquart-Evrard's treatise, as a means of removing silver stains; and that the fumes of bromine and iodine are destructive to paper photographs. I may mention that Mr. Mullins selected the prints he sent you from a dozen or more which I showed him, and that the remainder are in my possession and as good as ever.

I have now disposed of what he has politely called my "mendacious assertion."

With respect to M. Le Feuvre's print,—I have not seen it, nor do I think it likely that he would exhibit a faded print in his window;but I will make enquiry about it and let you know the result.

With respect to my repeated challenges to photographers to produce a faded print from Blanquart-Evrard's establishment, I beg to say that during the year 1856, I sent from Jersey upwards of 9000 mounted prints, each bearing the stamp of "permanent photograph" at the corner of the mount, and that not one has been returned to me as faded. Each of these prints may be considered in the light of an unanswered challenge.

During the whole course of my experience, I have seen no faded prints from Blanquart Evrard's establishment, except those which Mr. Mullins sent you, (and for which, you observe, I informed the readers of my "Notes," the months ago,) and very lately another among my own collection, the existence of which I do not wish to conceal. It is possible that among the subscribers to my Album there may be good-natured persons who may possess faded prints, but who have been unwilling to make me acquainted with the fact. But in the absence of such evidence, I must still hope that photographs which have been developed on iodide of silver, and properly treated, *are* permanent; for a *very rare* and *occasional* failure may fairly be attributed to an accident of some sort. If they are not, then the whole system of photography, with the salts of silver, must fall to the ground, for this is the process by which *negatives* are obtained, I repeat, that the fate of the present system of photography depengs on the permanence (not of my printing astablishment in St. Brelade's Bay, as Mr. Mullins would facetiously make out), but of Blanquart Evrard's positive print*

September 29th, 1857. THOMAS SUTTON.

* (?) Mr. Talbot's original *"calotype" positive print.*—ED. L. & M. P. J.

POSTSCRIPT.—I went to M. Le Feuvre's yesterday, in company with the Rev. T. M. Raven, (a member of the Photographic Society of Scotland,) to examine the print alluded to by Mr. Mullins. We agreed that it had not faded in the least degree. M. Le Feuvre received it, with a number of others, from Blanquart-Evrard, sound, about three years ago, and he allowed us to look over the remaining prints which came in the same parcel. All are as fresh and perfect as they were on the day when he received them; and he says he has never seen a faded print from B-Evrard's establishment, although he has unfortunately in his possession many faded prints by other artists.

I beg, therefore, to contradict the statement made by Mr. Mullins in the fifth paragraph of his letter.

I ought to mention that, when Mr. Mullins first showed me the damaged prints which he has sent to you, we had some conversation about them, in which I attributed their having perished to the action of the destructive gases which are always present in the atmosphere of his room, but particularly at night, when the doors and windows are closed. Why did he not, in common fairness, mention the circumstance of my having given him this explanation?

"As you have permitted his letter to appear in your Journal, I trust you will, as an act of justice to me, insert my reply in your next number. It is the only communication with which I shall trouble on this subject, for Mr. Mullins has so far forgotten himself that I decline entering into any further controversy with him.

MR. MULLIN'S REJOINDER.

SIR,—In the current number of "Notes," No. 37, Mr. Sutton, in referring to my letter in the last Journal observes that he *has* publicly acknowledged having seen the three faded prints I mentioned in my letter, and then, with the confidence natural to him, says, "the first part of Mr. Mullins' letter is disposed of"—how he jumps to this conclusion I am at a loss to imagine. The paragraph I alluded to, appearing in the "Notes," said that Mr. Sutton had repeatedly challenged the world to produce a faded print from Blanquart-Evrard's establissment, and that, as he had never had any reply, we may conclude, &c.: thus in as plain langauge as possible ignoring the fact of my having shown him the three *which have faded*, and were sent you at the time I wrote; and I think that his method of disposing of the first part of my letter is merely a confirmation of what I said, viz., that Mr. Sutton *had seen* the prints: his having mentioned that fact in a former number of the "Notes" is nothing to the point. He said deliberately that he had never seen a faded print from Blanquart-Evrard's establishment, and I reminded him that he had: but perhaps he thought that as he had mentioned them in No. 23, page 104, *they were* disposed of.

Now, as regards the print at Le. Feuvre's, which I said was hanging in the window, palpably faded at the time I wrote, and which Mr. Sutton now asserts (in capitals), was not: I must say that that assertion is "intemperate," for that print was *not* amongst those examined by him and his friend, the Rev. Mr. Raven, at Le Feuvre's, on the occasion he mentions, because before the appearance of my letter in your Journal, I missed the photograph from the window, and on enquiring about it was told that it *had been sold*, to whom they did not know: however, I am glad to be able to say that I was not the only one who thought it likely to be a bad investment.

Then, with respect to the charge of arrogantly claiming for the printing establishment at St. Brelade's Bay, the future of photography, which Mr. Sutton disposes of by saying that he has always frankly brought forward in the "Notes," the different processes of printing, such as those of Sella, Pretsch, Poitevin, &c.: I for one have no wish to deny: it was matter for his "Notes:" but as a set-off, can any of his readers say that advantage has not been taken of every opportunity to bring in Blanquart-Evrard and "Hollingsworth's thin paper ?"

In conclusion, I only remark, that unless Mr. Sutton employs some better argument in the letter he requests you to publish than we have been favored with in the "Notes," *the facts*, with all due deference to him, remain as they were.

HENRY MULLINS.

Royal Square, Jersey, Oct. 13, 1857.

From the Journal of the Pho. Soc.

PREPARATION OF HYDRIODIC ACID.

To the Editor of the Photographic Journal.

SIR,—Seeing in your last Number that one of your correspondents, Mr. Tichbone, has experienced some difficulty in making hydriodic acid in quantity by the action of hydrosulphuric acid, I beg to forward the plan I adopt, and by which it can be made in any quantity and of great strength. Take 1 ounce or any quantity of iodine, reduce it to powder in a large mortar, diffuse about 1 drachm in 1 ounce of distilled water, pass the hydrosulphuric acid gas through it until the iodine is decomposed, pour the liquid into the mortar on the remaining iodine and stir well with the pestle; a considerable quantity of the iodine will be dissolved: return the liquid to the decomposing vessel, again pass the gas until decolorization has taken place, and repeat the operation until all the iodine has been taken up. By this process there are no solid particles of iodine to be enveloped in the precipitated sulphur, and the operation proceeds in the most satisfactory manner.

J. FOSTER.

NEW YORK PHOTOGRAPHIC GALLERIES.

FRIEND SNELLING,—A short sketch of the New York Galleries will no doubt interest many of your Western and Southern readers I am sure, and I have taken the liberty of dropping a hasty line by the way. The first visit I made to the different galleries of Art, was my old friend, T. FARIS, Esq , late Cincinnati, Ohio. Mr. F. occupies the rooms formerly kept by ROOT, on Broadway. Mr. F. is an old operator and I could speak of him at great length, and of the many great and beautiful pictures he has produced. Mr. T. has no superior in his profession. The Diaphaneotypes that he gets up, are the most beautiful and artistic pictures that are made. The richness of color, the most exquisite and delicate touches cannot be equalled. In looking through Mr. F.'s gallery, I saw many old familiar faces. His arrangement of groups are done in an artistic manner, which shows that no person of limited knowledge could accomplish such things. I wish I had but time to speak of Mr. FARIS' different pictures, but there are so many I cannot find space for them; and if any of my artist friends visit New York, I recommend them to pay Mr. F. a visit, and they will be richly repayed.

I next strolled into BRADY'S, 205 Broadway, a small gallery, once occupied by the bearer of the above name. I saw several good pictures. Mr. Johnston is the operator, and a very polite gentleman I found him. I was much pleased with his pictures.

Farther up Broadway, I found *the* real BRADY, up to his ears in business. He has 26 persons in his employ, artists, operators, and salesmen. The imperial photographs are a most beautiful style of pictures. They are simply fine large cabinet pictures beautifully worked in India ink, to a high degree of perfection. There you can see specimens of nearly all the different distinguished personages that visit New York: those of Chas. Elliott, Esq., the artist, N. P. Willis, the poet, Ex-Secretary Marcy, Bayard Taylor, are most perfect gems of art: I could name hundreds equal to those. I saw several full-length photographs taken by WOODWARD'S Solar Camera, life-size, most wonderful pictures.

A few doors below is GURNEY'S gallery. Mr. G. has taken the premium for his beautiful pictures on many occasions, and deservedly so too, for he has had the best operators, and the very best artists, and has paid the highest prices for everything. Mr. G. is liberal, and he should be well patronized. Mr. G. has a large table, on it a shade in which is placed the many prizes he has got at the different institutions: he also has got a massive silver pitcher, awarded to him by the Committee appointed to present the ANTHONY prize for the best daguerreotype. He has various silver and gold medals too numerous to mention, for premiums taken in Europe and this country. Mr. Harry Moulton, the great photographist, does not work for Mr. GURNEY at present. Mr. G. has 25 persons in his employ—artists, operators, salesmen, and messengers. He does not take ambrotypes; nothing but photographs plain, in oil, water, India ink, and pastelle, and also daguerreotypes. It is really a treat to visit Mr. GURNEY'S establishment. He is one of the best of men, and his son, the affable and gentlemanly salesman, is the very man of all others to have in a gallery. The many large oil pictures that adorn the walls, show plainly that Mr. G. is not only a man of taste, but keeps the best of artists in his employ.

C. D. FREDERICKS, Esq., opposite the Metropolitan Hotel, has the largest and most spacious rooms in New York; he keeps eight artists in oil color; in water three, in pastele one, in India ink four—operators, artists and all, number thirty-two. The Hallotypes are not good: I have never seen one that I could call good yet, made either at GURNEY'S or FREDERICKS'. But Mr. F. has certainly the most spacious and best regulated rooms in the whole Union. His monthly receipts are $7000. I saw in one packet, 5000 negatives for photographs. A large portrait of Gen. Sam. Houston, is not only a great likeness, but a spirited and well executed half-length portrait. There are so many portraits in oil, pastele, and water, that it would consume too much time to name half; but to speak at a glance, the visitor to New York must never leave without going to see Mr. FREDERICKS' Gallery. The greatest business that is done here, is in painted and plain photographs. The sum of $1500 is paid regularly to artists monthly—that is only one item. Mr. FREDERICKS, by his courteous and manly deportment, liberality of heart, has won for himself, not only a great name, but wealth and fame.

MEADE BRO. take daguerreotypes and photographs. Some of their pictures are superior in tone and beauty of position; but they appear to have lost their pride to a great extent. Some years ago, I remember MEADE BRO, had the most spacious rooms in New York on the second floor, above the Astor House a short distance. They do a large business in furnishing goods to operators throughout the country. They take but few pictures compared with what they used to do. Their operator's name is Mr. Luuson from Paris.

A. POWELSON (307), takes photographs and ambrotypes; some of his specimens are very good, and business appears to be very brisk with him.

C. F. ROCKWELL (315), takes daguerreotypes and ambrotypes very good.

Mr. LAWRENCE takes very good photographs and ambrotypes; his place is in Broadway.

Mr. QUIMBY takes good ambrotypes for 20 cents on Broadway. You can get a good ambrotype done up in a plain case for 12½ cents. There numbers eighty galleries in New York, and I should be most happy to speak of them all but have not the time. I merely drop a line in haste, and I hope the balance that are not mentioned will not feel slighted. The business is woefully dull in New York as well as in other cities. These galleries that I have spoken of are the principal ones.

I visited ANTHONY'S depot for the sale of all kinds of chemical and daguerreotype stock, and from the simplest thing used to the camera, can be had; and the gentlemanly salesmen who are engaged by Mr. A., I could not fail to admire. Mr. ANTHONY is the agent for the sale of WOODWARD'S great Solar Camera, one of the greatest inventions in photographic art.

For the sake of being well posted up, I would recommend all operators in the country to visit the different galleries, when in the city, and note the great improvements that are being made in the manufacture of all kinds of pictures.

And from my short visit to the establishment of the *Photographic and Fine Art Journal*, I can promise myself that the

Journal will be greatly improved for the year 1858, and I advise all to subscribe early. In haste, yours, J. R. J.

From the New York Daily Times.

WASHINGTON ART ASSOCIATION.

WASHINGTON, Wednesday, Dec. 16.

The address before the Washington Art Association, last evening, by Hon. J. R. TYSON, was an eloquent and beautiful production, and was heard by the *elite* of the city in Corcoran Hall, in which building the Exhibition of Art was thrown open to the public at the conclusion of the address.

Mr. TYSON commenced by alluding to the discouraging circumstances under which the Washington Art Association had entered upon their present enterprise. A fortitude deserving success, or indeed the ardor which commands, was requisite. The minds of men are attuned to an appreciation of the beautiful in art in the seasons of repose, which prosperity secures; but the blossoms of elegance are chilled by the frost of adversity. The effort to impress the purposes of this Association upon the attention of the country at this period of financial gloom, is worthy the heroic spirit of the masters of the pencil and the chisel, as well as of song, who have lived and died for the glory of their professions.

The speaker extolled the patriotic purpose of making a repository of Art for the genius of the country, in its national metropolis, amidst the memorials of our greatness, whither the home student and the foreign tourist repair for glimpses of the taste and intellect of the nation. Here all the peculiarities of our people are exhibited, here Art is diversified by the variety of climate, and the varying conditions of society, and here an impartial and cultivated judgment should express in candid criticism its chastening and improving verdict.

Mr. TYSON assumed that every citizen desired that the National Capital should reveal the evidences of a high civilization, and would feel a just pride in realizing that the grace and beauty surrounding him were the achievements of his own countrymen. In all ages, the artist has been cherished by his own Government, or by its Sovereign, princes, and nobles. Without such aids the fine arts have ever languished. But we have no imperial or patrician rank, no law of primogeniture, no permanent class to whom the artist may look for patronage. The fostering aid of a legislature, and the appreciation of a schooled and reading public are his only resources, and he must turn to these in competition with the demands for the development of vast and unexplored physical resources.

Practical knowledge, the colossal machinery of Government, and the ordinary industrial pursuits, absorb so much of the devotion challenged for the beauties of Art, that we may even wonder at the efforts of taste we behold in decoration, architecture, landscape-gardening, statuary, and painting, for it requires the cooperation of artificial convenience and mental culture with wealth, luxury, and leisure to excite the poetic sentiment essential to the general appreciation of artistic genius in its higher manifestations.

These truths were eloquently sustained by parallels derived from the history of ancient Greece and Rome, and the prosperity of Art in modern Rome. The deficiencies of practical England with respect to the fine arts were dwelt upon, and a beautiful tribute was rendered to the brief catalogue of artists who have adorned the annals of this land of high achievement and practical wisdom—whose genius has illumed science and literature, and from whom we have received better lessons and qualities than Italy could have afforded us.

In America the native taste has been quickened by cultivation, and private wealth has been liberal to Art. But the number of persons of elegant taste and leisure is small; few models of excellence exist; no standard of taste prevails, and the merits of a candidate are often decided by caprice, whim, partiality or ill-nature. This the artist sustains in his unaided struggles, and with a mind ill fortified by discipline to endure it. A mind dwelling upon beauty in its varied forms hence contracts a disgust for every-day existence, and acquires a taste for fictitious elegance incompatible with the struggle for bread, and prosperity is rarely attained until the lengthened shadows of life announce its decline.

The speaker maintained that they err who suppose the artist has but few subjects of study in this country. Of superior specimens of Art we have enough to restrain the license and rectify the errors of genius, without repressing its originality. The eventful history and the majestic scenery of our country should afford ample inspiration. With themes so novel and suggestive, painting and sculpture may here form a school free from subjection to foreign ideas. The independent spirit of BENJAMIN WEST, an American artist, led him to the practical adoption of a conception that inaugurated a new era of Art in England.

After the recital of numerous historic instances, and some of them of a ludicrous character, illustrative of the unequal conflict of merit and rank in Europe, Mr. TYSON said that it is merit which here commands the avenues to distinction, rank, and fame. Where nature has done her part, diligence and honor will do the rest. He also descanted upon the practice of visiting Italy to acquire the arts, and with them the frivolties and vices of that artificial land—an experience which he did not regard as necessary for those whom nature had favored, quoting the couplet:—

> "How much a fool who has been sent to Rome
> Exceeds a fool who has been kept at home."

But diligence as well as genius must combine with a benignant nature to produce a great artist. "No day without a line" was the maxim by which APPELLES rose.

The imitation of nature, transferring not merely the lineaments but the expressive life and soul, is no mean achievement; but the pencil may combine objects in action and so dispose the parts as to evolve the complications of an intricate narrative; or it may create scenes beyond the effect of language. Thus the sculptor or painter is essentially a poet, and capable of uttering the most pungent satire, the most delicate irony, the severest libel, or the highest praise. It is also within his compass to depict the grandest conceptions of the human mind in corresponding proportions of beauty and majesty, and to reveal them in fearful aspects of terror and sublimity.

The speaker, after paying a merited tribute to COPLEY and ALLSTON, entered upon a vindication of BENJAMIN WEST, and pointed out the political influences which led to his disparagement in England. He dwelt with emphasis upon the merits of this painter, whose simple monument he had seen in Saint Paul's Cathedral in London, with its meagre inscription. WEST had sat for many years on the throne of British Art, but while the marble which covers his ashes has no soothing word of regret or commendation, the monuments of artists around him are loud in eulogy. But marvelous changes had taken place in the sentiment of England, between the period when WEST was received with honor, before our Revolution, and that of his death, after our Independence; yet, it is still more marvellous that American writers and American opinion were even under the slavish influence of the British press. The mists of prejudices, however, have passed away in both countries, and both countries rejoice in his fame.

A brief account of the character and excellence of some of the paintings of WEST was given, but the speaker dwelt chiefly upon his transcendent composition of "Death on the Pale Horse." The difficulties over which this great artist triumphed; his life of moral and religious purity; his manners as a polished gentlemen; his cordiality of feeling and generosity, were eloquently presented for approval and emulation. The audience, and especially the artists among them, were pointedly informed that he was a stranger to professional jealousy; that he assisted the meritorious; that the state of Art in his own country lay near his heart, and that the formation of an Academy of Art in Philadelphia engaged his countenance and sympathy.

Mr. TYSON, in conclusion, earnestly commended the example of this distinguished man in all these characteristics to the study and imitation of American artists; and said that it was to be hoped that the influence of an institution like this might concentrate the scattered rays of the talents of his countrymen, and that whether called upon in the beautiful province of statuary, or the lofty fields of pictorial art, its judgments might be impartially pronounced, and its rewards faithfully distributed.

From the Liverpool Photographic Journal.

ANNUAL REPORT

Of the Manchester Photographic Society.

The annual meeting of the above Society was held on Tuesday evening November 3rd, 1857, at the Rooms of the Literary and Philosophical Society, George Street; Professor Williamson in the chair. There was a numerous attendance.

The Honorary Secretary (Mr. J. Cottam) announced several contributions of pictures, and thanks were awarded to the donors. Amongst them were some of Macpherson's, from Mr. Higgins; five calotype pictures, from Mr. Davies, of Warrington; and two prints from collodion negatives, by the Secretary.

The statement of accounts, which extended over a period of two years (the accounts not having been made up in time for the last annual meeting), showed a balance in hand of £68 16s. 6d. at the end of the year 1855-56, and a balance of £6 16s. 6d. due to the treasurer at the close of the last financial year. The accounts having been passed, the Secretary read the

ANNUAL REPORT.

The members of the Manchester Photographic Society will have the satisfaction of knowing, on perusal of this second annual report of the Committee, that the position of the Society is one on which the Committee have cause to congratulate them, although its financial situation is not perhaps so satisfactory, as, but for a cause herein explained, it might have been.

The Society has first to acknowledge gratefully the liberality of the council of the Literary and Philosophical Society, which has enabled them to receive the more than usually large attendance of members, with much more comfort than heretofore.

They have here to record their satisfaction with the manner in which the editor of the *Liverpool and Manchester Photographic Journal* has placed his columns at their disposal; the change which took place in the proprietorship and management of that Journal appeared to afford a favorable opportunity for securing a prompt and efficient record of the Society's transactions, and the Committee are glad to find that the change has worked so much in accordance with their anticipations.

The following papers have been read at the Society's meetings: "On the Albumen Process," by Mr. Cash; "Visits to the Society's Exhibitions," by the Rev W. J. Read; "On the Collodion Process," by Mr. M'Lachlan; "On the Collodio-Albumen Process," by Mr. Sidebotham, who has also communicated some facts as to Photography, naturally colored, and a paper on "A New Dry Collodion Process." Several individuals have achieved much success in this last, but from some yet unexplained cause, the results they have obtained have not been reached by other operators. The whole of these papers have excited great interest, and as the Society now consists principally of practical photographers, much benefit may be expected from the operation of the hints therein contained.

Number two of the Society's Illustrations has also been published during the past year. The Committee have to thank the member who undertook the printing, for his voluntary services. The Committee for the ensuing year will have to take the subject into their early consideration, as the matter of printing is one which occupies much time and attention.

During the past year, the Society, instead of holding what might reasonably have been expected to have proved a profitable exhibition of their own, acceded to the wishes of the Directors of the Mechanic's Institution, and arranged to combine their exhibition with that of the Institution. Their principal reason for so doing was to benefit the Institution, by giving them a novel and attractive addition, and also to obtain a more public and general exposure of the works admitted, than a special exhibition might have obtained; in these respects, success was obtained, but at a cost to the Society of £55 13s. 4d., as the Directors of the Mechanic's Institution only partially contributed to the expenses; and in the matter of catalogue, which had also nearly proved a loss in the Society, the Institution left it entirely to your Committee, who are admitted to have produced the best photographic catalogue that has yet appeared. With these exceptions, it was in itself, eminently successful; as even in point of numbers, had many of the pictures in frames been accounted for individually, instead of collectively, it would far have outnumbered any exhibition that has as yet taken place. Your Committee would hope that something may yet be done towards reimbursing some portion of the loss to the Society.

As regards the general progress of the art to which the Society is devoted, that is pretty well known to members generally. Photo-lithography and Photo-galvanography have perhaps the claims to attention—numerous new applications have been made—numerous new formulæ have been propounded—among these, dry processes stand pre-eminent, and it is to be hoped that whatever processes members may have in hand, that they will frankly and freely contribute, according to the means and measure of their success, to the common fund of information. It may be suggested to the Committee for the ensuing year, as an eligible field for employment, to adopt some method of ascertaining the comparative merits of the different modes of manipulation in use, with a view to the obtaining certainty in their results.

It might have been expected that photography would have received a great stimulus from the Great Exhibition of the year, that of Art Treasures at old Trafford, it is but too painfully evident that such is not the result of the sanguine hopes entertained; the offers of assistance by this Society were not regarded—the contributions of members were neglected, pictures have been admitted which would not have passed the scrutiny of your Committee; and it would appear from the various critiques which have appeared in the journals specially devoted to the heliographic art, that a tolerably universal opinion obtains that this part of the scheme has been almost a failure. The Committee, upon mature consideration, find that concurrence in the views as generally entertained is the only course open to them.

Your Committee, in conclusion, hope that each member will not fail to evince a lively interest in the Society, either by suggestions to their successors, or by contributions of pictures to the Society's portfolio, or the communication of facts, either of novelty or usefulness, which may come under their notice.

The Chairman said that it must strike those present as a most satisfactory thing, and an evidence of the extraordinary vigor and healthiness of the Society, that, notwithstanding the heavy and unexpected drain upon their funds, resulting from their exhibition in connection with the Mechanics' Institution, they were enabled to close the year's operations with so small a deficit. The item of expense to which he referrred was altogether an exceptional one, and they might fairly consider that they were in a most gratifying position.

In answer to Mr. W. Fairbairn, who wished to know how their loss at the Mechanics' Institution Exhibition was occasioned, it was explained by the Secretary and others, that there had been an understanding that the Mechanics' Institution should bear the whole expense of the photographic exhibition, whereas the Insinuation only defrayed part thereof.

Mr. Joseph Sidebotham added that the Society had cause to think that they had not been very well used in the matter, and a similar opinion was expressed by Mr. Fairbairn.

The Chairman said that the Mechanics' Institution, like the Art Treasures Exhibition, did not appear to have been sufficiently alive to the importance of photography as a process of art. The Society were in the position of men inaugurating a new order of things, and had to encounter an immense amount of prejudice in artistic circles. He was glad to see, however, that this prejudice was gradually wearing away.

Mr. Fairbairn said he supposed he must conclude, from what had been stated by the chairman, that the Society's contributions to the Art Treasures Exhibition had not been properly appreciated.

The Secretary replied that the whole of the pictures forwarded to London by himself were returned, apparently unopened, by Mr. Delamotte, the authorized head of the photographic department in the Old Trafford Exhibition.

On the motion of Mr. Dorrington, seconded by Mr. Fairbairn, the report was unanimously received.

The following were appointed as officers for the ensuing year:—

President:—The Lord Bishop of Manchester.

Vice Presidents:—W. Fairbairn, Esq., F.R.S., J. P. Joule, L.L.D., F.R.S., H. E. Roscoe, Esq., B.A., W. C. Williamson, F.R.S., Joseph Sidebotham, Esq., Rev. W. J. Read, F.R.A.S.

COUNCIL:

The President. The Vice-Presidents:—Messrs. Alfred Barton, J. Compton, Jun., J. Dale, J. B. Dancer, F.R.A.S., J. Dorrington, G. Higgins, J. W. Long, F.R.A.S., G. T. Lund, Rev. T. W. Morris, E. Mann, W. T. Mabley, James Mudd, Arthur Neild, T. H. Nevill, John Parry, J. J. Pyne.

Treasurer:—Mr. Edwyn Offer.

Honorary Secretary:—Mr. Samuel Cottam.

The thanks of the meeting were then voted to the officers for the past year for their services.

Mr. Sidebotham exhibited four very beautiful prints from negatives, taken from etchings by Mr. Nasmyth, which they very closely resembled in every respect. He also exhibited some specimens of his backed collodion process.

Mr. Higgins, asked if any one knew an antidote to the effects of cyanide, some of which got into a cut in his hand a few weeks ago, and he had been suffering from it ever since.

The Chairman said that a concentrated solution of iodide of potassium would remove the stains of nitrate of silver.

A conversation then ensued upon the adaptation of photography to microscopic illustrations.

Mr. Parry said he had paid some attention to this branch of the art, and he found that the gas supplied by the town was not so good this year as last, for everything else being equal, his pictures were not so good now as they used to be.

The Chairman asked why solar light could not be used.

Mr. Parry said he had now waited for a fortnight in the hope of being able to take a microscopic picture by solar light, at noon, and he had not been able to take one.

A discussion of a conversational character ensued as to the relative value of various photographic processes, &c., and, on the motion of Mr. Sidebotham, small committees were appointed to experiment on the baked collodion, collodio-albumen, oxymel, and gelatine processes, and to make reports, accompanied by specimens, to the Society, in order, by a comparison of results, to arrive at some definite information of a useful nature.

By the kindness of Messrs. Agnew, a number of Egyptian photographs, by Mr. Firth, were handed round. They comprise scenes of the highest historic and topographic interest. The views were admirably chosen, both as to locality and effect, and the stay-at-home traveller will derive much assistance from them. There is a large set, nineteen inches by fifteen inches; and a small set, consisting of one hundred, price three shillings each, size, nine inches by seven inches. The photographs are particularly sharp and clear, figures are well introduced, and the tone is very agreeable. It is difficult to specify where all are so good, but we were highly pleased with the large pictures of the temple known as the "Memnonium," "Thebes," "The Ruins of Karnac," "The Temple of Philœ" (Pharaoh's Bed), and the Statues of Memnon.

A vote of thanks to the Chairman terminated the proceedings.

From the Liverpool Photographic Journal.

DIRECT POSITIVES ON COLLODION.

BY F. HARDWICH, Esq.

As we intend shortly to treat on the positive process on glass, we wish our readers to peruse beforehand, the fundamental papers on this subject, by Mr. Hardwich. The following was read before the London Photographic Society, in 1854, at which time we gave a brief notice of it; but, the circumstance above-named, induces us now to publish it *in extenso.*

I.—*Condition of the film most favorable for the production of pictures to be viewed by reflected light.*

"My own attention was first directed to the positive process, quite, as I may say, accidentally; it was at a time when I was comparatively ignorant of the effects which would be produced by varying the proportions of the ingredients in the sensitive collodion, and having adopted Archer's method of iodizing, viz.: by adding a certain quantity of a saturated alcoholic solution of double iodides of potassium and silver, I failed, from the alcohol I employed being in too concentrated a state. I had previously rectified it from carbonate of potash, and its solvent power being thus diminished, the amount of iodides taken up was not sufficient for the purpose; when I say 'I failed,' I mean it in the sense that I was not able to obtain good negative pictures, which was the object I had then in view; they were all sadly wanting in 'intensity,' and I found it impossible to 'print' from them with anything like success. However, I soon began to notice that these pale, unsatisfactory negative pictures looked exceedingly well when viewed as positives by reflected light; there was a nice gradation of tone about them which pleased me, and I adopted the plan of backing up with black varnish, and preserving them in that form.

"Now at this time, as I said before, I was not aware that I was employing a collodion with an unusually small proportion of iodide; but if I had been, I should not have referred my success in producing positives to that cause. I had never seen it stated in any work with which I was acquainted, that a difference ought to be made in the two cases. The directions I had received were these: 'If you wish to obtain a positive, expose in the camera for half the usual time, and develop with sulphate of iron, to get a bright deposit of metallic silver.' Now the object I have in view, in laying my paper before the Society this evening, is to prove that such directions as these are altogether insufficient, and that, if we wish to obtain the best results, we must use, not only a different developing fluid, but also a different collodion and a different nitrate bath, in the case of negative and positive pictures respectively. It may be asked, 'What is the inferiority of which you complain in the positives produced by collodion, as it is ordinarily sold?' I answer, it is this: 'That the whole of the picture is not to be seen at once upon the surface of the glass.' Suppose you are taking a portrait, which I think will readily be allowed to be one of the most severe tests of a collodion that can easily be applied, it will be found that the *high lights,* such as the forehead, the hand, and especially the shirt of the sitter, come out with exceeding rapidity, and in a degree out of all proportion to the time taken by the shadows and half tints to impress themselves: the consequence of this is, that stop the action of the light when you will, you do not obtain a perfect picture; after backing up with the black varnish it will be seen either that these high lights above alluded to, are good, and the rest of the figure almost invisible; or, on the other hand, that the coat, dress, &c., are very clear, whilst the face and hands present an unvaried white and flat surface without any detail or distinction of parts. These peculiarities, as I said before, do not depend upon the time of exposure, nor, I may add, in any way on the developing fluid, but simply on the fact that the collodion employed, is not capable of giving such a film of iodide of silver as is adapted to produce impressions visible by reflected light.

"Having thus stated the principal difficulties which we have, ordinarily speaking, to encounter, I proceed to show how they may be overcome, and what is the best sensitive mixture for that purpose. In making my experiments, I first prepared simple collodion by dissolving soluble cotton, four grains, in five drachms of æther and three of highly rectified alcohol; these are the proportions recommended by Mr. Hadow, and I believe them to be the best that can be used; they do not, however, of course apply to commercial æther, which already contains a considerable quantity of alcohol. In order to iodize my collodion, I employed iodide of ammonium (purified with care) in four different proportions, viz., four grains to the ounce, two grains, one and a half grain, and one grain.

"The films produced by these four mixtures, after dipping the plate in the nitrate bath, were very different in appearance; the lowest of all was pale, of a bluish opalescent tint, so transparent that the letters of a newspaper could be read through it with facility; the second somewhat similar; the third of a greyish hue, but still comparatively transparent; the highest of all, viz. the four-grain, creamy and opaque.

"The photographic properties of the films differed considerably; after comparing numerous results, I was satisfied that the two-grain solution was superior to the four-grain for the purpose I intended it; more of the details of the picture were visible at once on the surface of the glass, and there was less tendency to the overdone, flat appearance before complained of. Between the 'two-grain' collodion, the 'grain and a-half,' and 'the grain,' there was likewise a difference, but not to the same extent; on the whole, I was disposed to give the preference to the 'grain and a-half,' the last of all requiring too long an immersion in the bath to be used with advantage.

"It was not my intention at the time I began these experiments to make any variation in the amount of soluble cotton generally used; I found that four grains to the ounce gave a strong and even film upon the glass, and such being the case, there appeared nothing more to be desired; however, a fact that came under my notice soon afterwards altered by determination; I began to suspect that the weak solutions of nitrate of silver I was employing did not penetrate the film properly, and consequently I wished, if possible, to remove this objection by diminishing its thickness. The result of the change proved even better than I had anticipated, although the solutions were rather more troublesome to manipulate with; I obtained invariably more perfect pictures; the gradation of tints was now decidedly superior to anything I had met with before, and, although I could not immediately explain the reason, I was satisfied that I had gained an advantage.

"The composition, then, of the collodion, which I found after many trials to work the best, is as follows:—Æther, five drachms; alcohol, three drachms; soluble cotton, one and a-half grain; iodide of ammonium, one and a-half grain; instead of this, two grains of each may be used, or even so little as one grain, without very materially affecting the result; but in the latter case the mixture is so fluid that it is apt to run down the neck of the bottle whilst we are attempting to pour it on the plate. These proportions become very simple when it is considered that they are at once produced by diluting down an ordinary negative collodion rather more than one half, with the proper mixture of alcohol and æther.

"There is one point relating to this subject which I ought not to omit to mention; it is this, that by diminishing the proportion of iodide in the film, and also by diminishing the soluble cotton, you increase the *sensitiveness*. Why is it that these weak films give better half tones than the opaque ones? Because they are more sensitive to *feeble rays* of light! I made many experiments to determine this, and I have no hesitation in stating that such is the fact. Neither is it difficult to conceive why it should be so, because, as it has been remarked, the more dilute the solutions from which iodide or chloride of silver is precipitated the more gradual the precipitation, and the more finely divided will the particles of the precipitate be; hence we can well understand that such being the case, they ought to be more sensitive to light: however, we must not confound 'sensitiveness' with 'intensity.' I would use this latter term to signify that the deposit of metallic silver producing the image is thick, and obstructs the luminous rays of light strongly, so as to show well as a negative; 'intensity,' I imagine, relates in some degree to the *number* of the particles of iodide of silver; in other words, to the thickness of the film; but 'sensitiveness' is independent of this. Now 'intensity' is required for negative pictures, but it is not required for positives, and therefore in such a case I would have as little iodide as possible.

"At the risk of repetition, I will give a short recapitulation of the conclusions which I wish to establish. They are these:—That no proportion of alkaline iodide in collodion beyond that which gives the transparent opalescent film, is adapted to produce a perfect image, visible in every part by reflected light. Allowing that a photographic picture is produced by chemical rays of light acting in various degrees on the several parts of a sensitive surface, it becomes necessary that the particles of iodide composing that surface should be in a peculiar state both as to *number* and as to *fineness of division*, in order that the more intense and the feebler rays should work uniformly together, the tendency being in the former, so to speak, to get ahead and outrun the latter. The author of the paper supposes further, that a diminution in the proportion of iodide assists the action of the feeble rays by producing a more finely divided deposit, and curbs the violence of the more energetic rays by lessening the number of the particles.

II.—*Nitrate Bath and Developing Fluid.*

"I have spoken of the condition of the film of iodide of silver which appeared most favorable to the production of collodion positives; I now proceed, with a view to the completion of the subject, to consider the proper strength of the nitrate bath and the developing fluid.

"With regard to the former, that is the nitrate bath, there were two points of interest to be ascertained,—1st, whether the salt of silver could be used in an accurately neutral condition, and if so, what were the best proportions: 2nd, the effects of adding nitric acid in graduated quantities.

"Three solutions of nitrate of silver were prepared, of different strengths: A, forty grains to one ounce of distilled water; B, thirty grains; C, twenty grains; all were carefully neutralized, and saturated with iodide of silver.

"On immersing a plate coated with a *four grain* iodide collodion in each of these, it was found that with bath No. C, the decomposition of the alkaline salt was imperfect. However, with the proportion of iodide reduced from four grains to two grains, or one and a-half grain, the appearance af the film was the same in each bath, showing that even the lowest proportion of nitrate of silver was sufficient for the conversion of the whole of the iodide of ammonium into iodide of silver."

To be continued.

From the Jour. of the Phot. Soc.

RETICULATED COLLODION.

To the Editor of the Photographic Journal:

Sir,—I have purchased at various times this season, and from several of the well-known makers, who have agents in Edinburgh, many bottles of collodion, a number of which produced reticulated pictures; and as reticulation has been so common this summer, I would remind your readers, that an antidote can be found for it in any village. I say, *remind* your readers, because Mr. Shadbolt remarks, that chloroform is a capital ingredient for rendering the collodion film "perfectly structureless" (see vol. i. p. 149); so, bearing this in mind, I have invariably found, that by introducing 20 or 30 minims of chloroform to each ounce of the reticulating collodion all the *twil* disappears; and further, after using the collodion several days, the reticulatian returns, owing to the evaporation of the chloroform, for on adding a few more drops of it all will be right.

In your July Number, Mr. Haviland proposes, with success, a modification of the developer; citric acid, however, cannot be had at every druggist's shop, but chloroform can.

From the Jour. of the Phot. Soc.

PRESERVED COLLODION PLATES.

Oct. 10, 1857.

To the Editor of the Liverpool Photographic Journal:

Sir,—I believe it is a general idea among photographers that the sensitiveness of a washed collodion plate to receive an invisible impression, is in direct propoition to the strength of free nitrate of silver on the surface, and with this idea a very ingenious formula is given in the 'Journal,' vol. iii. page 13. In my own practice with preserved collodion plates, I have not found the sensitiveness in this proportion, and as it is an important point in all keeping processes. I will state certain results of my own experiences.

Prepare a collodion plate and sensitize it in a 30-grain nitrate bath; wash it with plenty of distilled water, as much as you please: expose it, while wet, in the camera for about four times as long as it is necessary for an ordinary unwashed plate; dip it in the 30-grain nitrate bath and develope as usual: the picture will probably be perfect. Now in this case, the quantity of nitrate on the plate during exposure was infinitesimally small, and yet only four times the ordinary exposure turns out to be sufficient.

Again:—In a keeping process I followed in hot weather and in a warm climate, my preservative liquid contained 5 grs. per oz. of nitrate of silver: the plates thus prepared kept for a week at least, and the requisite exposure was about *one-third* more than for the same collodion used in the ordinary wet way. I endeavored to increase the quantity of nitrate in the preservative liquid, and tried it with 10 grs. of silver per oz; with this the plates did not keep long enough for my purpose, and I gave it up, but it appeared (with this 10-grain strength) *quite as sensitive* as ordinary wet collodion.

My plates were in all cases dipped in the 30-grain silver bath before developing: the collodion was but a few days old, and comparatively slow, for a highly sensitive collodion did not succeed well there with intense sunshine, dazzling white walls, and black shadows.

The general tendency of preservative methods as at present practised is to wash off the nitrate of silver as much as possible, but as regards sensitveness, I think this is working in a wrong direction: it is generally admitted that wet collodion gives the most artistic effect, and my object has always been to come as near it as possible by keeping as much nitrate as I could on the plates consistently with safe preservation. Messrs. Spiller and Crookes, good authorities, state that 1 gr. per oz. was as sensitive as the ordinary wet process (Photographic Journal, vol. ii. papes 5 and 7), but I did not find this the case with my own plates.

My opinion as at present formed is, that in a washed plate the sensitiveness increases according to the strength of the free nitrate on it, up to a certain point, and that when this point is reached, it is as sensitive to receive the dormant impression as the ordinary unwashed plate; from my present imperfect data, I fancy this certain strength lies between 5 and 10 grs. per oz., the first or sensitizing bath being 30 grs. per oz.

If some of your readers who have opportunity would determine the practical exposure required for various strengths, say 1, 2½, 5, 7½, 10 and 15 grs. per oz. of nitrate compared with the ordinary 30 grs. per oz on the plate, it would form a really useful starting-point for all concerned in the use of preserved plates whether wet or dry, and would probably go far to clear up the discrepancies in the statements of different operators. My idea of proceeding would be thus:—sensitize a plate in the 30- gr. bath, wash it well with distilled water, drain, and dip it in the weaker nitrate bath for a minute, expose it immediately in the camera to get a perfect picture, dip it in the 30-grain bath for a minute, drain and develope. This should be done with the various weaker baths, and the requisite exposure noted and compared with the exposure required for the unwashed plate. In this way no preservative process would be required.

Of all preservative methods I prefer those which will allow of the plates being dipped in the nitrate bath (without injuring it) after exposure, and developing in the usual way with pyrogallic; when this is not allowable, the development must be by pyrogallic and silver mixed before pouring on the plate: in all such cases I have found much difficulty in getting intensity, and the plates thus treated were never, with me, equal to the others in cleanliness and transparency.

One plate I remember thus treated required six minutes to bring it well out, and the prolonged development produced a grey veil all over, which ought not to be the case, although the picture prints fairly, but slow; besides this, if the collodion is at all tender from age, the slow development is very liable to pull it to pieces.

THE COLOROCALOTYPE.

Friend Snelling:—My attention has been recently directed to a new improvement in the mode of treating photographs, by Mr. Hall, the patentee of the Hallotype; and I find it vastly superior to his former process, both in the *preservation of the whites*, and in the illusory effect, which was considered a feature in the Hallotypes, particularly worthy of mention.

You will no doubt remember that I first introduced a similar style of back colored picture to the public, at 505 Broadway, some three or four years ago, which you were kind enough to notice in the June No. of the 7th volume of your Journal.

Now, I have, since there has been so much said, and written, and quarrelled about, in regard to this mode of treating pictures, concluded to give the subject some attention: and have by numerous trials, in connection with my former experience in this direction, very much simplified the manipulations, and successfully produced a style of picture, which is pronounced by all who have seen them, to be the best yet out.

The pictures are made on a single glass, and the photograph rendered transparent in a new way—at once simple and effective. The air is all expelled, and the pores of the paper completely filled with a medium, that gives perfect transmission to the light; which is necessary to the process. There is no tendency to crystallize, or to be become opaque, or to *turn brown*. The coloring which requires no previous practice, is quickly done, and is the nearest approach to nature of anything that has been before the public, in the way of colored photographs, since their introduction to this country.

I would here state that I abandoned my former process, for the reason that I was not sure of the photographic impressions standing the test of time; as I found that some of them were fading out and leaving the colors alone on the plate.

I have since, with many others, been striving to obtain "fadeless proofs," and have found that all those toned with lead, as recommended in your Journal, bid fair to be lasting. I have kept from my first experiments until now, samples of all the different modes of treatment given in the books, besides variations of my own, and find none so satisfactory as those done in the manner you name in your formulas.

I think that we may safely predict, that in future (with of course, strict attention to the condition of our fixing and toning baths), our minds will rest relieved from that *horrid want of confidence*, in the behavior of the photographs we send out.

This belief induces me to give the preference to that style of coloring that does not interfere with the lines of the camera impressions, as all pictures touched on the front with color are more or less changed, not to say injured in the likeness; but that depends on the minds appreciation. I prefer, however, and I presume as much for you, that the photographic impression be left intact, and the pictures I send, you will acknowledge, do this in the highest degree.

With many thanks for your kind appreciation of my former efforts,

I remain yours, &c.,

J. De Witt Brinckerhoff.

N,B.—I shall be happy to exhibit to any member of the fraternity, specimens of the above-mentioned style of pictures, (which I have named the Colorcalotype, in honor to Mr. Fox Talbot, who first gave the name Calotype to pictures on paper), at the gallery of M. M. Lawrence, 381 Broadway, and also any communication in relation to them, will be promptly answered.

From the Jour. of the Phot. Soc.

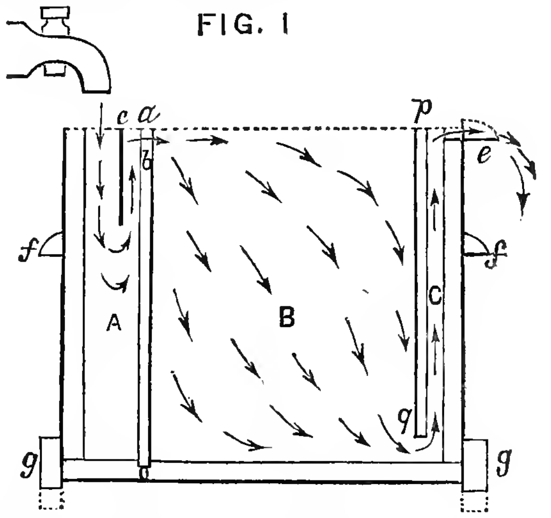
APPARATUS FOR WASHING POSITIVES.

Leeds 10, September, 1857.

To the Editor of the Photographic Journal :

Sir,—I beg to send you a stereoscopic view and diagrams of a bath which I employ for washing paper proofs. It consists of a narrow box of white deal, 13 inches long by $3\frac{1}{2}$ wide, and 12 inches in depth (all inside measurements), divided vertically by two transverse partitions, *a, o, p, q,* into three compartments or chambers A, B, C. The first chamber A occupies 2 inches of the length of the box, B $9\frac{3}{4}$ inches, and C$\frac{1}{2}$ inch. The partition *a o* extends from the top to the bottom of the box, but at the distance of 1 inch from the top there are small openings in it to allow the water to flow from A into B. The partition *p q* extends from the top to within $\frac{1}{2}$ an inch of the bottom.

FIG. 1



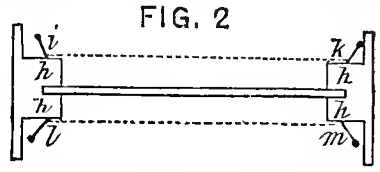
Longitudinal section of bath.—A. First chamber, into which the water flows from the tap. *a b.* Gutta percha hatches to regulate its flow into the second chamber B, in which the proofs are placed. *c.* Division to break the force of the stream. C. Third chamber through which the water rises to the discharge-spout *e.* *ff.* Handles. *gg.* Feet. The arrows show the course of the water.

The water is admitted from the tap into A, from which it flows into B, entering at the top, and as the only outlet from B into C is at the bottom at the opposite end, the water necessarily descends through B in the direction shown by the arrows. It then passes into C at *q,* ascends, and is discharged through a spout *e* $\frac{1}{2}$ an inch below the top of the box.

The proofs are pinned to a dipper, 12 inches high by $9\frac{1}{2}$ long, the construction of which will be best understood from the transverse section Fig. 2. It will be seen that the ends are connected together by a thin board, and that when the proofs are pinned to the flanges there is a clear space behind them as well as in front. The bath having been filled with water, the dipper is gently lowered into the chamber B, and secured from floating up by a transverse bar of gutta percha. The middle portion of each end of the dipper is cut away at both extremities, in order that the flow of the water at *a* and *q* may not be impeded; so that the stream entering at *a* flows immediately over the upper edges of the proofs, and is divided into four currents, one at the back, and the other at the front, of each of the pictures—they are, in short, placed in an inverted siphon.

The great advantage of this bath is, that the proofs cannot get huddled together, and the water is constantly changed on both sides of them. There is no danger of their being torn from the pins, if they are carefully fastened to the dipper and not put into the bath before it is filled. Canson's thin negative paper may be washed for many hours, when the water is running through the bath at the rate of half a gallon a minute, without sustaining any injury; and at half that rate, the whole of the water in the bath would be changed once in every ten minutes.

FIG. 2



Transverse section of dipper to which the proofs are pinned. This is lowered into the chamber B, and prevented from floating up by a crossbar of gutta percha, not shown in the Diagrams. *hhhh.* Flanges to which the proofs are fastened. *ik lm* Two proofs in position.

My bath will wash at one time two proofs 10×8, or four proofs $6\frac{1}{2}\times4\frac{3}{4}$, or six stereoscopic proofs; and by increasing the height and length, or doubling the width, its capabilities might be sufficiently extended to meet the requirements of most amateurs. A wooden cover protects the top from dust and dirt, that it may be safely placed under the kitchen tap without risk to the proofs. I have placed gutta-percha hatches at *a* and *e* to regulate the supply and discharge, but these may well be dispensed with. If the opening at *a* is made 2 inches wide and and $\frac{1}{8}$ or $\frac{3}{16}$ high, and placed $\frac{3}{4}$ of an inch from the top of the bath, there will be no danger of the proofs being exposed to too strong a stream; if the water is turned on too strong the superfluous portion will flow over the other sides of the chamber A, which should be made $\frac{1}{8}$th lower than the partition *a o.* The spout *e* should be placed an inch below the top. If the hatches are dispensed with, any carpenter can make the bath at a trifling cost.

W. Best.

From the Boston Transcript.

THE LATE MRS. DASSEL.

About ten years ago. Hermine Borchard, a Prussian artist, arrived in this country. Happening to visit the Bavarian Consul in Philadelphia, to see a statue by Steinhausen, we were struck by the portrait of an Italian peasant woman on the wall of the Consul's *salon.* Observing the interest excited by a picture which awakened some of the most delightful association of foreign travel, the Consul informed us that the work came from the pencil of a young lady of Köningsberg, who, from a natural love of art, left home to study at Dusseldorf and Rome, and after several years passed in the ateliers of the best masters in those cities, had recently come to the United States to set up her easel in New-York. The Consul expatiated upon the talents, worth, and isolated position of his *protege,* whom we found, on returning to Gotham, occupying two rooms in the third story of a private house, surrounded with Italian sketches, heads of famous models, studies from the old masters, porfolios and palettes. She was of German mould,— short and thick-set,— but her olive complexion, expressive dark eyes and sweet smile, breathed of the sunny South.

At this time she spoke but little English, and that with a *naive* pronunciation singularly pleasing. Her simple manner, kindly disposition, modesty and ardent love of Art, combined with her solitary position, instantly excited an interest in her behalf. Accordingly she gained friends rapidly, and had as many orders as she could fulfil. The Art Union bonght some of her pictures; the National Academy elected her an honorary member; some of our best families sent their daughter to her as pupils; she was often seen at the *soirees* of Mrs. Botta and Dr. Robinson's accomplished lady. She executed many portraits in *pastel,* and numerous fancy heads and groups in oil. years ago she married a countrymen, Mr. Dasssel; and her brother, an able Lutheran divine, is settled over a large German congregation at Dayton, Ohio. Mrs. Dassel's charities, domestic virtues and devotion to art, had thus gradually acquired for her the esteem and sympathy of many of our most respected citizens. She was early and late at her easel, walking out daily with her children, and usually passed the Summers at Newport, R. I., where she had many friends and plenty of portraits to execute. Great, therefore, was the sorrow of a large circle of Germans and of our own citizens, at the unexpectected announcement of the Death of Hermine Dassel, last week, after a brief illness. She made but one dying request, and that was to be buried in Greenwood. Her last works were two celebrated and admirable copies of the "Othello" and the "Fairees" of the Dusseldorf Gallery. She leaves a husband and three children. Agreeable in conversation, an enthusiast in art, frugal, industrious and affectionate, she was worthy of the love she inspired and the grief with which she is lamented.

Personal & Art Intelligence.

— With the New Year we begin a *new* volume (the XI) of the Photographic and Fine Art Journal, and we may say a *new* existence. For the fifteen or sixteen years last past, we have labored assiduously in the cause of photography; and more or less in every department. It is not our intention to go back and enumerate the variety and nature of our past experience; but we wish to foreshadow the benefits which are likely to arise from the change we have lately made. A slight inkling of what may be expected, is presented in the improvements in our present number. The photographs with which we illustrate it, are decidedly the best we have given since we commenced the publication. As specimens of plain photography, they will vie with nine-tenths of those produced at the present day: but they are not equal to those we shall produce, when we complete the printing rooms we have in contemplation, and which, with the assistance of our landlord, we shall finish as soon as possible after the first of May. This we shall endeavor to make a model photographic printery, where pictures from the smallest to the very largest, may be printed with the greatest facility and in the most perfect manner. We intend this not only for the benefit of the Journal, but for photographers throughout the country, who may desire a large number of photographs printed, or their small ones enlarged. We have very great assurance that the method we have pursued at the present time, and shall pursue in printing our pictures, will ensure permanence. In a future number—probably the February—we shall give our views on this most important subject, of the fading of positives. We contend that there is no more reason for the fading of positive photographs than for water colors, or oil paintings. Time will destroy all things; even oil paintings decay and photographs can be made to last as long as they—till the material upon which they are made crumbles into dust by the action of time. In our present number we have a portion of a controversy between Mr. Sutton and Mr. Mullins of Jersey, upon the permanence of Mr. Blanquart-Evrard's photographs. It also appears that the English mind is thoroughly imbued with the idea of the perishability of these beautiful pictures, and the nonsense many of them write on the subject has produced an effect upon the public mind, that will require a large amount of common sense and fact to eradicate. We have had hanging upon the walls of our parlor for nine years, sixteen photographs by Mr. Blanquart-Evrard, which are as fresh, strong in color, and as beautiful as they were the first day they were put up, notwithstanding they have been exposed to variable temperature, all kinds of weather, and different degrees of intensity of light. The tone is deep black, perfectly transparent in both light and shade, and they are as beautiful in every respeet as anything now produced. They show conclusively that in this respect, photography has not actually advanced a single step forward: but on the contrary—if we are to believe the English writers—retrograded. We have four other photographs, taken by M. Renard, and hung at the same time, which are fading. These are in the color so much desired by the French and English Photographers—a light brown, or sienna tint; and we assert that all photographs toned to that color must speedily fade. But we anticipate—we have much to say on this subject which will require more time than we have at present at command, and therefore cannot do it sufficient justice. It must therefore be deferred to a separate article.

— Many of our subscribers have written complaining that we give them nothing on the *Ambrotype* process. This proves that they either do not examine the pages of our Journal with proper care, or that they are ignorant of the fact that the terms *Ambrotype* and *Collodion Positive Pictures*; *Positive Collodion Pictures*, and *Positives on Glass* are identical. Of these there have been numerous articles published in our pages.

— It was our intention to have something to say about American Photographic Patents in the present number; but it is a subject that requires more time and attention, than we have had at our disposal since we made the promise. Matters are, however, becoming more settled, and we are in hopes that one or two months more will enable us to attend to this and other kindred matters, which are of importance to the art. Each issue of our Journal shall improve in originality as well as in photographic and typographical beauty. We have the pleasure of stating, that we have secured the services of a gentleman to furnish the Journal with sketches of American scenery, which will be illustrated in the best style of wood engraving. These articles will add largely to the interest of the work, and place it still higher in the rank of American periodical literature. Our patrons may depend upon it, that we shall stretch every nerve to carry out the design we have constantly entertained since we commenced the Journal; namely, making it the most beautiful monthly publication in the United States. It will be seen, that in order to accomplish this end, we relinquished a position in one of the first establishments in New York, and that, consequently, we shall not be prevented by a sense of duty to another, to neglect the columns of the Journal. What we have produced, with a very small fraction of time from each month at our disposal, must be our guarantee of what we may accomplisn now that our time is wholly our own. By this change on our part, and the future regular appearance of our Journal, we trust the unfounded and false assertions of those who have for the last seven or eight years, endeavored, by such means to destroy us—but who have signally failed—will be entirely dissipated. As further evidence of the falsehoods of all such infantile attempts at our destruction, we invite the members of our beautiful art to call upon us when they visit New York. They will not "find the door shut and the latch-string pulled in," no matter what may be the object of their visit.

— J. C. Gray, Jamestown, N. Y.—This gentleman has sent us a specimen of his skill in photography. Considering that it is the first production of a student without a master, it is praise-worthy. He is right in regard to the negative being too weak. The modulation of shade, however, are very fine; but he should bring up the high lights, and deeper shadows stronger in order to give still greater character and more marked contrast to the features. It is also toned too long, having passed the purple stage—in the bath—a sure indication of future fading. The foreshortening is remarkably good, and the proportions well preserved. A re-development would have improv d the negative materially, and made it almost perfect. We should also say, that notwithstanding the over toning, it is very clear and transparent. Mr. Gray has also sent us another specimen—a keg of Jamestown butter, thereby feeding both mind and body. The picture, *as a photograph*, is good, but the butter, *as butter*, is better. But we have not the slightest doubt that the quality of the butter foreshadows that of his future photographs. In reply to our acknowledgements of the gift, Mr. Gray writes a letter so much on a par with the butter that we take the liberty of transcribing it to our columns. Every line is worth thought:—

"You give me too much credit for generosity, in ascribing my gift to be entirely gratuitous. You have certainly done me more than one favor, and by your kind replies I am encouraged to ask more, providing I can do so without putting you to inconvenience or trespassing too much upon your time and knowledge; and here permit me to say that it is my desire that you make a suitable charge for your time and trouble, or for any knowledge you may impart to me.(*a*)

"In one other way I feel indebted to you; indeed you are continually laying me and, in fact, all your subscribers, under obligations, and that too in your capacity as Journalist; each month you give us a rich treat, and to say nothing of the illustrations (of which many of them are valuable), it very frequently comes laden with that that imparts to us a knowledge which is worth a whole year's cost. You give us for our Five Dollars not only all you promised, but you give us more, much more than we were led to expect. Therefore, are we not under obligations to you? Ought we not to manifest in some manner our appreciation of your services? are not our interests identical? and what encouragement do you meet with for renewed exertion in our behalf? Surely the payment of your demands is not all-sufficient, if paid in that cold, unfeeling manner which apparently governs the commercial world. Sir, there is too much distance between us, the Editor and subscriber. What communion have we? we may know your sentiments, but what knowledge have you of ours? but little, if any; who is the most benefitted? Your subscribers are. You gain a few dollars, but they gain a knowledge that money cannot purchase from them. What know you of the estimation in which we hold you, of the satisfaction your labors give us. The promptly paying one's dues may be sufficient testimony that *they* appreciate your efforts, and that *they* are pleased therewith, but should our relations end here? Certainly not; there is yet too wide a gulph. Suppose, sir, your subscribers should not only pay promptly, but should convey to you their thanks and an acknowledgement of the good you were doing, would not this be an incentive to further effort on your part? Should we not be mutually benefitted? undoubtedly neither of us would have cause for regret. That a more friendly and intimate relation may exist is my sincere wish. You have the welfare of many to care for; do care for them, and provide them a food that is beyond a price. What should we do in return, we being the most benefitted, and oftentimes receiving an amount of knowledge that is of great pecuniary benefit—what if we were occasionally to make you a present, a present however trifling, pecuniarily considered, would it not show you that your labors were duly appreciated, and your readers were grateful and had a lively interest in your welfare; and in return you would do all in your power to further their interests in reciprocation of such friendly relations. But, friend Snelling, I am moralizing too much; however, you have my sentiments, and I hope all your subscribers entertained as liberal ones; undoubtedly a majority do. But I must return to the subject I commenced writing upon, that is: I have commenced the making of Photographs, and I need the aid of a friend in procuring me chemicals that are *pure*. I could fill several sheets with my disappointments and failures in procuring *good* articles, both of dealers and manufacturers, even when I mark my orders: "best quality or none," and "price no object," &c. Now, I believe that if a genuine and pure article can be obtained, you, Mr. Snelling, can get it; and also of Pyroxyline. I do want an article that is perfect, and has all the good qualities that a Photographer could desire, and if you will purchase me the list of articles enumerated below, you will greatly oblige me,(*b*) and would also be pleased to have you reply to the following questions:

1st. In washing Pyroxyline is it objectionable to pour boiling water on the cotton?

2d. Is it detrimental to the Photograph to tone in the open room, moderately lighted?

3d. Do you consider the chloride of lead of any benefit in the toning bath?

4th. Would you recommend as being good and performing what it promises, "Prof. Smith's Collodion Preservative?"

5th. It requires from 3 to 5 seconds to make a positive; same light for a negative requires 30 to 40 seconds. I think it is too long. Can you tell me what to do to shorten it. I am working Moulton's process (as published). I think there are some errors in it, and that it is too indefinite to be called an instructor. Yours, JOHN C. GRAY."

(*a*) Our reward in *all* such cases, is to see the photographic art prosper and improve in its practitioners; to see high-toned and well executed pictures made by every one. For whatever good we have done, or ever shall do in this way, we ask (nor would we receive any) no specialr emuneration. With the prosperity of the art, we desire that of our Journal. This is our pride—we think a worthy one—and with this we will be satisfied.

(*b*) The chemicals we sent are of the same kind we use ourselves, and we consider them the purest in market. Their quality is uniformly the same; which cannot be said of the French. Our advice to all is, never to make a change in their chemicals, after obtaining a make that proves acceptable to them, as this alone has a tendency to disturb their success.

(?1st.) *Warm* water is not objectionable. It is in fact recommended, to suffer the *pyroxyline* to soak in it for several hours, if time is no object.

2nd. It is not. All our photographs are toned in the full light of day. We have toned them by lamp-light and all things being identical, we could perceive no difference.

3d. We do. Of more benefit than is generally conceded to it. It softens the tone materially; but its most important property, we consider to be its permanence. A photograph toned to the purple tint (no matter how deep; but it must not pass the deep purple), we think will last and retain its full strength, as long as the paper will hold together. The Evrard pictures, of which we speak in our first paragraph of this editorial, are made with the lead bath. The destructive action commences in the photograph the instant it passes from this purple tint. This we have found out to our cost, in endeavoring to obtain variations of color in our illustrations. We shall hereafter enlarge on this subject.

4th. We cannot reply to this question from personal experience. We have seen one or two very good negatives that were taken on plates said to have been kept three weeks. We are having a camera box made specially for dry collodion plates, and if we are favored with a bottle, shall give this "Preservative" a trial, and our opinion afterwards. In the meantime, try Mr. Sidebotham's process (P. & F. A. Jour., page 314.)

5th. Mr. Monckhoven professes to take negatives in from five to ten seconds with his collodion. (Formulas P. & F. A. Jour., page 149, vol. ix.) The most sensitive collodion we have used is Anthony's. We have not used Moulton's process; but have read it, and think we should have no difficulty in practising it.

As soon after the first of May next as an addition can be put to the building in which our office is located, we shall open a photographic printing room and studio, not only for the purposes of our business, but for the benefit of our patrons. It will always be open to their inspection, and they will be instructed in any of the processes they may desire to learn without charge.

— MR. FRANK FORD, Ravenna, Ohio—Has sent us an excellent positive view on albumen paper. The tone is decidedly the most pleasing we have seen taken upon this kind of paper, being a very clear delicate purple-black. Every portion of the picture, to the minutest detail, is brought out perfectly sharp and clear—even the little dog sitting by the fence, looks as if he wanted to bark at you—the very grain of the wood is, in some parts of the fence, perceptible. Mr. Ford should try his skill upon larger plates.

— C. A. JOHNSON, Madison, Wis.—We regret to see by the Madison papers that this gentleman has been again burned out, losing his entire stock of pictures, apparatus, and fixtures. His loss was $1600. Insurance, $1000.

— WE have seen the Colorocalotypes mentioned in Mr. Brinckerhoff's communication, and deem them very creditable attempts at coloring photographs by transparency. We might describe them as a medium between the Hallotype and Diaphaneotype, and do not require so much skill in coloring to give them a pleasing effect. More practice will undoubtedly improve these first attempts.

— WENDEROTH'S INSTANTANEOUS PRINTING PROCESS.—We have published this process in book form. (*See advertisement.*)

Whipple & Black Neg. Boston, Mass. H. H. Snelling, Print.

GARDEN SCENE,

In Cambridge College Botanical Garden.

From the Liverpool Photographic Journal.

LIVERPOOL PHOTOGRAPHIC SOCIETY.

THE monthly meeting of this Society was held at the Royal Institution, Colquitt-Street, on Tuesday evening, November, 17th, C. Corley, Esq., presiding.

Mr. Keith, the Hon. Secretary, reported that at the last meeting of the Literary and Philosophical Society, the privilege of admission to the meetings of that society, to the President, Vice-Presidents, Council, and Secretary of the Photographic Society, was extended for another year.

It was resolved that the compliment should be acknowledged with thanks and reciprocated.

The Chairman acknowledged the receipt of the "Proceedings of the Historic Society of Lancashire and Cheshire," which were also ordered to be acknowledged.

The Treasurer, Mr. J. A. Forrest, exhibited a number of stereoscopic views, taken on ground glass, by Dr. Hill Norris's gelatine process, which seems admirably adapted for stereoscopic pictures—the quality of hardness so objectionable in a landscape picture forming in a stereoscopic view one of its greatest beauties. Mr. Forrest stated that all the plates exhibited were printed at once on ground glass, by gas-light in the evening, and a piece of plain glass was placed over them, which secured them from accident.

A number of stereoscopic views taken on ground glass, by Mr. Forrest, were also circulated amongst the members, which the Chirman stated would bear comparison with those produced by Dr. Hill Norris.

Mr. Forrest observed that the collodion film adhered so tenaciously to the ground glass that it could not be rubbed off.

Among other photographic illustrations produced for the inspection of the members, was a specimen of printing on opal glass, with a vignette, by Mr. Forrest It was the portrait of a lady, printed by superposition with wet collodion, the exposure being about an instant, and developed with pyrogallic acid. It had a very delicate and beautiful effect, the rich half-tones forming an exquisite contrast against the pure white of the opal surface.

Mr. Cook presented, for insertion in the Society's album, a number of well-executed prints from wax paper negatives. The prints which were passed round for examination, and generally admired, included views of Furness Abbey, Conway Castle, and old Bidstone Church.

In reply to the Chairman Mr. Cook stated that the prints were taken on albuminized paper, the salting solution being prepared with ten or twelve grains of salt to the ounce, with albumen diluted one-half. The wax negatives were obtained with Mr. Fitt's formula, the toning bath being prepared as follows, from a formula furnished by Mr. P, Frith,—

Chloride of gold	12	grains.
Chloride of platinum	6	"
Carbonate of soda	25	"
Water	20	ounces.

One drachm of this was quite sufficient for a picture eleven inches by nine inches. The solution should never be used twice. The picture ought to remain in, face downwards, and be kept in motion by a glass rod until a perfect tone was obtained, when it should be fixed with hypo, in the dark, although he had toned some of them with the window-blind partly drawn. It was decidedly the most satisfactory mode of printing they had ever tried. The silver should be washed out very carefully before putting the print into the toning bath. The hypo was not very weak.

In reply to Mr. Forrest, Mr. Cook stated that the English paper made infinitely better pictures than the French paper, the tone being so much superior.

THE DRY COLLODION PROCESS.

Mr. Cook produced a dry collodion plate, prepared with Mr. Long's Formula, and asked if Mr. Forrest could explain the cause of the ridgy or streaky appearance it presented.

Mr. forrelt said the bath was to weak.

The Chairman said the balance of silver in proportion to the strength of the chemicals was not duly preserved: the bath wanted strengthening.

Mr. Keith thought there had been too much iodide in the collodion, and suggested that Mr. Cook should either let it down with plain collodion or increase the strength of his nitrate bath.

Mr. Forrest said he had found that Mr. Keith's collodion, diluted one-third, using half ether and half spirits of wine, worked admirably, giving the powdery character to the dry collodion, which was so much coveted.

NOVEL METHOD OF OBTAINING STEREOSCOPIC VIEWS.

Mr. Forrest had great pleasure in drawing attention to a very novel and simple idea just originated by Mr. S. Gill, 90, Islington, Liverpool, and patented by him, in conjunction with Mr. Newton of Jubilee Buildings, by means of which stereoscopic photographs could be taken with a single lens, by an ordinary camera, at a single sitting, and with one operation. Two mirrors were so placed together, at a slight angle, that each received an image of the object proposed to be taken. The camera was then directed towards the mirrors, the images reflected in which were taken on a single plate. In addition to the advantage of enabling the operator thus to use an ordinary camera, there was the additional advantage of having the picture correct in position, for as the mirrors would give what might be termed a left-handed view of the object, the plate in the camera would receive the impression naturally, so that in a portrait the hair would be shown parted on the proper side, and if there were any distinctive mark on the features, it would be represented in its right place. He (Mr. Forrest), had seen some pictures taken by Mr. Gill in this manner, and they were perfectly stereoscopic.

Mr. Keith stated that he had tried experiments with photographing from a single mirror, and he had always found that there was a double reflection, one from the surface of the glass itself, and the other from the surface of the silver at the back of the glass.

The Chairman observed that that arose from the peculiar quality of the glass which Mr. Keith must have used. If he had a glass, the two surfaces of which were perfectly parallel, the evil to which he had referred would not occur.

PHOTOGRAPHY IN PALESTINE.

The Secretary remarked that Mr. Francis Frith, whose Egyptian views were exhibited before the Society two months ago, when they excited such general interest, was preparing to proceed to Alexandria, with the view of making his way to Palestine and the Nile, where he intended to take a series of views. It was his intention to have embarked on Saturday, in the Alexandria Steamer, which unfortunately had sailed without him, in consequence of the captain having unintentionally misled Mr. Frith as to the hour of her departure. The whole of his apparatus was on board, and would consequently arrive out before he could reach Alexandria.

A strong sympathy was expressed for Mr. Frith in the annoying and vexatious dilemma in which he was placed, Mr. Forrest observing that all lovers of photography could not but wish him every success in his important undertaking, as his views of Karnac, Thebes, &c., were the most sublime things of the kind he had ever seen.

PROPOSED PHOTOGRAPHIC SOIREE.

Mr. Forrest had great pleasure in announcing that the Council of the Society had determined to hold a Photograahic *Soiree* in connection with the association, and he was encouraged to hope that the proprietors of the Royal Institution, where it was intended to hold the *ooiree*, would throw open their museum, and that the excellent gallery of art would also be accessible on the occasion. It was intended that the *soiree* should be held a week before Christmas, but more definite announcements would be made at as early a day as their arrangements would enable them to issue a programme. He proposed that the Secretary be requested to wait upon the Committee of the Institution for the purpose of making the necessary application.

Mr. Cook seconded the proposition, which was carried *nem. dis.*

Mr. Keith, the Hon. Sec., then read his paper on

"OPERATING ROOMS."

In looking over the various photographic publications, the London and Liverpool Journals, and *Photographic Notes*, I have observed constant enquiries as to the best plan of constructing a room for photographic purposes So far as I have seen there is as yet very little definite information on the subject, and both amateurs and professionals are left very much to their own fancies. One consequence of this is that a great number of rooms are totally unfitted for the purpose for which they were built; another is that a great deal of money and time is wasted in alterations and experiments.

Since I commenced the practice of photography I have built three operating rooms, all of which have, to a certain extent, answered their purpose. In the hope that a description of them may be both interesting and instructive, I have brought here this evening plans and descriptions of them all.

The great defect of nearly all the operating rooms I have seen, is that there is too much light. It appears to me that the great advantage of working within doors is that you are enabled to shut out the light. My early experiments in the collodion process were carried on in a back yard, surrounded on three sides with high walls, and on the fourth side a wall about ten feet high.

I am inclined to attribute the measure of success which attended my efforts at that time to the fact that I had so little light.

Pictures taken in the open air are usually flat and unsatisfactory, on account of the absence of definite shadow. If taken in the sun the general effect is to much improved, but they must then be considered rather as pictures than portraits, as the face is so much shaded as in many instances not to be recognizable,

When I commenced the practice of photography in earnest, I could of course no longer work in the back yard. I therefore built my operating room No 1. The house I then occupied had a balcony about 5 feet wide, and 18 feet long; this I covered in with glass. The front was made in four frames, each 4 feet 6 inches wide, and 7 feet high, screwed together at the sides. The roof was also made in four pieces, the two centre pieces of which turned up against the wall. This mode of construction added a little to the expense, but enabled me afterwards to take it down with very little trouble. About this time Mr. Barker built a glass house in his garden, very much on the same principle, which answered very well. I was at that time of opinion that the more light I could get the better; and as I had light only at the top, front, and one side, I whitewashed the wall to prevent too deep a shadow. The pictures I then obtained were very unsatisfactory, and quite inferior to those taken in the back yard I therefore commenced to shut out the light with blue calico, but without any improvement in the result. I then obtained some thick brown paper, quite impervious to light, and went on gradually shutting out,—first the front, then the side, then the top, until the only light admitted was from the two middle frames of the roof. I also found that the whitewashed wall was not only unnecessary, but predjudicial, and there also I nailed up a large sheet of brown paper. I then obtained pictures, which, as far as light and shade went, were everything that could be desired, and what may at first appear strange, without any increase in the time of exposure. I may here mention that this brown paper is a very useful article in experimenting with the light. It is inexpensive, and very readily tacked up and taken down.

My next essay at photographic architecture was at the rooms I now occupy in Castle-street. At that time they consisted of two rooms, with a dark attic. My ideas of light were by this time considerably modified, and I contented myself with cutting out the ceiling of the front room, removing the slates and joists up to the ridge, allowing the purlins to remain, and putting in a skylight about 13 feet by 10 feet. The front room occupies five-eights of the entire space; the piece of ceiling between the ridge and first purlin was allowed to remain.

Yau will obrerve that I was a long way from the light. In summer I found this no disadvantage, but in winter the light was very poor. I therefore put up a platform at the back of the room, about 5 feet wide, and 6 feet from the floor, but as the pictures obtained there was not at all satisfactory after trying it about a month, I had It removed (this experiment cost me about £10, in addition to the trouble and annoyance. I then had two platforms made, 2 feet 6 inches high, 6 feet long, and 4 feet 6 inches wide, one for the sitter and one for the camera, and in this room I worked for about three years with great success, and the plan is one that I can with confidence recommend for general use. The cost is not excessive, and where a very large room is not required, it leaves little to be desired. The only disadvantage is that the top light is rather strong, and consequently the shadows are sometimes rather heavy.*

I now come to the room No. 3, the one I now occupy, which fully answers my expectations. It is sufficiently large for all ordinary purposes. It is beautifully lighted, and I am enabled to obtain any effect of light and shade I require. It has been formed by raising the back and side walls, and roofing it entirely with pale blue glass. The advantages of this are so numerous, that I do not think the additional expense should be a bar to its employment.

The first impression on entering an operating room is generally one of discomfort and irritation on account of the immense of quantity of light. This is entirely obviated in my present room, for there you have no idea that the light is stronger than ordinary. The pupil of the eye under the action of a strong light contracts, and the result of this is the stupid, half-drunken appearance of many photographic portraits. My former room was glazed with ordinary sheet glass. During the first summer I obtained pictures in three or four seconds; the second summer it took six or eight seconds, and this year the sitting were prolonged to ten or fifteen seconds. I was at a loss to account for this, until my attention was called to the fact that ordinary window glass exposed to the action of long continued sunlight rapidly changes color. At a recent meeting Mr. Forrest exhibited some pieces of glass from a skylight, which had changed to a reddish purple, while the portion sheltered by the putty retained its original color. In my case the glass had acquired a decided yellow tinge, which materilly impeded the action. Under the blue glass I have, during this month, obtained pictures in five seconds, and in fine summer weather the action was almost instantaneous. How the blue glass will retain its color can only be decided by time, but from the nature of the material employed, cobalt, I have every reason to believe that it will be permanent.

My new room may be considered as divided by the purlins into five portions. The first or lower portion is devoted to the dark room. The next three are glazed, and the fifth portion, sloping down to the back wall, is slated and plastered. The whole of the glazed portion is supplied with black blinds, and many persons have been surprised at the small portion of light which I use. If I have a full flat face I shut off all the light except from the upper portion; for ordinary working I use the second portion, shutting off the light from the top of the head. If the features of the sitter are thin, and the eyes deep set, I shut the two upper portions and open the third, by which means I get a broad light upon the sitter. As the sitter, I

* MM. Gerotwohl and Tanner work, in Paris, in an *orthodox* artist's studio. The sitter is placed on a stage. The light is high, and of small extent. In London more light is required to work in all seasons.

may say, faces the light, I can obtain any amount of shadow upon either side of the face by partially drawing the curtains on that side. Operating rooms are generally colored or papered of a light color. This I consider objectionable, as trying to the eyes. My walls are colored a dark grey, almost black, so that it answers for a background at any part of the room, and as the sitter is placed he is generally looking into a dark corner. The result is that the expression is easy and natural, and that unpleasant reflection in the eyes is entirely avoided. I have also a background made like a large cheval glass, with a different color on each side, so that I have the choice of three backgrounds. The ventilation is amply provided for by a large door opening at the bottom, window on each side, and ventilating bricks in each side wall at the top.

You are probably aware that my practice is almost confined to positives; how far the room may answer for negatives I am not at present able to state, but my present opinion is that they require more light, and that a lengthened exposure in a weak light will not produce the same effect.

Mr. Forrest said the paper they had just heard was most important and instructive. He felt this especially, as he was receiving letters almost every morning from amateur photographers, requesting information on the subject. It was especially gratifying thus to see a professional gentleman freely giving them the benefit of his well-studied and successful experience. He had very great pleasure in proposing a vote of thanks to Mr. Keith for his valuable paper, which, being duly seconded by Mr. Cook, was passed unanimously.

Mr. Keith, having stated that the adaptation of the dark blinds arose from a suggestion made to him by Mr. Corey, acknowledged the compliment paid by the meeting.

THE NEGATIVE BATH.

Mr. Glover then read the following paper on

"THE NEGATIVE BATH."

The state of the negative bath is a matter of the greatest importance to the photographer. Whatever degree of perfection he may have attained as a manipulator, however pure his chemicals, and whatever formula he may adopt in the preparation of his secondary solutions, unless the nitrate of silver bath be in proper working condition, his efforts are fruitless, as far as regards perfection in this beautiful art is concerned. True, it is possible, with an inefficient bath, &c., to obtain images by the agency of light, the novelty of which, even with the uninitiated public, is not a sufficient guarantee for anything short of a faultless photograph. We shall therefore enquire, without entering into the best established mode of preparing a new bath, what constitutes an imperfect bath, with the various causes and the remedies.

Alkalinity is fatal to all attempts at photography. The cause may be generally traced to the presence of carbonates in the iodides or bromides used in the collodion: a small portion is thus introduced into the bath with each plate, until it has an alkaline reaction. Another cause may be the presence of free ammonia in the collodion. To counteract this, it is usual to add acetic acid, but we prefer the use of nitric acid, for obvious reasons, to which we shall hereafter call attention.

Another, and we may say the most general cause of failure is, the presence of *nitric acid* in *quantity*. The cause may be attributed to the use of collodion containing free iodine, which no operator would wish to be without. It is evident to those who understand only sufficient chemistry to carry them through the process, that if the collodion contained only pure iodide of potassium, the decomposition would be as follows:—

$$KaI + AgO\ NO_5 = AgI + KaO\ NO_5$$

So that, consequently, no free nitric acid could exist: but the case is far different when free iodine is present. Having a greater affinity for the silver than nitric acid has, the iodine take its place, liberating free nitric acid. There is no substance present with which it can combine, consequently, it must accumulate in the bath.

The usual remedy for this has been the addition of ammonia till neutrality, or rather a slight alkalinity was obtained, causing a small quantity of oxide of silver to be precipitated, nitrate of ammonia being formed in the solution, acetic acid was then added, which, uniting with the oxide of silver, formed acetate of silver. This fact requires special attention, as reference will be made to it in a subsequent part of this paper. Instead of the above, some recommend the addition of other alkalies, such as carbonate of potash or soda, both of which precipitate, carbonate and oxide of silver, which have to be separated by filtration, thus abstracting the silver from the bath, at the same time a new substance is left in solution, nitrate of soda or potash.

Others recommend the use of a piece of marble in the bath (carbonate of lime), which certainly is attended with the least trouble and inconvenience, no precipitate being formed of any consequence; but, there is one great objection, the formation of nitrate of lime which is held in solution. We shall withhold further comment on this subject for a distinct and most important head of this paper.

Among the rest of the causes of failure we may enumerate the presence of foreign substances in the bath, produced by the decomposition of the re-agents that have been from time to time added to correct the acidity or alkalinity, and to which we call special attention in the foregoing part of our paper, viz.:—*acetate of silver.* This salt is decidedly prejudicial, the plates being more liable to stain when it is present. The least carelessness in the cleaning of the glass is made doubly visible in the finished negative, and one of our greatest photographic chemists (Hardwich) asserts, not only the above, but that the presence of acetate of silver tends to solarization from over exposure, causing the peculiarity which most of us have observed, a light transparent red color in the high lights of the negative. For this reason we object to rectify an alkaline bath with acetic acid. When once alkalinity occurs, some oxide is thrown down, this is re-dissolved by the acetic acid, consequently, acetate of silver must be present. It is also very probable that other substances, such as nitrate of lime, nitrate of ammonia, &c., before alluded to, are best dispensed with, if we can attain our object without them.

Other minor causes of failure might be enumerated, though not strictly chemical. Some photographers are so sparing of their nitrate of silver as to mix only sufficient solution to fill their bath-holder; by this method, unless the solution be continually filtered, which entails considerable loss, spots will be produced in the film, by the floating particles, and those in suspension subsiding on the surface of the plate. We would recommend every individual to make twice the quantity of solution he requires, so that he can pour sufficient off for his use without disturbing the sediment, by which he will be a gainer, no loss by filtration being required.

The tendency to this practice may perhaps have increased since the introduction of those useful portable bath-holders, with water-tight tops. It was never intended that these should be the *only* receptacles for the solution, but were constructed for the convenience of the tourist only.

Another minor cause of failure may be from weakness of the bath, caused by the abstraction of the silver, without sufficient being added to make up for the loss. We do not recollect to have seen any rule laid down, but the calculation is very simple. For every ounce of collodion used, containing four grains of iodide of potassium, nearly $4\frac{1}{10}$th grains of nitrate of silver are removed. Of course, the quantities vary with the use of bromides, or of other combinations of iodine, the atomic weights of which are easily calculated. I may just remark here, that although the silver is removed from the bath by continued working, the specific gravity is very triflingly altered, as in the use of the metallic alkalies as iodizers, one metal only takes the place of the other in the bath. Iodide of *silver* forming in the collodion film, and nitrate of the oxide of *potassium* remaining in solution.

It is an error to suppose that the "specific gravity" and "yellow tinge" are owing to the redundancy of iodide in the bath, as after it has once been saturated at the time of preparation no more iodide can possibly be absorbed, whatever volume it comes in contact with. The yellow color is most probably owing to the organic matter in contact with the nitrate of silver or nitric acid. Water has the power of separating the iodide, consequently when it is added to the bath a portion of iodide is precipitated, but if the water be again evaporated the iodide is re-dissolved.

The foregoing are the chief causes of failure in the negative bath, and in entering on the most important part of our paper, the point at which we want to arrive is, the means of neutralizing the nitric acid without the introduction of a foreign or deleterious substance, which will always occur, as we have shown, when a substance is added which effects a mutual decomposition. We will, therefore, give the results of a few experiments with a view to this object.

Metallic silver was introduced, but it is very slow in its action, the nitric acid being so dilute. A difficulty presents itself in procuring (commercially we mean) pure silver for the purpose, our standard metal being alloyed with copper, therefore forming nitrate of that metal as well as silver.

Pure oxide of silver was then introduced into an acid solution of nitrate of silver. We obtained the oxide by precipitation from nitrate of silver by ammonia. The precipitate well washed with boiling water, to free it from the alkali, presents a finely divided surface to the attack of the nitric acid, and answers tolerably well. We allowed twenty or thirty grains to remain in the acid solution for a day or two, shaking up occasionally. The uncombined oxide subsides to the bottom, and the clear and *nearly* neutral solution can be decanted for use.

The last and highly satisfactory experiment we performed was founded on the chemical theory, that *carbonic acid* has a greater affinity for the base *silver* than that of *sodium*, and, secondly, that *carbonic acid* is displaced by *nitric acid* without the presence of a second base. We selected as a good subject for our experiment an old positive bath, prepared by the French formula, and we think resembling that used by our worthy Secretary. The problem to solve was to convert this excessively nitric acid bath into a negative bath. The quantity to work upon was about twelve ounces, containing say twenty-five grains to the ounce, having been some time in use. We took three ounces of the above solution, added a solution of bicarbonate of soda till the whole of the silver was thrown down in the state of carbonate, taking with it a small quantity of oxide of silver. This precipitate we thoroughly washed with boiling water to remove every alkaline trace. Carbonate of silver, as most are aware, is, when newly prepared, a white powder, insoluble in water. This, when added to the other nine ounces of acid solution, almost immediately neutralized the nitric acid with considerable effervescence, owing to the escape of carbonic acid gas, described thus:—

$$AgO\ CO_2 + NO_5 = AgO\ NO_5 + CO_2$$

Thus we not only neutralized the nitric acid, but concentrated into nine ounces all the silver contained in the original twelve of acid solution. We submit the first negatives taken with the altered bath.

In conclusion, we beg to propose, by the same plan somewhat modified, to collect the silver from our washings of prints, old baths, &c. The plan is to precipitate the silver as carbonate, which will shortly subside, so that the then valueless liquid can be siphoned off and thrown away. Water poured on, and the same washing repeated several times. The carbonate must then be collected on a filter, boiling water poured over it till all the soda is removed, then dried, and pure nitric acid added to saturation. By this means we get a strong solution of nitrate of silver, which can be tested by the hydrometer; or evaporated and crystalized. This is attended with remarkably little trouble and cost compared with the old process of precipitating as chloride, and reducing to the metallic state, and re-dissolving in nitric acid, which requires some skill and apparatus not always at hand. Thus every photographer can reclaim all his waste silver in the most valuable form for his purpose.

Since writing the above we performed the following experiment:—120 grains of nitrate of silver were dissolved in about one and a half gallons of water. The silver was precipitated as carbonate, the liquid syphoned off, and the washing repeated several times. In running off the last water we syphoned rather too close, and lost about ten grains of silver, making 110 to work upon. Without filtering or drying we added pure nitric acid, drop by drop, till the whole of the carbonate was changed to nitrate. We then added about a quarter of a grain of iodide of ammonium, and made the whole up to three and a half ounces with distilled water. After filtration, we prepared a collodion plate and made sensitive in the above solution, and now lay before you the result.

Mr. Glover received unanimous and hearty thanks for his interesting paper, which he illustrated by several practical experiments.

The meeting soon afterwards adjourned.

From the Jour. of the Phot Soc.

ON IMPROVING THE TINT OF TRANSPARENT STEREOSCOPIC SLIDES.

Many persons who have been perfectly successful in printing these slides by the process which I described in vol. iii. p. 303, object to the slight green tinge which, under some circumstances, the pictures present. To such it may be of interest to know that an *excessively* weak solution of sulphide of ammonium (ten or a dozen drops to an ounce), poured on and off the plate for a few times, will quickly change the color to a rich brown, varying in tint according to the time which the sulphide of ammonium has been allowed to act. It should be poured on after the plate has been washed free from hyposulphite of soda, but before the surface has become dry, and as the different shades of brown follow each other with tolerable rapidity, the operation should be performed in a good light, and with a plentiful supply of water close at hand, so as to wash off the sulphide as soon as the desired tint is reached. After wash off, the plate may be allowed to dry as usual. W. C.

SUBSTITUTE FOR CYANIDE OF POTASSIUM.

To the Editor of the Photographic Journal.

Sir,—Observing in the last Number of the 'Photographic Journal' your notice of the warning given by Messrs. Harvey and Reynolds as to the indiscriminate use of the poisonous substance known as cyanogen soap, and sold for the purpose of cleaning the fingers of photographers from stains of the nitrate bath, &c., allow me to propose a substitute of a most innocent character, by the application of which I have found, from experience, that these annoying stains may be readily got rid of, without the possibility of any injurious effects ensuing.

Beginners in this fascinating art do not often, I expect, escape the penalty of blackened fingers; at all events I have found myself sufficiently clumsy at manipulation to incur it to the full, and confess I have, on a few occasions of my tyroship, felt considerably annoyed at the circumstance. Even Mr. Thomas's cyanogen soap did not always perfectly answer the cleansing expectation; whilst that ugly, portentous word "POISON," printed in *large caps* on the pot, did not seem to me very strongly recommendatory of its continual absorption by the skin. Perhaps, however, this has been more particularly the case in my own individual instance, since, fond of horticultural recreation, I am often using the budding or pruning knife, and my hands are frequently made to feel, with somewhat more pungency than is by any means agreeable, that "roses have thorns."

A picturesque mountain-stream happens to run bustling over a rocky channel through my garden, and it is to this brook that I generally repair to perform all such ablutions. Finding on one of these occasions, when my fingers had become blackened to an unusual extent, that the stains obstinately resisted even the poisonous application longer than I either liked or could patiently endure, it occurred to me, almost in anger, to try the effect of *friction* with a small stone, rounded from its angular asperities by attrition in the waters of the stream. Great was the satisfction I experienced at finding that this exceedingly simple remedy perfectly succeeded.

My scratched and thorn-wounded digits now cause me no dismay, for I have quite discarded the poison-soap, and no longer stand awe-stricken under the fear of inoculation.

Perhaps I should add, that the stones I find thus effectual are of that kind which occur in combination with an infinite number of small glistening particles, most likely quartz; this gives a roughness to the surface, by which friction with the cuticle is greatly assisted. Of course, smooth pebbles would not answer the purpose; but any sandstone would probably do so, provided neither too coarse nor to fine in the grain.

I shall be glad if this suggestion should prove serviceable to any of your readers.

THOS. LINDSAY.

From the Liverpool Photographic Journal.

ON THE METHOD OF PRODUCING MINUTE PHOTOGRAPHS.

BY W. HISLOP, F.R.A.S

Read before the North London Photographic Association, October 28th, 1857.

The particular department of photography which I have the pleasure of bringing to your notice this evening, is worthy of attention, on account of the remarkable manner in which it exhibits the extraordinary capabilities of the art.

I propose to explain the method of producing exceedingly minute pictures, either reduced from others, or taken direct. The term "microphotograph," has been improperly applied to enlarged pictures of microscopic preparation. This process being one of enlargement, is exactly the reverse of that which we have to consider to-night, and I conceive that the word micro, signifying small or minute, can only be correctly applied to reduced and not to enlarged figures. The exceeding minuteness of the pictures which can be produced can hardly be conceived by those whose attention has not been directed to their productions. As some indication of what may be done, I may refer you to the specimens which have been arranged beneath the microscopes before you, some of which contain elaborate groups within the space of the sixteenth of an inch, in which every detail is preserved, and even inscriptions may be read with ease. The material employed, too, admits, by skillful manipulation, of all the effect of tone and contrasts of light and shade, which go to make up a perfect picture, being produced at will, and repeated to any extent. Although there are some who doubt the utility of pictures so small as to require a microscope to see them, yet I believe that any one who has seen a good micro-photograph, properly exhibited, will admit that this class of photographs may certainly be reckoned among the wonders, if not among the utilities of the art.

It will easily be seen that the manipulation of this process must be extremely delicate, the materials should be of the finest quality; the instruments used most perfect in their adjustment; the subjects selected with judgment; and last, but not least, patience and perseverence on the part of the operator are essential to success.

Two or three photographers and microscopists, besides myself, have worked in this department, but, so far as I know, have not given the details of their manipulation to the public. Having worked it out independently, I have thought myself at perfect liberty to reveal what I have done, the more so, as I hold as a principle in science, that he who wishes to accumulate information, ought also be willing to impart the information to others.

Having myself been led into photography by its connection with the microscope, and knowing that those who have succeeded with these small pictures are also microscopists, I am induced to believe that a knowledge of the management of a microscope is of great importance in the process. The requisite delicacy of manipulation is difficult of attainment, and even a microscopist will not always succeed.

I will now, after these preliminary remarks, proceed to tell you my own method of procedure:—

First, as to the materials. All the various sensitive surfaces may be used, but I prefer collodion on glass. The pictures are best as transparent positives. The glass used should be the best thin plate, in the form of microscopic slides, three inches by one, and as neatness of appearance is important in everything relating to such minute productions, I prefer that the edges should be ground smooth and polished. Such slips of glass are supplied by Messrs. Claudet and Houghton, at 10s. per gross. Each slide should be carefully examined by a magnifier, and those which have scratches or specks of any kind should be rejected. When the picture is finished and dried, it is covered with Camera balsam, and a piece of thin microscopic glass placed upon it. Discs may be obtained cut to any size, also, of Messrs. Claudet and Houghton.

The collodion I use is positive, rather thin, and producing an opalescent film. It is obvious that it must be perfectly structureless, and here is one of the most serious difficulties which we encounter. For, I may safely say, nine cases out of ten, the pictures will be found to look as though covered with a piece of net. This appearance is not seen in ordinary photographs, simply because we do not use the microscope to look at them with; but I have observed it in first-class photographs. I know of no certain remedy for this defect. I have tried chloroform, wood spirit dilution with ether, and other chemicals, but with no certainty of results, and I can find no one who can give any certain cure. You will, of course, ask how I get rid of this structural appearance, as my pictures do not show it. Simply by throwing aside the collodion as soon as it appears, and when I get a good sample, endeavering to use it before it is spoiled for my purpose. The exciting bath is the ordinary thirty grains solution, with a slightly acid reaction.

All the various developments employed for wet collodion may be made use of. Pyrogallic, with acetic acid, often gives a brown tone to the picture; the salts of iron bring it out rapidly and with considerable brilliancy; but, under a tolerable magnifying power, the result appears granulated like a coarse mezzo-tint. The development which I prefer for blackness of tone, sharpness and uniformity, is composed of two to four grains pyrogallic acid, and one to two grains citric acid to the ounce of water, with sufficient spirits of wine to ensure even flowing over the plate. The picture comes out slowly, but any amount of blackness may be attained with safety. I fix with a single drop of a strong solution of hyposulphite of soda, and wash well afterwards with filtered water.

We now come to the apparatus employed. The great essential is, of course, the object glass. This is a microscopic object glass, and must be of the very best quality. We shall find it a mere waste of time to endeavor to succeed even tolerably with any glass that is not first-rate as regards its corrections. The focus I prefer is one inch. The angular aperture will be of small importance, except as affecting the quantity of light and consequent time of exposure.

I produced a great number of pictures by using the ordinary microscope, removing the eye-piece and placing the prepared plate upon the stage. This method requires some particular precaution, which I will detail. We must first decide whether we intend to operate by natural or artificial light. If by the latter, we may either place the body of the microscope upright and throw the light down the tube by some kind of reflection, or we may place it horizontally, in which case we must use a clip to hold the glass plate against the stage. The negative to be copied was supported in the first case on the ring of a retort stand, at a certain height above the body, dependant upon the size to which I wished to reduce the picture. In the horizontal position I place the negative in the dark frame of a camera with the lenses removed. In all cases of the use of artificial light care must be taken that the negative is illuminated by parallel rays. I prefer to effect this by using a large condensing lens between the light and the negative. For the natural light we have simply to place the instrument upright upon a table in the open air, in an inclined position, near a window, or in an horizontal position, directing the light by a plain reflector.

Having gauged the glasses to a uniform thickness, I then take one, coat it with a thick collodion, and sensitize it in the bath in order to obtain a surface for focussing on. After draining the plate, and drying it, I place it on the stage, all things being in position; and by the aid of a hand magnifier, applied sideways, I accurately focus the picture. We must now allow for the difference between the chemical and visual focus of the object glass. Microscopic object glasses are generally over corrected, the violent chemical rays being beyond the visual focus. The glass must therefore be moved a little away from the sensitive surface to get the utmost degree of sharpness. Rules have been laid down for microscopists, in taking enlarged pictures of minute objects, as to the amount of difference between the visual and chemical foci for object glasses of different powers; but the corrections are so variable, and are so much modified by circumstances, that I believe the readiest and surest plan is to ascertain the point by trial till we succeed to our satisfaction. When properly focussed, the instrument must be removed into the dark room, and the prepared plate placed on the stage, the whole wrapped round with a piece of black velvet, and then replaced upon the table in the position before occupied. The velvet being now removed from the top of the tube, the plate is exposed, and must remain so for a space of from five to thirty seconds, according to the density of the negative. If artificial light is used, we need merely turn it down or shade it while we place and remove the plate. It must now be developed and fixed, as usual, the process being examined by a hand magnifier. After drying, it must be mounted in Canada balsam, of which I shall speak presently.

This method of using the microscope is attended with inconveniences innumerable, as the stage becomes stained by the chemicals employed; and if it be a valuable instrument, this method of producing micro-photographs becomes rather costly. I therefore made, in the first instance, a dark frame of brass to hold the slide, and then contrived a special apparatus which could be used for either natural or artificial light. I have thought it best to exhibit the original apparatus, which I still use, as well as one made from the same model by Messrs. Horne and Thornthwaite, who have made arrangements to supply the apparatus. It simply consists of a mahogany board, about three or four feet long, six inches wide, and one inch thick, having two uprights at one end. Between these two uprights a small box slides up and down for adjustment to the centres of different sized negatives. This box is opened at back and closed in front, having affixed thereto a ruder brass fitting, with rack and pinion adjustment; on the axis of the pinion is a graduated micrometer head, with an index, by means of which the exact position of the object glass may be read off for any distance of the negative. The object glass is screwed to the inner end of the brass fitting, and stops of different sizes fit in to the front of the tube. At the back of the box is a fork-shaped piece of brass, in which the dark frame is made to slide into position, or it may drop into a groove as in the ordinary camera. This dark frame is made of brass, the back fastening in with a simple catch, and having openings back and front, which are closed by stops turning on centres. The front one is moved aside in exposing for a picture, and the back one is opened for focussing, which is now performed through the glass. The negative is placed in an ordinary frame, such as is used in dark slides, and this frame is held by means of eccentric buttons, upon a carriage which slides backwards and forwards, according as a larger or smaller picture is required. If natural light is to be used, the apparatus is inclined near a window, so that the whole points towards the sky, as it may be maintained in a horizontal position, and a reflector be used to take the light through the system. A piece of black velvet must be thrown over the box before the plate is exposed, so as to exclude all light but what passes through the object-glass.

For artificial light, I use an argand gas-burner, and make the rays parallel by placing a large lens against the negative. The position of the burner being carefully arranged so as to throw the rays into the aperture of the object-glass, I then focus by means of a piece of finely-ground glass or dried collodion film, placed in the dark frame, and viewed, both apertures being open, by means of lens. The distance of the chemical focus I ascertain by experiment. When this focus is obtained, I read off the micrometer head, and mark the reading against another mark, showing the exact position of the carriage carrying the negative. I then know the precise position of the object-glass for that particular distance of negative.

I prefer a negative of small intensity, but of course having all the details. With such a negative and a good gas-burner, the time will be from ten to sixty seconds. Our picture being obtained and dried, the next point is how to preserve the film from injury. For this end we must use a little microscopic invention. A mounting plate is prepared, consisting of a plate of metal, which may either be supported upon the ring of a retort stand or upon three legs fitted into it. This is placed over the flame of a lamp, and heated till it is warm, but not too hot. The slides are laid on the plate, a minute drop of Canada balsam placed on each, and a carefully cleaned disc of thin microscopic glass, previously warmed, and dropped upon it. The slide is left for a quarter of an hour or longer on the plate to harden the balsam; it is then cooled and cleaned off with a soft cloth.

This is the whole of the *modus operandi*. The apparatus described above, is capable of being used for other purposes. It may be employed for obtaining enlarged pictures of minute objects; the illuminating medium being removed to the opposite end of the system, the object to be copied being placed in the small dark frame, and the prepared plate on the sliding carriage. There are also other applications to which I may allude on some future occasion.

From the Jour. of the Phot. Soc.

SPOTS ON COLLODION PLATES.

47 Ludgate Hill, Sept. 28, 1857.

To the Editor of the Photographic Journal:

Sir,—The various suggestions that appear in what you call your "Minor Correspondence" are exceedingly valuable to the professional photographer. To the amateur, or those who produce what is not intended for public criticism or for sale, a speck or spot is of no great consequence, but when a man's success and position in life depends upon the perfect finish of his productions, those "insane atoms" assume a fearful import, and to get rid of them a matter of stern necessity. Did they choose to take their place in some quiet and unseen part of a lady's dress, there they might remain, and meet with the contempt they deserve. One would not think it worth one's while to quote Shakespeare concerning them. But no—they must intrude in high places, lips or eyes, and of course, as you have been told, removal is destruction. These spots are occasioned by undissolved particles in the collodion that will not subside into what are called " bottoms," and therefore they must be filtered out.

The suggestions made by your correspondents and others would generally answer very well, but they are much too scientific and complicated (siphon, gas-jars, &c.), and of course troublesome, and besides add unnecessarily to one's stock of seldom-used apparatus, in itself no small matter: all that the operator requires is to *filter his collodion as he would filter any other solution* through a glass funnel with ordinary filtering-paper, but taking the precaution to place a glass plate on the top large enough to cover the funnel.

For the idea I am indebted to Mr. McMillan of Fleet Street. It is much too simple a plan to be the offspring of my own brain. It is what I practice, and I believe it to be all that is required. There is a little waste, but scarcely worth mentioning. Let therefore any one of my brethren, who has been annoyed in the way described, purchase a small glass funnel and a few sheets of ordinary filtering-paper, and if he uses them properly he will have one trouble the less in photography.

Edward Burke.

ON THE PRODUCTION OF PHOTOGRAPHS ON GLASS.

According to this process, a thin film of iodide of sulphur is formed upon plate glass, by covering the glass, which must be perfectly clean, with a very thin coating of sulphur, and then impregnating this for a few seconds with the vapor of iodine. The glass plate is then placed in the camera, where at the same time the vapor of some quicksilver in an iron cup in the bottom of the camera acts upon the iodide of sulphur with which it is coated, and it receives the photographic image within a minute. The glass plate, when taken out of the camera, only exhibits a a trace of the picture, but this immediately comes out on exposure to the action of the vapor of bromine. If the picture be now held over alcohol, and some of the same liquid be poured upon it, it will be fixed. Not more than from five to eight minutes are required for the whole operation.

The glass plates must be breathed upon and well rubbed with soft linen rag several times before use. They are coated with sulphur by burning sulphur sticks, made on purpose, in a proper tube, and holding the plates over it at a distance of about 3 inches. These sulphur sticks are prepared by dipping pieces of rush-pith into a melted mixture of sulphur and mastic, with which they become incrusted. For use, these sulphur sticks, which are about the size of a lucifer match, are stuck on a brass needle, introduced into the middle of a glass tube and kindled, so that the vapor of the sulphur may come in contact with the glass plate held over it.

These glass plates are so sensitive, that the coating of iodide of sulphur becomes instantly changed on exposure to direct sunlight, and give a Moser's image within five minutes when laid in a book. The figures thus obtained are most easily read by candlelight. In daylight, the blue betters can be recognized on the yellow ground only by looking through the plate towards the middle of the window, or towards a sheet of paper fastened in that place, the sulphur not having been removed either by vapor or bromine or by alcohol.

If a glass plate, covered with a solution of gum and exposed to the vapor of iodized sulphur, be placed in the camera, a positive picture, with all its details, is obtained, the outlines of which can be laid bare by an etching-point capable of scratching the glass. If a glass plate, so marked, be rubbed in with printing ink, the outlines will be filled, and the ink will remain in them when the glass is freed from the coating of gum by means of water. The picture is then easily transferred to paper, which is to be laid on the plate and rubbed over with a paper-knife.—*Chemical Gazette*, vol. x. p. 291.

From the Jour. of the Phot. Soc.

POISONOUS EFFECTS OF CYANIDE OF POTASSIUM.

To the Editor of the Photographic Journal:

Sir,—I see in your last Number you have noticed the twaddle which has been going the round of photographic and other Journals, respecting the supposed danger of using so deadly an *internal* poison as an external detergent.

I will confidently affirm that the fear of its use externally is perfectly groundless; not only am I in the habit of using it in the form of ointment in neuralgia, but for the last three years I have used it as carelessly as a piece of soap when my fingers have been begrimed with nitrate of silver, and this whether I have abrasions on my hands or not. Beyond a smart, which is at once allayed by dipping the hand in water, I have never experienced the smallest inconvenience, though I have often consumed on my hands a piece of cyanide as large as a shilling at a single ablution. Moreover, I have never heard of any authentic case of dangerous effects when thus used. Photographers may then, I think, be perfectly at ease on the point.

W. H. Rankin, M.D.

Letters of inquiry of interest to the *writer only* must be accompanied by a postage stamp to prepay answer.—Ed.

From the London Art Journal.

THE MARINE AQUARIUM.

BY MRS S. C. HALL.

"'Tis said that Xerxes offered a reward
To those who could invent him a new pleasure."
Byron.

Happy are they who to the admiration of the beauties of nature—inseparable from a feeling and reflective mind—add a knowledge of the causes and effects of what the Giver of all Good has so abundantly scattered not only over the face of earth, but underneath the waters. Yet so universal are the wonders of creation that those who go "abroad in ships" do not encounter greater marvels than are to be met with in standing pools, or mingling with the murmurs of tiny rivulets "at home." To the lover and observer of Nature nothing is barren, nothing "common or unclean:" the blade of grass, the drop of water, the sparkling pebble, the stiff clay, the teeming mould, the rocky fragment, the glittering sand, the whispering shell, the bursting bud of the wayside flower, the penetrating sunbeam, the pale ray of the queenly moon, the crystal salt in the chasm to which the wave seldom returns—all are suggestive of thought, and all may be sources of enjoyment—while all, insignificant as they seem, are essential parts of a mighty whole.

In the bright summer or cooler months of autumn, we who reside in London think it as much a duty as a pleasure to inhale the freshness of the country, and return from our rambles to our city homes laden with "specimens" of the material world, or flowers and ferns that will keep "green memories" amid the snows of winter; we enrich our "fern-houses" with tributes from our Glens or Highlands, and few things cheer us more than the remembrance of *how* the little plant was obtained, and *who* assisted in the gathering. Dried leaves have too much of death about them to convey unalloyed pleasure to the living, and we consider "Ward's cases" to be acquisitions for which all town dwellers are bound to hold the inventor in high esteem —the living memory of many a mountain ramble is enshrined in a "Ward's case," or even beneath a simple bell-glass. But we Islanders are too fond of the element to which we owe our safety as well as our restraint, not to seek its shores, if we cannot cross its waves; and until lately the only mementoes we could bring away of the storm or quiet of the deep were dried "flowers of the sea," or beautiful shells, the least perishable of all the forms that enclose life: our own, alas, soon mingle with the dust to which they are doomed to return, while the dwelling of the periwinkle and the limpet seem to endure "for ever."

The "new pleasure" to which we invite our readers, has to do, not so much with the homes of the limpet and the periwinkle, as with the manners and customs of their inhabitants. We have become in some degree familiarized with the snail family, and understand their value in keeping the plants that flourish in our glass bowl from being coated with "fur" or slime. We have advanced a good many steps in our treatment of gold fish; we no longer doom the little animal to an eternal swimming mill, without the relief of shade; we permit him to meander through the groves of the delicate *Vallisneria*, and in the centre of his crystal palace we build him a miniature Stonehenge, wherein he can play at hide-and-seek, and enjoy a cozy nap without disturbance, or even observation; we introduce to his habitation a tiny shoal of minnows—most frolic-loving things—which, when we tap the glass, flock to the surface and greedily devour the fragments of "pastry-cook wafer" which, though they never did banquet thereupon in their natural state, they much enjoy in their captivity. We have learned from Mr. Warington to treat the tiny stickleback with as much respect as we were taught in childhood to bestow upon the beaver, and recommend our young friends to purchase a miniature aquarium especially for them, and so have the pleasure of observing the care bestowed by father stickleback in the formation of his family mansion, and the parental attention he pays to the protection and education of his young masters and misses, whom he keeps from the jaws of devouring minnows. We understand all such creatures better than we did, and it may be they return the compliment.

Our own especial "new pleasure," however, is the MARINE AQUARIUM. Concerning this drawing-room "romance of nature," we borrow a pen better qualified than ours to deal with the object to be attained, *i. e.* the arrangement of a collection of animals and plants in salt water, in such a manner that, by the working out of natural laws, the whole may be permanently self-sustaining and self-purifying, without frequent change of the water being necessary.

"The circumstances which brought about the growing taste for such an agreeable adjunct to our homes as the Aquarium, were mainly some experiments on the domestication of marine life, commenced—almost simultaneously—about five or six years ago, by Mr. R. Warington and Mr. P. H. Gosse. Then came some popular, accurately written, and beautifully illustrated books on the subject, by Mr. Gosse, followed by the opening to the public, in the spring of 1853, of the large and magnificently appointed aquatic collection of the Zoological Society, in Regent's Park, London, which produced as important effects on the branches of natural history to which it relates, as did the previous great event of 1851, in Hyde Park, on the sciences at large.

"No sooner was it found possible thus to make daily acquaintance with the 'manners and customs' of a great variety of curious organizations previously hidden from all except professed naturalists, than many old notions on their natural history became exploded, and indeed it would be easy to name more than one accepted text-book, dozen of pages of which must be cancelled by the aquarium-experiences of the last four years. Of course the desire to have Aquaria at home became obvious. In fresh-water, it was an easy matter to plant aquatic vegetation among gravel at the bottom of a vase, and to put in fish and other animals: but the attempt to set up a *marine* collection and to maintain it in a healthy state, involved many difficulties. The supply of sea-water was uncertain and costly, and even when obtained, its purity, and that of the vessel in which it was brought from the coast, could not always be depended upon. In cases of accident, too, the whole of the live stock might perish before a fresh importation of water could be made. At length Mr. Gosse stepped in with a formula for the manufacture of an *artificial sea water* from its constituent salts, which, after adequate trials, has been found nearly to answer every purpose of actual seawater.

"It then became necessary to obtain the animals and sea-weeds from the coast. This, to residents inland, was a matter of difficulty. Amateurs could not always find the time and means to visit the sea-side and collect for themselves. Nor was it always practicable to employ an agency for the purpose; to hire a man to procure and transmit so small a quantity of specimens as would merely suffice for a vase or tank, would obviously be working at a disadvantage both to collector and purchaser. In short, it became essential that some one in the metropolis should be found willing to "set-up shop" in this kind of "marine stores;" to establish a regular communication with the coast; to receive consignments at stated intervals; and to be willing to retail them in any quantities according to the variation of the tastes and means of the purchasers."

* * * * * *

We commenced our salt-water "Aquarium" under the most favorable auspices. The accomplished secretary of the Zoological Society was so good as to order for us a tank of "suitable" dimensions, and permit one of his intelligent keepers of "marine stores" to arrange the interior of our mimic ocean; he also gave us the necessary quantity of sea water, "dipped up" from the Atlantic, and some excellent advice; but we furnished our tank as young housekeepers are apt to furnish a house—with much more than was necessary. Every specimen we could collect was floated into "the tank." We should not, during the days of our young experience, have hesitated to have introduced a juvenile shark or cod-fish into our marine menagerie. It was in vain the Hermit crabs gathered in their claws, that swimming crabs and other crabs crowded from the bottom, and endeavored to reach the summit of the rocks to escape with life from the noxious gases generated by dying and sickly fish without a sufficient counteracting influence of marine plants; it was in vain that the pied *Crassicornis* bloomed and died within a day, that the *Actinia bellis* (the hardy daisy), refused to implant itself among our pebbles—that the *Sabellas* crept out of their cases, and the delicate *Actinia dianthus*, and even the hardy *Messembryanthemum* let their tentacles droop in unhealthy inertness; still we continued adding instead of withdrawing, pouring in half-pints of innocent periwinkles, and half-dozens of springing shrimps, until in a few days the water became offensive, and the whole contents of "the tank" was obliged to be thrown away! We were "all in the wrong,"—and in addition to the information derived from the secretary of the Zoological Gardens, from the kind counsel of Mr. Gosse, as well as from his books, varied and beautiful as they are; from that also of Doctor Farre, who wrote concerning the interest of those sea-creatures some twenty years ago; in addition to our sea-side experience during the autumn, and our daily access to Mr. Heale's picturesque cottage at Ilfracombe, where, beneath a bower of roses and woodbine, his bright and pretty daughter has become as familiar with "*Madrepores*" and "*Sabellas*" and "*Actiniæ*" of all kinds, as the generality of village maidens are with primroses and buttercups; in addition to the inspirations of "Glaucus" and the concentrated wisdom of the pretty square books published by Mr. Reeve; though we waded ankle-deep at least in Watermouth Bay, and explored "tide-pools" and wide-spreading sands in the bewitching localities of Ilfracombe and Torquay; in addition to the advice of friends, the information of books, the frequent inspection of the Vivarium at the Zoological Gardens, the "peeps" graciously afforded into the "tanks" of Mr. Gosse, Mr. Warrington, and others learned in Zoophytes—and, moreover, acquaintance with the varied creatures to be seen in Mr. Lloyd's sale-room, in the bowers of Capstone Cottage, Ilfracombe, or in the pretty "Shellery" of Mr. Pike, at Brighton—we had to learn the lessons that are taught only by EXPERIENCE.

Atmosphere and light, and the least difference in position have such an effect both upon weeds and waters, that nothing but *observation* in fact—will enable you to maintain a marine Aquarium in health and respectability. If you give too much light the water resists the intrusion, and becomes opaque; if too little, the animals pine away. You must have practice and patience: in truth there is as much pleasure in both these virtues as in the peace and prosperity of your "Aquarium." We tried the sea-water three several times, and with the same result; we ceased to over-stock our sea farm, yet still the creatures died! The water was thrown away and the shingle washed over and over again; and an Irishwoman, a "help," who assists all our experiments, declared, "No wonder people got say-sick crossing the say, if the water was all like that!" At last, by Mr. Gosse's advice, we put our Aquarium under Mr. Lloyd's care; he nearly filled it with the composed water, replaced our weeds and shingle, and arranged the flagging *Actiniæ* in what he considered the best situations. The next day the water looked nearly clear, a delicate *Dianthus* had adhered to the glass, several *Bellis* had fixed themselves in the shingle, and those hardy fearless *Mesembryanthemums* were in their full bloom of activity. We felt singularly elated—we should have been so glad to have shown our mimmic caverns, over which floated banners of the green *Ulva*, to Mr. Mitchell or Mr. Gosse, or even to the triumphant Mr. Warrington, who has kept his sea-water unchanged for upwards of five years, and whose venerable prawns prowl about perpetually, seeking what they may devour.

But soon after, another kind friend sent us a bountiful supply of animals and most beautiful sea-weed from Falmouth: we did not—however tempted by the swelling beauty of the *Gemmacea*, or the graceful bend of the *Dianthus*—overstock our tank with animal life; but we had a weakness for the picturesque, and we loaded it with sea-weed; child-like, "because it looked so pretty!" Though we knew that the *Ulva latissima* is all sufficient or the purpose of keeping the water pure—still we were tempted, and the water soon became discolored and turbid. Mr. Gosse says the water under these circumstances can be brought back to purity by being placed in a dark closet, but we had not a "dark closet," and so were obliged to get another supply of Mr. Lloyd's prepared salt, and replenish our ocean; since then, we have been greatly successful, the water is "clear as crystal" now, and it has continued so for more than ten weeks.

The desire to know something about, and to possess some specimens, of those "living flowers," is becoming so general, that "agents" can be met with at most of our sea-side resorts, who will procure a sufficient number of "zoophytes" to effect a commencement; but, we repeat, without patience you cannot prosper. Your tank may be on the plan of those at the Zoological Gardens, oblong, formed of plate-glass and slate, and bound with iron (mine contains about 18 gallons, the cost 4*l.* 10*s.*); you can have smaller vessels, from a finger-glass upwards; but all require patient observation, care, and cleanliness: whatever you put in must be first cleansed—of course, in salt-water.

Very recently, however, improvements have been made in tanks; and such improvements should be made extensively known; for in many ways they greatly augment the "new pleasure;" first, as avoiding all danger to the inmates; and next, as supplying articles of furniture so elegant as to be accessories to the drawing-room. I allude chiefly to the tanks manufactured by Messrs. Lloyd & Summerfield, of Birmingham. By a patented process, these gentlemen have substituted glass for wood and iron, in many cases where, heretofore, wood and iron were indispensable. In several of the large shopwindows of London, the whole is of glass—pillars, supports, and sashes. Thus, in the tank, the plates of glass are brought together by glass pipes, neither wood nor metal being used anywhere. The advantages are so obvious, that hereafter, we imagine, this principle will be adopted universally, as at once more elegant, and more healthful to the inhabitants of tanks, either of fresh or salt-water, but especially the latter.

But Messrs. Lloyd & Summerfield, we believe, designed these articles not so much to serve as tanks as for Fern-houses; although it is apparent that they are quite as well suited for the one as for the other. They are produced in very great varieties: some being larger and more shallow; others being without legs, to stand on tables; others are made to serve as fountains, standing on a graceful glass pillar, through which runs a metal pipe connected with a supply of water. These gentlemen also manufacture a variety of globes, large cups, vases, and basins: so that all the wants and wishes of those who cultivate Aquaria may be hence supplied—taste as well as convenience having been studied.

A fresh water Aquarium is much more easily managed than a salt one, and the active movements of the fish increase its interest; but fish are by no means as varied and curious as the zoophytes. Wherever Nature is, there is interest and beauty, so you can choose one or the other—or you may have both. In addition to your tank you will require a syphon, a syringe (of either glass or zinc), and a long-handled wooden spoon, with a spouge tied on the handle end; you must also have a little glass "test," to regulate the density of the water.* If a town-dweller, we suppose you will obtain the prepared salt from Mr. Lloyd; although Mr. Gosse and Mr. Warington prefer the sea-water, and it continues pure and healthy in their tanks: I have no doubt that when it can be procured pure, and not near the sea-beach—where it is necessarily injured by extraneous matter—it is far better than the artificial water. But whether you use the sea or the *composed* water, you must, first having washed and seasoned your tank for a few days (and all vessels, large or small, require a little salt water to stand in them for a day or two), put in a thin layer of sand, then a layer of shingle, then arrange a few carefully-washed rocky stones according to your own fancy, let them be rugged, because the *Actiniæ* can the better grasp them, and you can place your sea-weed to greater advantage: an arch, which you can easily build or have cut at a stone-mason's is always pretty, and the sea-weeds hang well from the top; then put in your sea-weed, taking care that it is growing, and has its roots fixed to bits of rock or stone; the *Ulvalatissima* (the delicate sea lettuce), and the corallines, are quite enough as a commencement; the "copper beech" of the ocean adds much to the beauty of your marine garden, the only difficulty being in the arrangement of light; it loves deep waters, and will fade beneath the rays of a strong sun. Having arranged your plants, leave them alone for two or three days, and then introduce the hardiest of your *Actiniæ*.

* The syphon is necessary to draw off the water without confusing your arrangements; the syringe to throw in (if used for five minutes once a day), a supply of fresh air; the "spoon" to remove the dead animals; and the *sponge* to clean the glass.

Mr. Warington told us of a worm that conceals itself in the sand, beneath the shingle, and, in gratitude for its shelter devours all impure and dead substances; the prawns do this also, but we would not put prawns into *new* water, nor until the lower organizations of animal life had been fully established in their several localities: the *Bellis* (daisy) hanging from some rough stone; the *Dianthus* wandering imperceptibly along the glass, now looking like a knob of jelly, then extending like a telescope with a number of the most delicately cut fibres at the end—a living white carnation: the *Gemmacea*—so worthy of its name; and every class and color of the *Mesembryanthemums* from the scarlet strawberry to the delicate olive green, are all safe tenants, and may be introduced at the same time. The *Craissicornis* we have not been able to keep alive more than a week—with one exception; a very small one fixed itself upon a fragment of rock, and we placed it near "high-water mark;" there it lived and bloomed seven weeks, at last dropped off and died. A very intelligent correspondent at Falmouth tells us that he takes his *Crassicornes* out of the water every day for a couple of hours, shakes a little gravel over them and returns them to the water, and that "they live months;" he does this "because," he says, "they are in their natural state frequently left exposed by the receding tide." I regret that I have not time to air them, as ladies air their lap-dogs—but the practice has *reason* in it.

It may be that the daisies (*bellis*) will not fix, but "bloat" themselves out and roll about in the water; this is a bad sign, yet they may change their minds, and root well for all that; if, after three or four days, they are not fixed, they will lose their firmness and color, become spongy, and not withdraw their tentacles when touched; then lift them to the surface of the water in your fishing-spoon, and you will soon perceive by the aroma that they are dead. Nothing dead must on any account be suffered to remain in the water, so throw them away, and put in others. Ascertain that your "test" globules floats upright, and when you force it down, if it rises *slowly*, very slowly to the surface, the water is fit; there is always, even when you cover your tank (which I strongly recommend you to do), an evaporation which renders your water too salt; you must prevent this by occasionally pouring in from a teacupful to half a pint of fresh-filtered water, watching the movement of your "test;" you may also introduce the active and beautiful *Anthea cereus*, but I find it wiser to introduce the small not the large specimens. My large *Anthea cereus* all died after two or three weeks, but I have two small ones which are growing; one fixed itself at what may be called "high-water mark" on the glass, the other floats on a leaf of *Ulva*, and never changes its quarters, while its sister moves an inch or so every day, but always near the surface; half-a-dozen periwinkles must be thrown into the water (taking care they do not remain on their backs), they will prevent the accumulation of decayed vegetation, and mow from off the glass the mossy growth which would soon obstruct your view of your favorites, if permitted to accumulate. Avoiding disturbing the bottom of your tank; and note down the number you put in: a certain quantity of water can only afford nourishment to a certain quantity of animal or vegetable life, so I would entreat you not to overstock. You will require some (say for a tank of 18 gallons three or four,) prawns (not shrimps, who must burrow in sand, and do not float about like the beautiful prawns); they are the most gentlemanly scavengers you can imagine. All *Actiniæ* throw off a sort of a cobweb, which in the absence of prawns I frequently sweep off with my sponge or a feather. I can see to a hair's breath if my *Actiniæ* move during the night, or during my absence; they suffer from cold, and I lost several that I had just received from Mr Dunstan, of Falmouth, simply because the water which warms the corridor where the tank stands, grew cold in the night, and the thermometer fell below freezing point; several *dianthus*, *bellis*, and *gemmacea* were flat and dead in the morning. Crabs of all kinds are very active and interesting, but they are so restless and revolutionary in their movements, that I would not recommend them as inmates of an Aquarium; they scratch, and doge, and tear everything; the hermit crabs —in fact, the whole crab family are the same: in mischief they are the very monkeys of the sea. I have still some beautiful madrepores which I brought from Ilfracombe in September; I know nothing more beautiful than the madrepores, when they bloom from out their caves; but do not let the large *Actiniæ* creep too near them; if once their tentacles embrace a madrepore, a prawn, a crab, a periwinkle, the next day they will disgorge the shell, but the substance will have been extracted. Sometimes, if my *Actiniæ* do not bloom freely in deep water, I remove them to the more shallow, and *vice versa*, which a young friends calls "giving them change of air;" though sometimes when I have removed a green, or a grey, or a scarlet *Actinia*, for the purpose of getting a nice bit of color at a particular point, so as to add to the beauty of my tank, the obstinate thing has either slid away or died, as if in sheer perversity. I have, therefore, learned, if they seem healthy and happy in one situation, not to attempt to remove them to another.

I pray it may be understood that my notes upon this " new pleasure" are simply intended for the instruction of tyros, who will be saved much disappointment by going to the A, B, C of the "Aquarium," and then learning, from learned books and experience, what I—myself a learner—could not presume to teach. During the past winter, those "blossoms of the sea" have afforded me a great deal deal of enjoyment. Every bit of weed and rock—every zoophyte—has its little history. I have beguiled some lonely midnight moments by placing my candle, so as to produce different effects of light and shade on my mimic ocean; and those dim links between vegetable and animal life have carried me back, without an effort, to the delicious scenes from whence they came.

How patiently have we watched the receding tide, to enable us to explore the mysteries of some tide-pool, difficult of access but richly repaying our exertions by the abundance and variety of its inhabitants! How have we deplored the loss of a "specimen," and, like all bad workmen, quarrelled with our tools— " the hammer was too heavy," the " chisel too light!"—and, when we made sure of " such a magnificent *Bellis* ," how foolish we have felt when it disappeared from our grasp, sinking into its rocky crevice, scarcely leaving a trace of its retreat! We triumph to this day in a *dianthus*, remembering how nearly our boat was upset beside a group of rocks off Torquay, while endeavoring to obtain the prize. What a delicious day that was! The overpowering heat of the southern sun, tempered by a breeze cool only by contrast, yet still refreshing! The sky, bright as in Italy! The distant splash of oars, as boat after boat passed to and from the delicious bays which indent the Devonshire coast with their mysterious beauty: there, a bold headland, purple and green amid its dark-browned rocks and golden veins, stands sentinel of sea and shore, shading without obscuring the low-roofed cottages, whose trellised roses and verdant lawns, hanging midway on yonder hills, realize an English Arcadia!

We frequently sought amongst the weeds which the lavish waves had heaped upon the strand for *Actiniæ;* and if we moved a stone, it seemed as if the bay produced nothing but crabs, such scrambling multitudes rushed forth and disappeared. We found one or two marvellously large "strawberries" there, one, who still hangs at the corner of our tank, like a pendant of " Love lies bleeding" always in active bloom, seeking what he may devour—a fragment of beef, a bit of chicken, a dead " *bellis*" or a minnow—a most gluttonous creature! and this reminds me that *he* is the only *Actinia* I have ever fed, though Mr. Warington indulges his captives, at long intervals, with little scraps of mutton: and the blue old lobster, at the Zoological Gardens, has his food as regularly as the lions and tigers. But if you feed the zoophytes with palpable food, I doubt the possibility of keeping the water pure, and the water produces sufficient for their existence; though I dare say their growth would be increased by a more liberal supply.

It is quite amusing to observe how the little children, both at Torquay and Ilfracombe, have caught the taste of the times, and come to the sea-side visitor with a bunch of "zoophytes," as they used to do with a young bird or a bouquet of wild flowers. They patter along the shore with their bare feet, turning up the sea-shag, and astonishing the crabs and sand-hoppers; or plash boldly into the pools. One little fellow brought we a worm in great triumph, calling it a sea-serpent; while his sister—brown, though blue-eyed—produced a green *Actinia*, which survived until Christmas: it is pleasant to remember the children toiling up Capstone Hill, attracted as much by the music of the brass band as by the hope of selling " zoophytes."

We need only recal our own hours of wearisome do-nothingness at watering-places, in days lang syne, to properly estimate what this " new pleasure" was to us during our rambles along the coasts of North and South Devon—the lane-walks affording us such specimens of ferns and wild bowers as we never gathered before, and the shore rambles sending us to our lodgings with our living sea-flowers, to be turned into every available glass and basin, with the cheering and inexpensive speculation of how they would look "at home."

It is impossible to admire these beautiful creatures, and the simple labors by which they exist, without thinking of HIM who, insignificant as they appear, works for them and in them. Surely, if HE cares for them—which cannot except by the contentment they exhibit, acknowledge HIS bountry—how much more will HE care for us!

The amiable and enlightened Doctor Landsborough claims a remote antiquity for these wonders of the shore. In one of his charming books,* he says, "the *Sertulariæ* that wave their plumes in the sea in the present day, are not in the least more skilful than those that lived immediately after the Deluge. But they can boast of kindred who were great before the flood —which have for ever passed away—though their existence is proved by their wonderful remains, buried in the rocks in every place of our land, and they can more proudly boast of kindred yet alive in foreign climes—numerous almost as the sand of the sea-shore, which have achieved what human power could never have accomplished, and with unwearied assiduity, and still carrying on works which the united efforts of myriads of millions of mankind would in vain attempt to effect. We speak of the coral-forming zoophytes of foreign seas."

Surely there is both simplicity and dignity in a pursuit which leads us to a more intimate knowledge of these dwellers in the sea, and when I perceive the birth of an *Actinia* and observe the little creature—hardly bigger than a pin's head—working its oars and seeking its own food, I cannot but feel that by " studying the nature and habits of these little denizens of the deep we see the kind hand of GOD, where our forefathers never thought of looking for it, and where we should not, in all probability, have seen it, but for the invention of the microscope. In the very lowest department of Zoology we deal with things that have *life*. Who, of earthly mould, can give life and voluntary motion to the smallest creature ? This is God's doing; and it is not only marvellous, but pleasant to our eyes!

I have thus endeavored to add my mite to a treasury, the wealth of which is open to all, earnestly desiring that many may share with me the enjoyment to be derived from this NEW PLEASURE. The longer we live the more we are impressed with the conviction that there can be no happiness that is not participated: it is a solemn yet a pleasant truth that we become happy by making others happy.

* " Popular History of British Zoophytes." Reeve & Co.

The "season" is now approaching when thousand will quit for a time the "busy hum" of cities for the breezy melody of the sea-shore: under such circumstances it becomes almost a duty to be idle; but surely "idle time" will not be "idly spent" by those whose daily strolls are ministers to a "new pleasure!"

From the Jour. of the Phot. Soc.

MR. LONG'S DRY COLLODION PROCESS.

40 Sloane Square, Oct. 8th, 1857.

To the Editor of the Photographic Journal:

SIR,—In last month's Number of the Society's Journal, page 41, Mr. G. R. Smith in eulogizing the dry collodion process, as published by Messrs. Bland and Long, gives to Mr. Long the merit of its discovery; now if Mr. G. R. Smith will refer to the very ingenious preface to Mr. Long's pamphlet, he will find that Mr. Long does not claim any part of the process.

The metagelatine* made with *citric acid*, by which means neutralization and filtration are avoided, was first suggested and successfully carried into practice by me.

Some time before Mr. Long's pamphlet appeared, I showed him the results of my experiments; he considered them so satisfactory that he asked me for my formula, which I freely gave him and which he has since published, and I feel assured that he will corroborate this statement; moreover, I mentioned the subject at the Ordinary Meeting of the Society on June 4th, 1857, and also on a former occasion.

I wish it clearly to be understood that I do not claim the discovery of preserving sensitive collodion plates with gelatine, as we are indebted for that to Dr. Hill Norris; but in justice to myself and brother amateurs, I do hope that, in future, should any of our little improvements be considered worthy of publication, the *credit* will not be so appropriated by others as to mislead such well-intentioned photographers as Mr. G. R. Smith.

W. ADRIAN DELFERIER.

From the Jour. of the Phot. Soc.

"RAISED" PORTRAITS.

To the Editor of the Photographic Journal:

SIR,—Under the appellation "Photo," in the answers to correspondents in the Journal for September 21, you gave me the following information relative to what I called "raised portraits," that is, the portrait appeared to stand out from the background:—

"Photo. 1.—The collodion side of the glass positive is placed in front, and then a background, &c. painted on the other, plain, side of the glass."

I am sorry to say I do not understand what you mean. I always frame my positives when colored with the collodion side in front, and if there was painted a background on the other, which is the plain side of the glass, it would not have the desired effect I allude to. I use a white sheet for a background, and what I wish is to have the portraits with white background, but still the figure to appear to stand out. I know an amateur at photography who cannot color a photograph, and yet he can bring out his portraits "raised" in a beautiful style.

As I very much desire to know how to bring my portraits out in this style, I shall be extremely obliged to you if you will notice the subject more plainly in next Journal; and if you know any work that alludes to the subject, I shall be glad of the information.

PHOTO.

*** We are unable to give the precise information desired. Can any of our correspondents enlighten us?—(Ed. P. J.)

* Maxwell Lyte's—ED. P. J.

From the Liverpool Photographic Journal.

CHORLTON PHOTOGRAPHIC ASSOCIATION.

The sixth annual meeting of this Society was held in the Chorlton Town Hall, on the 12th instant, Mr. HEPWORTH, V.P., in the chair.

After the usual preliminary proceedings,

Mr. L. E. WHAITE read the following paper

ON COLORING THE BACKGROUNDS OF COLLODION POSITIVES.

In a recent number of the *Liverpool and Manchester Photographic Journal*, there appeared an article on coloring backgrounds of collodion portraits, in which the writer expressed a wish that some additional information would be given by any one conversant with this interesting subject. Having in my practice, as an amateur, adopted a method which, after repeated trials, I have found completely to answer my expectations, I take this opportunity of communicating the information.

What photographer, whether professional or amateur, is there that has not met with a spotty or stained background? and perhaps, on the same plate, has obtained an exceedingly good and faithful portrait, but, in consequence of spots and stains, has destroyed the picture, and then labored again and again to obtain the former happy expression, but alas! in vain It may be that the background is clear, while there is too much of the same tone throughout the picture, and a ghastly look is thereby given to the sitter. Again, every operator is aware of the great difficulty in taking portraits of childen who will not remain quiet, unless held by their parents or nurses; these, being behind the child, would of course be visible in the photograph, and disappear only when the background is put in. Unquestionably, pure photography is at all times to be preferred, yet it frequently happens that circumstances such as those described above, will so deteriorate the impression, that some additional aid is required, otherwise, very many attempts might be requisite to produce a picture which would be satisfactory even in a moderate degree.

The first thing to be done is, to free the surface of the plate from all grease, or any impurities of gum contained in the varnish. This is done by washing it over with a few drops of liquid ox gall, and wiping it dry with a soft handkerchief or *dossil* of lint.

I may say that, without this precaution, the color will shrink from its original place, and leave a sort of halo around the figure.

Having decided on the tint of the background, say for instance a grey, or any other neutral tint, I take a small quantity of black and blue of the ordinary photographic powder colors, and a little of the liquid ox gall, grinding them, or rather mixing them, with a small palette knife on a piece of ground glass, adding a small quantity of moist Chinese white, which gives a body to the color and renders it opaque. I also add a small particle of red to give warmth to the grey.

The color having been well mixed, I then proceed to lay it on the plate with a sable brush, which is done as quickly as possible, taking care not to color over the outline of the figure. After having worked round it, I take a larger brush and fill up the remainder of the background: then I stipple with a swan-quill or large camel-hair brush, which destroys all traces of previous brush-marks which may have been left by the sable brush, and not only gives an even granular texture to the background, but serves also like so many cells for the reception of dry powder colors, which fill up the cavities and attach themselves readily and firmly to the groundwork—in the course of a few minutes the groundwork is dry. I then proceed to lay on the dry powder colors with a small short camel-hair brush, thus gaining a more even surface, and producing with the powder colors all the graduated tones of a beautiful painting. Lastly, the excess of powder colors is to be dusted off; then, with a moist brush, clean over the figure, taking care not to touch the background.

These observations will be more fully understood by a reference to the specimens on the table, and I have only to add, that this process is not difficult; it requires, like the rest of photographic operations, a little care and practice to enable the operator to produce a beautiful picture, varying not only the color, but the respective shades at pleasure, so that a true artistic effect can be given.

A vote of thanks was unanimously given to Mr. Whaite for his very interesting paper.

Mr. Alfred Deane then read a paper

"ON THE PREPARATION AND PROPERTIES OF GUN COTTON."

Of all the photographic processes, none for simplicity, quickness, general application, and artistic effects has equalled the use of collodion, the foundation of which is gun cotton; a preparation that was once anticipated to be the grand agent of destructive warfare, and which is now a great promoter of friendship, peace, and the fine arts, and helps to work such mir acles of quick and accurate drawing, as to be, in its application, a wonder of this wonderful age—second to none.

When first commencing with photography the importance of gun cotton was such, in my estimation, that a month's experiments were not thought too long to devote to the subject. I learned that it can be made from any materials containing woody fibre—whether leaves, grass, wood, rags, potatoes, ropes, &c., but that cotton as presenting the fibre in its purest form and finest state of shreds, was the most eligible material with which nature has furnished us. I have tried animal wool and other substances, but, with the exception of wash leather, without any desirable result.

First, procure the cotton as clean as possible, and then boil it in a strong solution of potash or soda, if somewhat caustic the better, or stir it well in some hot alkaline liquid, so that it may be freed from a natural oil it contains, which causes an unequal action in the after process.

Now procure an ordinary pickling jar of any size, and if the top is flat, or rubbed flat on a stone, so as to allow a piece of ground glass to lie evenly on its surface, to prevent the too easy escape of the fumes, so much the better.

Mix by degrees in a stoppered bottle an equal quantity, by measure, of commercial sulphuric and nitric acid, sold at about ten pence per pound; though not quite pure, it answers as well, and often better, being generally stronger, than the purer and more expensive kinds. When this cools, pour into the jar filled with cotton sufficient of the nitro-sulphuric acid to give it equal dampness to prevent an unequal action in the after process.

The sulphuric acid of commerce can be generally bought strong enough for our purpose, but nitric acid varies so much in strength, and is mostly so weak, that I have found it best to make it from nitrate of potash, by adding by degrees the pounded salt to sulphuric acid. The mixture should be made in a stoppered bottle, and shaken leisurely, so as to prevent it heating too much. No weighing or measuring is required, as it will be right if it is all fluid, at about 200 degrees temperature, or fluid enough to flow out of the bottle at half that heat. It will be quite solid when cool. No action worth considering takes place with the cotton in this strong acid when cool, or even warm; and here comes my grand secret—commence with the materials as cool as possible, then you may so apply heat that you command the progress at pleasure.

Warm the solid sulphate of potash just enough to allow it to flow out of the bottle into the jar of cotton, which, on well stirring with the mixed acids, becomes more fluid. Now place the jar covered with a piece of glass on a hob, sufficiently large to command different degrees of temperature, or place the jar in a pan half full of warm water or sand, over the fire, and in the course of several minutes, just before the heat is at the boiling point, or at the boiling point if no solution is taking place, take it off. Quickly draw it out with a hooked wire or glass into a large pan of water, immediately stirring to prevent solution taking place in the inner part of the clotted cotton, by the weakening of the acids.

With weak acids it is well to allow the heat to be high, though in them the cotton is most liable to dissolve, and once properly commenced the internal heat becomes so great that all the cotton disappears before you have time to draw it out into the water.

The great advantage of using the heat of a fire, is in being able to regulate it, while the fumes go up the chimney. In a glass vessel you can watch the behavior of the cotton, and may consider it satisfactory if none of it dissolves. The redness of the fumes inside the bottle will soon become a good guide to the change the cotton is undergoing.

A little experience will soon indicate to the novice the strength or weakness of his acids, for, if weak, the cotton is disposed to dissolve at a proportionately low temperature, while if strong, the heat may reach safely 212°. Or the stronger the acids, the less heat required, and the greater the heat the cotton will bear the quicker the action.

The beginner, should he suspect the weakness of his sulphuric acid, would do well to stop the action before it advances too far, and hook out a tuft of cotton into some water; and if it is unaltered in strength, it may be considered underdone; if it feels of a much greater specific gravity when washed, and is much more tender, it may be considered right; and if it falls away in the water, in rotten short threads, the cotton may be good, but it is dissolving from being over done. When first learning, I would take a piece of cotton out of the wide-mouthed bottle; roughly wash and quickly dry, first by squeezing in blotting paper, and then open it out and place it near the fire, and treat in the following manner:—Place a tuft, quite dry, on a clean bit of glass or white porcelain; apply a flame, and if it burn slowly with much flame, and little or no explosion, leaving a black tinder, make sure, if the acids are strong enough, that more heat or more time is required. If the tuft slightly flames and suddenly explodes without much noise, leaving behind a little black ash, and especially a little damp, gummy residue, it may be considered satisfactory. If it suddenly and somewhat loudly explodes, leaving behind a dry white powder, it must be considered over-done, not probably because the acids were too strong, for of that there is little fear, but because the heat was too long, or high, or both.

For the most certain test it may be as well to keep at hand one or two ounces of known quality of æther, and alcohol mixed in equal proportions. In this the cotton should readily dissolve, an inferior quality requiring a larger proportion of æther.

Put about a grain of cotton to a dram of the fluid, and if it does not dissolve or only partially, and remains little altered in strength of fibre, it is underdone, but if it appears to be dusty it is overdone. If the cotton is diposed to make the whole fluid into a jelly whilst dissolving, a few drops of ether alone added, may cause it to liqnify perfectly, but still this cotton will not dissolve at the rate of more than three or four grains to the ounce; but, if made at a higher temperature, it would then become perfectly liquid in the test mixture.

A good cotton will, in dissolving, instantly become transparent, appearing for a moment like dissolving gum arabic, and soon becomes perfectly lost in the solvent, at a rate of eight grains to the ounce, and will even bear from four to six grains to the ounce, if three parts alcohol to one of æther is used.

This is the only cotton on which you can expect to get rich and brilliant-toned positives, as it has less of the cotton in its nature; for my notion of the cotton is, that in solution it is merely a neutral medium for the formation of the iodide of silver, and receiving the reduced salt, while the underdone cotton has a tendency to unite with a more unreduced or oxide of silver.

This very soluble cotton may be for color of deposit no better for negatives, but as it is most free from network on drying, will bear the most alcohol, therefore less liable to tear off the glass, and is more porous, and therefore rougher and more sensitive. It must be the rule to get a cotton that will bear the most alcohol. Views or portraits on a rough porous alcoholic collodion, are bolder, softer, and more artistic. Should your cotton only partially dissolve, it shows that you have been too quick in your manipulation, not using the glass rod enough in stirring. I am not prepared to give any clear theory of the chemical change the cotton undergoes, but will certainly deny that there are any definite kinds of gun cotton, for the cotton is capable of all degrees of change, from it being little altered to a more or less soluble cotton, until it goes on to the insoluble explosive gun-cotton, just as you may more or less alter cotton by heat until, from being a little burned, it becomes perfectly carbon.

With respect to the use of linen or paper, I have found no advantage over unrepelling or washed cotton, especially if that cotton is cut with the scissors in short lengths, as paper merely undergoes a process that makes its fibres shorter, and thus presents more open ends to allow the acid to get inside the cotton or fibre, but it has this disadvantage, that the outside of the fibre is more pressed over-lapped, or intertwined, and less exposed to action. The cotton, after being roughly washed in water, requires nothing more than being well squeezed in many changes of warm water, dried and bottled.

In making collodion, I seldom use less than seven grains of cotton to the ounce, and reject, for good reasons, methylated æthers. A good collodion, can be made from two to sixteen grains of cotton to the ounce, and containing from three to eight grains of an iodine salt, while a developer may be used successfully from two to twenty grains of protosulphate of iron, according to circumstances, and the other materials used.

Having tried all kinds of additions to collodion, such as iodide of silver, essential oils, chloroform, &c., I can only say that they are best let alone, with the exception of iodine, which sometimes tends to unite with and throw down invisible impurities in a new collodion, and therefore doing more good than harm, if not used in excess. One-fifth of a bromide is good for the better taking of certain colors.

The opacity of the film after it comes out of the bath, is no certain guide of the strength of the collodion in iodides, for a porous collodion, with the same quantity of an iodine salt, will give a more creamy film than a close textured one, simply because the particles of iodide of silver were formed slower, and, if I may be allowed to say, in a finer state of division, at least so arranged as to appear more transparent. A little water added to a very anhydrous collodion will often make a somewhat transparent film look more opaque, as the collodion has become of a more porous quality.

Again, make an iodide of silver in a strong or weak solution of nitrate of silver, and the result is, a strong solution precipitates snowy flakes, a weak one a fine milky deposit, so that by a weak or strong bath, a porous or impenetrable film, the action is slower or quicker, and will give different opacities with the same quantity of an iodine salt in the collodion, independent of the different thicknesses of the film.

From the Jou. of the Phot. Soc.

SPOTS ON COLLODION CAUSED BY VOLTAIC ELECTRICITY.

50 Blessington Street, Dublin, Sept. 5th, 1857.

To the Editor of the Photographic Journal:

Sir,—Since the publication of my letters in vol. iii. of the Journal, pages 55 and 91, I have endeavored to ascertain the cause of other peculiar marks of a flame-like appearance radiating from the corners of the plates towards the centre. In consequence of having recently been experimenting with dry collodion, in which these marks never occurred, I naturally imagined that the silver corners of the slides might play an important part in the phænomena; accordingly I covered the corners with a fine slip of gutta percha, and found the remedy effectual. What, then, was the nature of the chemical change thus produced? I at once attributed it to a current of voltaic electricity generated in a manner requiring investigation, and accordingly constructed a small galvanic apparatus with a scrap of iron and a piece of silver immersed in dilute acid in a teacup. Having sensitized a stereoscopic plate in the usual way, I placed it horizontally on a stand, and gave it an inclination of 8 or 10 degrees, so as to allow the solution of nitrate to accumulate at the lower edge. Having shielded the ends of the connecting wires with silver foil, I applied them to the lower edge of the plate, one near the one and the other near the other corner, and after the lapse of twenty or thirty seconds, I stopped the action, and exposed and developed the plate, when I found the result to be exactly what I had anticipated. I then prepared another plate, subjected it to the galvanic action, and developed it without exposure, and the result was most interesting. I enclose prints taken from these plates.

The result of my experiment proves that electricity is capable of producing effects similar to those caused by the action of light; and when we consider that the photographic image is produced principally by the violet and extra spectral rays (supposed by some to be magnetic), investigation may be directed into a channel hitherto overlooked.

I may add, that no visible effect was produced until after the developer was applied.

It may be objected that galvanic action could not be produced when only one metal (silver) is to be found in the slide of the camera. In answer to this I would observe, that we have in collodion, iodine, potassium, silver, and nitric acid, either separately or in combination, on the surface of a wet collodion plate,—bodies amply sufficient to cause the production of slight voltaic currents.

W. C. Macartney.

PHOTOGRAPHEES.

Through a variety of causes, over which, it seems to me, I have had no control, I have been rather unfortunate in life. I was expelled from Warton Grammar-school immediately after the great Rebellion (I mean, of course, the barring out there, and not the more generally known affair of sixteen hundred and forty-two), although I protest I was led into it my senior. I was plucked in honors at Cambridge through the maglignancy of the examiners, who, because I did not graduate the Steel-yard, refused to graduate me; partly through a pecuniary embarrassment, partly through a misunderstanding of a mere legal subtlety, I was unable to obtain my attorney's certificate. Then, naturally turning my attention to bill-discounting, was unfortunate there; and, finally, upon the turf—last scene of all, wl.ere in the Unsuccessful plays—my private Tart gave me false intelligence, and I laid the whole of my remaining store against the winning favorite, which I had most conscientiously believed to have been safely poisoned the night before. "When," as the bard has observed, "a man is like me, sans six sous, sans souci; bankrupt in purse, and in character worse, with a shocking bad hat and his credit at zero," what on earth can he now-a-days hope to become save a photographer? This profession, which, requires little capital, but great assurance; no book learning, but considerable knowledge of character, was the very thing to suit me, and I may say that I have succeeded in it: when generations yet unborn shall speak with fervor of the leafy woodlands of Creswick, the breezy moorlands of Landseer, the peaceful kine of Cooper, and a great number of other things of a great number of other people, they will not, perhaps, be altogether silent concerning Jones the photographer; his judicious groupings will not, I venture to affirm, be then forgotten, whether they be his domestic—grandmother in centre with a baby on each arm, Paterfamilias, L. C., mother of the family, R.C., eldest son, left of male parent; eldest daughter, left of female parent; and miscellaneous offspring promiscuously disposed: or his classical—tallest girl in sheet and wreath, with bread-knife and salad-bowl, as Melpomene the Tragic Muse. Second ditto, in ditto, ditto, with backgammon-board under the left arm, as Clio, Muse of history Small fat brother, upon one leg, in act of flying, with wreath and-bow-and-arrow, complete, as God of Love; and Materfamilias in arm-chair with hired peacock, as Juno, Queen of Heaven. Or his romantic—only son with exposed throat, Ready Reckoner for small edition of by Byron upon adjacent pillar, quill pen in the left, with back-ground of wood and water, with water, with turret—in any case, I say, grouping will challenge criticism, and their combined effects set competition at definance. All ameteur artists and many professionals forget that the situations are reversed in the photographic process, and the family ensign is but too often represented with his drawn sword in the wrong hand, and the domestic poet composing from right to left, after the manner of the literati of Japan.

Before a man can become a first-rate photographer I hold it necessary that he should have had some experience as a photographee. I made my living in the latter capacity for the first two years after my little Turf transaction, and laid by enough to purchase the instruments of my present profession as well. I was that hussar whom, you know so well in the stereoscopic pictures, who is making love to the young lady in ball costume in the conservatory; I was perpetually doing it for upwards of a fortnight, and then (as you also remember) I married her with considerable pomp, and that venerable divine who performed the ceremony is the very man whom I now employ superintending my apparatus.

Many and many a time have I formed one of those delicious pic-nic parties, which look to you, my public, so pleasant, and so real, with pasteboard tongue and fowls, artificial smiles, and a painted screen for New Forrest scenery up two pair of stairs in the New Road.

I was the bishop who is baptising the child in presence of that magnificently apparelled company at two shillings an hour, and to provide their own costumes; and I was the groom who is biting the puppy's tail off with an expression of enjoyment (price six shillings and sixpence, and cheap at the price, besides the hire of the puppy) who is marked at the back of the stereoscopic slide—"A Study."

I learnt thereby how persons in every rank of life are to be characteristically composed for pictorial representation, besides qualifying myself, better perhaps than most place-holders, to fill almost any position which the state has to offer. Is it a government office? Here is our newspaper and our official expression with the "I really don't know, sir," pleasantly balancing in it the "I really dont care," tape and pamphlets to any amount in the back-ground, and the government coals seen blazing between our departmental legs as we stand with our back to the fire, with our coat-tails under our arms. Or is it the colonies themselves? Here is the table of the house (dresser, sideboard, or other convenience, as occasion offers), upon which the fingers of our right hand are impressively doubled up; those of our left upon the despatch-box—missionary or other—with slit, the second finger just touching it, and the "I hold in my hand, sir, the refutation" order of countenance after original on view every night at the exhibition just closed at St. Stephens', or is it a mere Queen's counselship?

Here is our handkerchief, and our hand upon our heart, and the "upon my word and honor, gentlemen of the jury, I do believe my unhappy client innocent," written in every lineament of an expressive visage, so that you can almost hear our broken tones.

If, however, as is but too probable, none of these appointments should be conferred upon me, photography is still to me its own reward. There are but few professions which combine, as this does, pleasure and profit, enjoyment and a stroke of business. While I wander amongst the fairest scenes of nature, and, transfer them without robbery to my cabinet, by aid of her clever little handmaid, Art, making for me a sort of illustrated autobiography which reanimates, whenever I set eyes upon any leaf of it, some by-gone scene with its associations, I do not feel much less joyous, because I am, at the same time, earning my bread. When I mirrored, indestructibly, that nook's green coolness by the river's side, or arrested in its dedecay, for years and years, you blood-red ruin crumbling away in the deep stillness of its woods, my admiration, though perhaps weakened, was not annihilated by the reflection that trees were in demand and abbeys rising in the photographic market. I am, by nature, I believe, a man of sentiment, and though my past life has been of a sort to give the main chance a too prominent position, my present certainly tends to mitigate that experience. I have room, I hope, for tenderness and disinterested pity, yet. I felt for that kind lady and her family, yonder, in deepest mourning, whom I took but a month ago.

"I must have two pictures of each of these," she said, pointing to her children, "all that are left to me, so that in case of——"

She saw the poor, wandering artist had a heart, I think, for she made no effort to restrain her tears, and presently told him her sad story. Her son had lately fallen—been butchered—at an Indian station, and all she had of him now was a small portrait—lifelike, real, of a soldierly, fine lad, whom any mother well might have been proud of; and this she must needs part with to his widowed bride, left more forlorn even than she herself. When I assured her that I could give her a copy of this in a few moments, and presently succeeded in producing a most accurate one, I learnt, for the first time, how great a benefactress is this simple art of mine, and how gracious a giver, indeed, is the glorious sun.

Once, when I had been engaged one morning at a country house, taking likenesses of all its in-dwellers, I was ridden after, upon my road home, by one of the young gentlemen, who asked me if I would be so kind as to take him once again; when I said "Yes, certainly"—since I travel in a shut-up fly with yellow blinds (smelling, by-the-bye, very horribly of collodion), and so am always ready for a subject. He produced, from round the corner of the road, his pretty cousin Caroline, and, getting off their horses, they were there and then grouped together very prettily, with his arm turned round her "dainty dainty waist," and his eyes looking at her with an expression with a good deal more of "kind" than "kin" in it. Poor young fellow! He little knows that I have an excellent copy of this which has been much admired, and a very singular contrast it presents to that which I took of him at his uncle's house a few hours before, where he has a manuscript sermon (roll of music) in that left hand instead of Carry's fingers, and is supposed to be preaching his first discourse to his first congregation.

Again, shall I ever forget the young lady of thirty-five or so, who wished to know whether I would mind taking her by moonshine instead of vulgar daylight! Or that whole family of females who, being informed by their little nephew who had pressed under my black curtain, they appeared upside down, refused to be taken at all! Another feminine circle once jumped up from their chairs and insisted upon seeing how they grouped in the camera before they were printed off, and very much surprised they were to find that when they were in my place there was no group to look at.

Gentlemen, I must confess however, have given me quite as much trouble as ladies; their portraits are quite as often pronounced by them to be "unnatural, inexpressive, unlike," as those of the other sex are held to have given them "too old an expression," or to have "very much exaggerated the feet." One Paterfamilias who won't be taken with a lot of babies, "to look like a scene in a pantomime," and the Paterfamilias who will, are both inexorable sitters, and very hard to please. "Why, you have actually made my hair grey!" cried one indignant parent of five-and-fifty; and "You have positively given dearest Edward John no nose at all!" complained another, as querulous about his little two-year-old as any grandmother.

Handsome old gentlemen, with one expression, are my best photographees; then, old ladies; and worst of all, I am obliged to say (save babies) are young ladies. Their features are generally too rounded, and they have rarely any medium between trying to look intellectual and giggling This is my usual monologue with the majority of them: "Not so much up at the sky, Miss Smith; look at me, if you please, and be so good as to part your lips; don't frown; your ankle is too exposed, it will be of a frightful size; thank you: don't purse your mouth up as though you were going to whistle, and oblige me likewise by not laughing, or you'll have such a mouth; now, steady—there you are you see, my dear Miss Smith, squinting abominably; I told you how it would be, if you would wink your eyes."

Spoilt children are perhaps a trifle worse: some of them taking advantage of my absence under the curtain to throw stones at the camera, and others screaming with terror because they consider it to be a deadly weapon provided for their special destruction, which I have sometimes devoutly wished it was. But the most unwilling sitters whom I ever took were a couple of dozen gentlemen who were accepting, for various terms of years, the hospitalities of the governor of a certain north country gaol. More than one of them had recently shown a disposition to leave the place, and not to be burthensome to him any longer; but their host was determined not to hear of such a thing; he was even prepared, in case of their departure, to go the length of fetching them back again, and applied to me to assist him in such a case by enabling his servants to recognise them. The photographees did not like my interference one bit. The machine seemed to remind them exceedingly of a bull's eye lantern, to which they had a very natural repugnance; their positions were far from graceful, their expressions such as had no parallel in all my photographic experience. I never saw folks so disinclined to look the sun in the face before. There was, however, one among them, a mere lad, expiating his first offence in the prison, who had one of the most honest countenances I ever beheld: he was the only one who did not tell me he was innocent, and the only one who appeared to me as being possibly not guilty; he took occasion to entreat of me not to put him amongst a portrait-gallery of felons for the remainder of his days, because, if his mother should come to hear of it, it would surely break her heart—it was almost broken now, he said. I thought of the poor lady in mourning then, and how much worse than to lose a son it must be to have a son in such a plight as this; and, whether there was something wrong about the collodion, or whether I handled this particular photograph rather clumsily, it is very certain that the young lad's face is smudged, and by no means to be recognised.

From the Jour. of the Phot. Soc.

DIRECT POSITIVES ON COLLODION.*

BY F. HARDWICH, ESQ.

"A comparison was next made of photographic properties, the one-and-a-half grain collodion being used in every case.

"1st. *Sensitiveness.*—Here the difference was not very marked, perhaps the twenty-grain solution had a little the advantage; at all events it was plain that nothing had been lost in this respect by diminishing the proportion of nitrate.

"2nd. *Cleaness of Image.*—In every case the image was perfectly clear, in the sense that there was no *fogging* or reduction of metallic silver on the transparent parts, but there was a difference in the appearance of the '*lights*;' when baths A and B were employed, they were always slightly obscured, especially the shirt and forehead of the sitter, by a yellowish deposit of silver, which seemed as if it had been precipitated after the proper development was complete. I conclude that this deposit was derived from the free nitrate of silver on the surface of the film, which being in a more concentrated state in the two former cases, was the more readily acted upon by the developing fluid; however, it may not be that the effect here alluded to will invariably follow when a neutral bath so strong as forty grains to the ounce is used; much depends no doubt upon the nature of the developing agent; indeed the two must be associated together, the strength of one varying inversely with that of the other.

"The conclusions arrived at are these, that with the dilute iodized collodion, nitrate of silver in the proportion of twenty grains to the ounce, gives equal sensibility, and in every respect the same perfection of image, as when used of greater strength; besides this, it has the merit of economy, and superior cleanliness of manipulation; if the proper precautions are observed, such a bath will remain constant in its action for a length of time.

"Before proceeding to the developing fluid, there yet remains to be considered, as originally proposed, the effect of adding nitric acid in graduated quantities to the neutral nitrate bath; my experiments in this direction are, I am sorry to say, as yet incomplete; however, two or three facts of importance are manifest, viz: that it is impossible to lay down any general rule as to what the effect of adding the acid will be unless we take into account all the other circumstances of the case; no doubt there will invariably be a loss of *sensitiveness*, but whether or no advantages will be gained in other respects, seems to depend upon further considerations. When collodion positives are taken by solutions modified as I have proposed, it will be found that the smallest amount of free acid, even such as cannot at once be detected by test paper, will sadly injure the 'half-tones' of the picture.

"On the other hand, many photographers advocate the use of nitric acid, and state that they obtain a better result by means of it.

"In explanation of this seeming discrepancy I would suggest (and the view I entertain are borne out by my experiments as far as they have gone), that the amount of free nitric acid which may be added to the bath with impunity depends mainly upon the *strength* of the solution of nitrate of silver; strength of bath is favorable to reduction, nitric acid is opposed to it, consequently the two, to a certain extent, balance each other. But besides this, I am inclined to think that *something depends upon the thickness of the film of iodide of silver*; perhaps it may be that the particles of iodide being less in number are more easily attacked; but, at all events, it seems necessary to regulate the acid, both in the bath and in the developing fluid, with greater care when weak films are employed than under contrary conditions.

"It is important then, and indeed essential that the dilute nitrate bath should be preserved accurately neutral; this may easily be effected by adding a little carbonate of soda and so setting free carbonate of silver, which can be allowed to remain continually at the bottom of iodide of *ammonium* is used in the collodion, this plan does not succeed, because nitrate of ammonia, which will then be formed in the bath, has the property of dissolving carbonate of silver, and forming with it an alkaline solution; in that case it is better to keep a piece of blue litmus paper always in the solution of nitrate and when the color is perceived to be changed by the small amount of acid liberated by the free iodine in the collodion, to add ammonia graduated to fortieths of a minim until the evil is removed.

"Having now finished what I have to say on the subject of the nitrate bath, it only remains that I should speak of the *Development* of collodion positives in order to complete my paper. The deposits which constitute the light portion of these pictures consist in all cases, excepting where the bichloride of mercury is used, of metallic silver; but it may be useful to class them under two heads, according as they do or do not possess metallic lustre.

"The first is a surface bright and sparkling like frosted silver, very white when produced in perfection, but with occasionally a greyish tinfoil hue.

"The second is dull and without lustre, of a whitish tint, slightly inclined to yellow or grey; there is no appearance of metal about it, the color being like that of a piece of chalk.

"These two varieties require exactly opposite conditions of developing fluid to produce them; from what I can gather from the observations of others, it would seem that the first is obtained by means of a reducing agent checked, as it were, in its action by the presence of a strong acid, consequently the development proceeds slowly and gradually, and the particles of silver are large and crystalline; on the other hand, the second variety results when the action of the developer is sudden and violent, no impediment being offered by the presence of acid, except in minute quantity. The particles of metallic silver are here smaller than before, and being comparatively amorphous, they reflect light in a different manner. The distinction in the two cases, then, if the views here given are correct lies in the amount and strength of the acid used; in the one it is simply sufficient to whiten the picture slightly by preventing the precipitation of oxide; in the other, being increased in quantity it tends to retard the development as well. In conducting these experiments the action of several different developing agents was compared, viz : pyrogallic acid, the same with subsequent whitening by bichloride of mercury, protonitrate of iron, and protosulphate of iron.

* Continued from p. 28 vol xi., no. i.

"1st *Pyrogallic Acid.*—This gives, under certain circumstances, a beautifully white deposit of silver, free from lustre; it should be used in the proportion of three grains to the ounce, with a small quantity of nitric acid; if too much of this substance be added, the deposit is more metallic, but the half tones are not properly brought out, so that the pyrogallic acid is not adapted to produce what I have termed the first variety; so also it does not succeed when the proportion of nitrate of silver in the bath is reduced to twenty grains to the ounce; in that case the development becomes imperfect in parts of the plate, and large patches of a blue or greenish color are seen.

"2nd. *Pyrogallic acid and acetic, with subsequent whitening by bichloride of mercury,*—I was unsuccessful in my attempts to produce good pictures by this plan; the color of the image was not sufficiently white, but had invariably a bluish tint, which was particularly unpleasant: other photographers, I am aware, have produced excellent results with bichloride of mercury, and it may be that the extreme tenuity of the film I employed was one cause of the blueness and transparency. Another objection appeared to be that the details of the picture were slightly injured by the action of the bichloride, and the whole image reduced to a certain extent in intensity; this was more apparent after blackening by means of ammonia, and then again whitening a second time.

"3rd. *Protonitrate of iron.*—This substance is peculiar in producing an image of brilliant metallic lustre, without the addition of any free acid, hence it may at first sight seem to be an exception to the observations that have just been made on this subject; it is remarkable, however, that protonitrate of iron should be so feeble a reducing agent when compared with the corresponding sulphate; probably the reason may be, that in passing into the state of *persalt*, a portion of the oxygen required is furnished by the decomposition of the nitric acid itself, and hence less would be extracted from other sources. In experimenting with protonitrate of iron, I found a difficulty sometimes in bringing out the half-tones of the picture properly; to obviate this, it is advisable to use the solution of the salt in as concentrated a state as it can be procured, and to increase the proportion of nitrate of silver in the bath, if required, from thirty-five to forty grains to the ounce.

"With the dilute nitrate bath of twenty grains to the ounce, protonitrate of iron failed entirely to develop the images, thus affording most conclusive proof of the close relation which the strength of the bath bears to the energy of the development.

"4th. *Protosulphate of iron.*—This salt appears better adapted for the purpose than either of the others when the twenty grain bath is employed. In order to obtain the tint which has been characterized as a dead white with absence of lustre; it must be used of such a strength that the picture comes out almost instantaneously in all its details; it occurred to me at first that the gradation of tone would be injured somewhat by this violent method of proceeding, but neither is there any indication of fogging or over development if the solution be poured off from the plate tolerably quick.

"The proportions I have been in the habit of using are these:

Protosulphate of iron *pure*, gr. 15 to 18 or 20.
Acetic acid (glacial) minims viij.
Distilled water one ounce.

"In the place of the acetic acid, strong sulphuric acid minim half, or nitric acid minim quarter, with fifteen drops of alcohol may be used; the alcohol certainly has the effect, as has been stated, of causing the solution to flow more evenly, but it appeared to me, that if present in two large quantity, the liability to 'specks' and 'dirty marks' was increased.

"If the solution of protasulphate is in too concentrated a state, it will be difficult to pour it on the plate sufficiently quick to cover the whole surface before the action begins; in such a case, after fixing with the cyanide, curved lines will be seen, such as would be produced by a wave of fluid flowing forwards and resting for an instant at a particular spot.

"On the other hand, If the solution is too dilute the image becomes slightly grey and metallic on drying.

"For fixing the picture by removal of the unaltered iodide of silver, cyanide of potassium* appears preferable to the hyposulphite of soda, it may be used of such a strength as will clear the plate gradually in about half a minute or so, and is easily washed away by pouring a stream over the plate for a short time.

"For, 'Backing up,' I employ two varnishes, both of which dry speedily; the solvent is different in the two cases, and that of the black japan does not appear to act upon the transparent layer beneath. A complaint is sometimes made that collodion positives do not show to advantage through the glass, but I have not myself been able to distinguished at all between the two sides, excepting in cases where the picture was slightly over-exposed.

"With regard to the time required for taking a portrait on a tolerably bright day, as giving some indication of what the degree of sensitiveness of the plates might be, I would say that with a Ross' portrait lens of two-and-a-quarter inches, having a diaphragm of an inch and three quarters aperture, an exposure in the camera of two to three seconds is the average; when distant objects are taken with the full aperture of the lens, it is hardly possible to remove and replace the cap sufficiently quick."

From the Jour. of the Phot. Soc.

HINTS ON THE COLLODIO-ALBUMEN PROCESS.

To the Editor of the Photographic Journal:

Sir,—Since the publication of my small work, 'How to take Stereoscopic Pictures,' in which I slightly modified the collodio-albumen process, as given in your Journal, Nos. 45 and 46, I have been successfully following out the plan therein laid down, with only occasional failures; but the tracing of these to their primary cause has involved a large amount of trouble, and for the benefit of your readers I now propose to give my experience on this subject.

On preparing a dozen plates by this process, I sometimes found that whilst the majority would be all that could be desired, one or two would turn of a reddish-brown tint when kept a few days after being excited; and, on being developed, stains and markings would occur which completely spoiled the result; indeed a plate in this condition must be exposed and developed within a few hours after being excited to ensure a passable negative. The cause of such failures was evidently the imperfect washing of the collodion film before pouring on the iodized albumen; for should any free nitrate be left on the plate, a part *may be* decomposed by the iodide in the albumen, but the greater portion evidently unites with the liquid albumen, forming albuminate of silver. This being an easily decomposable body, soon acts so as to cause such a change as to spoil the negative, more especially in the presence of a trace of free nitrate left on the plate after exciting.

In order to free the collodion film from every trace of free nitrate, I coat, excite, and well wash the plate as usual, and then immerse it in a tray or basin containing a solution made by dissolving ten grains of iodide of potassium in ten ounces of distilled water. After allowing it to soak for two minutes, the plate is lifted, only slightly rinsed with water, then stood up to drain for one minute; lastly, coated with iodized albumen in the usual manner.

Since adopting this plan I have found that the sensibility of my plates is slightly increased; that no stains ever occur during development; the resulting negative has been uniformly clear and vigorous, and *no change* has taken place in plates kept sensitive for five weeks.

Instead of using ordinary negative collodion with the addition of tincture of iodine and glycerine, I have succeeded in forming a special iodized collodion for this process, which requires no such addition, and is supplied ready for use by Messrs. Horne and Thornthwaite.

This collodion improves by keeping, yields a perfectly struc-

* Cyanide as *pure* as can be obtained economically.—Ed. L. & M. P. J.

J. B. Heywood. Neg.

H. H. Snelling, Print.

MRS. J. M. MOZART.

tureless film, which adheres so firmly to the plate that blisters never occur, and the plates may be artificially dried, both before and after exciting, and are even improved by being so treated, provided the heat employed does not exceed 170° or 180°.

Those who use eggs for photographic purposes, must have noticed that the viscidity of the albumen sometimes varies to a considerable extent in different eggs, and at different seasons; but this viscidity is sometimes so great, that it is useless to attempt its filtration when prepared in the usual manner. I therefore, for this reason, now prepare my iodized albumen as follows:—

To the whites of three eggs add 15 drops of glacial acetic acid, and having stirred the whole together for two minutes with a glass rod, leave it to rest for about an hour, and then strain through coarse muslin. Next, dissolve 1 scruple of iodide of ammonium in 1 drachm of distilled water, and add it, together with 1 drachm, by measure, or ordinary treacle, to the filtered liquid. Stir well together, and pour it into a clean glass funnel, the neck of which has been slightly plugged with a fragment of sponge, and filter, so as to obtain a perfectly clear fluid free from sediment or floating particles.

Plates excited in a bath solution which has been allowed to become discolored, never develope without stains or fogging, if kept any time after exciting; for this reason, it is advisable to allow kaolin to remain in the bottle containing the solution, and to return into the bottle that portion which remains from use when done with, so that it may be rendered colorless by the kaolin and ready for using again when next wanted.

When the collodion employed has a tendency to blister, the use of cyanide of potassium for fixing frequently raises the film, so that creases are formed in drying: in such cases, a saturated solution of hyposulphite of soda may be used; but when the collodion is of the proper kind, the cyanide is preferable.

The perfect removal of the nitrate of silver solution after exciting is very essential, and is best performed as follows:—

Provide three gutta-percha trays, made as hereafter described, and having filled each with distilled or filtered rainwater, proceed to excite the plate by immersing it in the nitrate of silver bath for one minute, then take it out, drain slightly, and pour distilled water over the back and front, so as to remove as much as possible of the nitrate solution; afterwards lay it, *face downwards*, in the first tray, and give it a rocking motion occasionally. When two minutes have elapsed, remove the plate, pour distilled water over the back and front, and place it in the second tray; allow it to remain there for another two minutes, shaking the tray occasionally, and then place it for the same time in the third tray. Now wash the face again with distilled water, and rear up on filtering-paper to drain and dry, or dry by artificial heat. Of course in doing this the operator will understand that whilst one plate is being washed another may be exciting, so as to save time by dovetailing the operations into one another. The water in the trays will require to be renewed after the immersion of three plates.

In developing collodio-albumen plates, gallic acid will be found preferable to pyrogallic, except where a plate has been under-exposed; and in that case pyrogallic solution, as given in your Journal, produces the best result.

In using pyrogallic acid, the plate must not be laid on the levelling-stand, but the solution kept in motion by being poured on and off repeatedly, and changed, should it become muddy, until the full development takes place.

The washing-trays* above referred to are a nest of three, the smallest of which is a trifle larger than the plate, and about 2 inches deep. A thin strip of gutta-percha is bent and when in use, is placed so as to overhang the two longest sides of each tray near one end, thus forming a bridge on which a sensitive plate may be laid *face downwards* in the tray without the slightest risk of damaging the coated surface.

A vertical bath is preferable to all other shapes for exciting; but as the quantity of solution required is large, the horizontal is mostly used in travelling. In this, sufficient of the recently-filtered bath solution is poured to cover the bottom for about half an inch depth; the bath is then tilted so that all the liquid shall run into the "well," and whilst in this position, a plate is laid, *face upwards*, in the upper portion. The bath is now made to resume its horizontal position, when the liquid flows over and covers every part of the plate. It is allowed to remain thus until the plate is considered to be fully acted on, when the liquid is again made to enter the "well," and the plate, after draining, removed by the use of a silver wire-hook.

William Ackland.

* These trays were first suggested to me by Dr. Mansell, who, in a tour in Brittany last summer, took out with him forty-three prepared collodio-albumen plates, and returned with forty good negatives.

From the Liverpool Photographic Journal.

LONDON PHOTOGRAPHIC SOCIETY.

An ordinary meeting of this Society was held on the 3d of December, Dr. Percy in the chair. After some routine business, Mr. Paul Pretsch read a paper

"ON PROF PETZVAL'S RESEARCHES IN OPTICS."

Mr. Pretsch said, I have the honor to address you concerning some researches in optics of Prof. Petzval, in Vienna, who is known as the originator of the combination of lenses, executed by Voigtlander, Dietzer, and others. The principles of these researches are not contained in any compendious theory. They are the result of careful labor, continued for more than six years, and carried on by several able mathematicians, under the superintendence of Prof. Petzval. The expenses of the work having been paid by His Imperial Highness the Archduke Lewis; the Ministry for Public Instruction and the Imperial Academy of Sciences co-operating. These researches will be published in Prof. Petzval's work, "The Integration of the Linear Differential Equations;" "Die Integration der Linearen Differential Gleichungen."

He begins with investigations for the purpose of finding out the direction of a ray of light, which arrives on a separating surface of two different optic substances supposed to be a surface of rotation. The natural consequence of this is the definition of the path of such a ray through several of such surfaces round the same axis of rotation, and therefore through a certain number of lenses, or mirrors, or mirrors and lenses.

This is a problem partly executed long ago by Euler, De la Cail; and in later times by Gauss, Biot, Schleiermacher, Littrow, Stampfer, Grunert. These researches would in all probability not have been continued, if Daguerre's wonderful invention had not given rise to a demand for a camera obscura more perfect than a mere plaything for the purposes of amusement; requirements in optical instruments having been hitherto limited to telescopes and microscopes, the only instruments used for scientific purposes. But there is now felt the want of a more perfect instrument for the purpose of fixing on a given surface the transient and immaterial image in the camera.

Hence, therefore, arises the want of large and brilliant images as free as possible from distortion, and correct in perspective, and this want has compelled the mathematician to investigate more intimately the properties of the image formed by lenses of different curvatures. It was necessary to abandon the mode usually adopted in these calculations; it was necessary to develope by a suitable mode in series the co-ordinates of the point in which such a ray passes a surface put on any chosen place;—this series was continued far enough, and the terms of the same were analysed; by this mode he arrived at the imperfections existing in the images, classifying the same in a suitable manner, he originated in this way a peculiar pathology of these optical images.

But these enormous labors have not been undertaken only to benefit the photographic camera. It very seldom, perhaps never, happens that an important extension of our theoretical knowledge does not furnish us with a more or less fundamental reform of what we already know, and with the improvement in the practical art which is the base of such a theory. Thus an increase of knowledge in optics leads us also to improvements of the telescope and microscope. But these latter improvements might not be approved of immediately by the scientific world. The astronomer might not think it worth while to receive a telescope whose tube is reduced to half its usual length. Nevertheless the new telescopes will gradually replace the old ones, like the achromatic telescopes have now completely replaced the first unwieldy tubes. The same will ultimately happen to the microscope, and Prof. Petzval is convinced that his new photographic lens applied to the solar microscope will, by degrees, perfectly change the views of those who use such an instrument.

The above-mentioned calculations have been continued till the terms of the seventh order inclusive, and we are therefore enabled by the given theory to construct combinations of lenses and mirrors, whose imperfections only belong to the ninth order of quantity. Thus we have arrived in optics and mathematics at the same point as in astronomy, where Burkhardt has continued the development of the functions (of interruptions) till the terms of the seventh order.

This exact definition of the path of a ray of light through a system of surfaces forms the body of Prof. Petzval's researches, and all the other additions make it more practical and furnish the philosopher with new means of research.

With the first approximation of the optic problem, Prof Petzval was obliged, to his own regret, to represent the four fundamental co-efficients of the first approximation, not in the same compact form like Euler and Gauss, but in two other different forms, viz.: for the higher approximation as a sereis of factors, and for the theory of achromatism as extended algebraic polyno.nes.

This first approximation with its consequence concerning the properties of light, magnifying power, field of view, and size of picture, with the practical applications on the theory of achromatism of the false light, and of the eye-glasses, &c., will form the first part of his work on optics, to be published by the Academy of Sciences.

Although a great deal has been done in the construction of eye-pieces—see, for instance, the interesting work of Biot in the 19th volume of the "Memoirs of the French Academy,"—and although we possess astronomical and terrestrial eye-pieces, and many others, composed of two, three, or four lenses, we are, nevertheless, not furnished for every case. Prof. Petzval gives several instances to prove this view. He considers all the photographic pictures obtained through the eye-pieces of microscopes inferior to the picture received by the human eye itself by looking through the instrument; because the human eye accommodates itself with a certain elasticity to the eye-piece which possess neither a chemical nor optical focus. For the purpose of obtaining good photographic pictures it is necessary not to change the object-glasses of the microscope, but to use another eye-piece with a different focus, giving a flatter picture.

A second instance occurs in obtaining photographs of the moon. He considers it necessary for this purpose, to obtain at first improved refracting watches; secondly, a new eye-piece; because the image obtained in the focus of the object-glass would be too small, and the picture obtained with the eye-pieces now in use, would not show as much as we see through a good telescope.

A third instance is furnished by the *dialytic* telescopes; they are imperfectly achromatic, possess a limited field of view, and represent a star, only sharp in the centre, showing many aberrations on the edges. This could be obviated by having another eye-piece more fit for the purpose, by means of which we could obtain a large field of view and an even sharp picture, like those obtained with perfect achromatic instruments.

As a fourth instance, Prof. Petzval himself possesses a short telescope for searching for comets, five inches aperture, with a magnifying power about twenty times, and having a terrestrial eye-piece, not Galilæis', neither is it the known one with four lenses, it being only composed of two lenses, so as not to lose light.

It follows from these remarks, that eye-pieces may be looked upon as small tools of science, like files, chisels, screws for the mechanic, and each physicist ought to be able to construct and to choose the one most fit for his special purpose.

The second part of Professor Petzval's researches treats of the theory of illumination. Fresnel only has partially treated of this subject, and our practice is such that the mode at present adopted for the illumination of our streets and public buildings, at night, serves more to illuminate our atmosphere than to enable us to see our terrestrial paths. The instruments for illuminating purposes require to be very varied in form to act with economy in all given cases; rays of light possessing every variety of angle from 0 to 180° have to be properly refracted and conducted to their appointed destination.

Several important facts have been discovered by Professor Petzval in the branch of optics relating to mirrors. He finds, for instance, that every curved mirror receiving light from any source divides the same into two parts; the one he calls the optical part, because it is able to give an image of the source of light, and the other the non-optical part, because it is unable to form an image. The second quality is most especially to be used for illuminating purposes.

Professor Petzval has had much experience in the construction of apparatus for the *distribution* of light. About twelve years ago he was led to devise a plan for illuminating apparatus for the production of dissolving views; and he soon discovered that, by the usual mode, one-thirtieth part of the light is really used; but he became able to employ sixty per cent. of the total quantity of light, and he could have rendered seventy-five per cent. effective, if all the small details of his plan had been executed. About the same time he made a plan of an apparatus for the use of river steamers. It was so constructed that the points of equal illumination were situated in the periphery of a long ellipse, the ship forming the centre. It was calculated that all objects in a straight distance of 2000 yards, and sideways of 200 yards, were equally illuminated. Nine years later he was requested to construct an apparatus for illuminating places at a distance of 2800 yards, the longest range of the largest shell mortars. There was required for this purpose a large reflector of four feet aperture, ground with great accuracy, and as light as possible, so as to be easily moved; furthermore, there were required lenses of particular combination and of very large dimensions, and it was necessary to construct a peculiar furnace or oven for melting and cooling these lenses. Nevertheless, it is expected that this important work will be finished by the end of this year.

From his researches, Professor Petzval is led to doubt the well-known tale of Archimedes having set on fire the Roman ships of Marcellus in the harbor of Syracuse. Such a fact could only have been obtained at a short distance, and with an apparatus of immense size, and with perfect steadiness on the part of the ships.

It sounds, perhaps, like a paradox, but it is nevertheless true, that, for seeing objects at great distances, we must try to do with as little light as possible. This is one of the few cases where force can do but little, and prudent economy all.

Professor Petzval considers the theory of *illuminating* sufficiently developed and based on principles, but this is not the case with regard to the art of *producing* light There is a certain relation between heat and light which is not yet sufficiently explained. To prove how much the power of light depends upon heat, Professor Petzval made a fundamental experiment with a lamp which had three concentric wicks. After having well regulated the three flames, placed one in the other, the lights appears thin and transparent, and of a wonderfully white-blue color, each flame being visible through the other one. But, if the flame in the centre is put out, we observe directly that the other two flames lose brightness—that they become poorer in light, less transparent, and longer or higher. If, in the same way, we put out the middle one, keeping only the exterior flame alight, then we observe that this last flame has lost all its lustre; it appears yellow, and not at all transparent. The great heat and supply of oxygen causing less carbon to be separated in the flame, the light is given of a transparent character, but then those particles which are separated are more intensely heated, and thus glow with increased brilliancy: thus the light is brighter, though less solid. Experiments of this class should be continued with gas lights. To illuminate economically a street it would be better to use one large light with twenty-five distributors, instead of using twenty-five lights. It is not at all improbable that the time will come when, in every capital of Europe, and even, perhaps, in smaller towns, there will be erected a building of a dome shape, and an immense height, crowned with a transparent pavilion, containing a gigantic flame, which would send to all the neighborhood a much richer and more equal light than our present system of illuminating by an immense number of small points of light.

It is very probable that Drummond's light and the electric light surpasses the intensity of the sun-light—that is to say, that a square inch of the white-hot chalk surface sends out more light than a square inch of the surface of the sun himself.

The researches of Professor Petzval, of which the above statements furnish but a slight idea, will be published after the second volume of the "Integration of the Linear Differential Equations."

In conclusion, Mr. Pretsch said:—

Having mentioned so many interesting facts, I feel it is almost too much demanded from your patience to wait till this work is published. It will be easily imagined that the practical execution of all these proposed improvements would require an immense deal of labor, time, and capital, and the co-operation of many scientific and practical men. However, I can show you at least a few specimens, executed by an instrument which originated from a part of these investigations and researches I have the honor to place before this Society some photographic pictures taken with the lens and camera obscura, calculated and invented by Prof. Petzval, and executed by Mr. Charles Dietzler, optician in Vienna. These pictures are not very remarkable as photographs; you have seen far better ones, but they show the peculiarity and quality of the instrument.

Here is a picture of the apparatus itself. The camera consists of two parts, or two bellows, a larger one, and a smaller one; on the last is the lens, consisting of six glasses, three of flint and three of crown. The ground glass is twenty inches square, and arranged that it can be moved out of the perpendicular, if required. The camera is movable on a prism, by means of a coarse screw. Having obtained the required length of the camera, the exact focal adjustment is obtained by means of a fine screw near the ground glass. The lens is three inches aperture, and gives sharp pictures of sixteen and more inches. The focal length is twenty-six inches; time of exposure, viz., for a landscape, in good light, three seconds; a group of figures, in the open air, fourteen seconds; in a room forty seconds. These are the particulars given to me, and I do not doubt they are true.

Here is the copy of a map taken by this lens with a stop or diaphragm. You will find it sharp in all its parts, and I think this picture proves the applicability of the instrument for maps in general, as well as for copying drawings, prints, and paintings. Especially I should like to have this instrument tried in copying paintings, because I consider this branch of photography a very important one, and I do not consider this problem at all satisfactorily solved at present. If my expectations of this instrument are proved to be correct, I think the productions of it would give a new impulse to the applications of my method, "Photogalvanography."

There is a view of the "Burgplatz," in Vienna, an oblong square of about 300 feet in length. The colossal monument stands in the centre of it, and the point from which it was taken, is the same distance from the monument as that is from the background. You see by the dial of the clock that the time of exposure has been very short. Every part of the picture is equally sharp, and the lines and perspective correct. I consider that this picture as it is, could not have been taken by *any* other instrument.

Here are two pictures of architecture; they are no doubt very good, but they could have been taken by another lens; if we have light enough, time enough for exposure, and a suitable distance, then almost any instrument will serve for the purpose, perhaps even a little hole in the camera with no lens. But practical photographers know very well that these requirements are very seldom to be had, and there are some cases where a picture can only be obtained during a few weeks of the best season of the year.

The last picture which I have the honor to show you, is inferior as a photograph, because it is taken by the optician himself, representing him amongst his apparatus. But it shows most of the peculiarities of the lens. You know perfectly well that each picture in a camera, especially when formed by a combined portrait lens, exists only in a curve, therefore the corners and edges cannot be as sharp as the centre, and the light is mostly concentrated in the middle, and so the photographer is obliged to place the most important part of the picture in the centre (generally the head of the person to be taken), and his skill and experience teaches him just to catch the picture when the lights are not too much overdone, and when the shadows just begin to appear. These difficulties seems in this picture to be perfectly obviated; the light is distributed over the whole surface, and the picture is equally sharp at the edges and corners as in the centre. I have here two copies, one mounted and another unmounted. I recommend them to your special examination.

And now perhaps you will ask me where this instrument is to be had. I am unable to give you a sufficient answer. I have already written to the manufacturer, with whom I am personally acquainted, for some of these apparatus, but he hesitates to make them public before he has taken steps to secure himself the advaatage of at least the first sale. However, I hope in a short time to receive the terms and particulars under which they can be obtained, and then I shall be very glad to make them known to any person desiring the same.

Before discussing M. Pretsch's paper, it was agreed that the following paper, by Mr. Grubb, M.R.I.A,, should be read:—

"ON SOME OF THE OPTICAL PRINCIPLES INVOLVED IN THE CONSTRUCTION OF PHOTOGRAPHIC LENSES."

Understanding there is a feeling that the optical and physical sections of the art (or science) of photography are not as adequately represented in communications to your Society, or its *Journal*, as are the other sections of the art, I purpose to (at least in some measure) restore the balance by an occasional contribution of a paper coming under the head of the optics of photography.

That the present is not my first essay in the same direction, will be recollected by some of your members; and, having recently glanced over the discussion, as published in you *Journal*, on huge *versus* small view-lenses, it appears desirable for me to make a few final observations on the same previous to entering upon a new subject.

It is now just two-and-a-half years since "C. J. F." (following in Mr. Sutton's wake) informed the Society that he had practically ascertained the fitness of the smaller lens, by getting one made of one-and-a-half inch diameter and fifteen inches focus, which gave very perfect definition up to the edges of a field of nine by seven inches. "C. J. F.," however, has given no information as to the aperture of the stop used in producing such result; and as the indistinctness arising from aberration is as the third power (or cube) of the aperture used, so almost any desirable distinctness of outline can be obtained with the worst lens, provided only that the aperture be sufficiently reduced; for example, I have seen a very fair photograph which had been taken with an ordinary single lens co ting half-a-crown. "C. J. F.," however, appears to have mistaken the question which I, at least, was discussing, viz., the size which a view-lens should be for a given focus and field, in order to afford *the best result*, and which I consider to include the conditions of the utmost distinctness throughout the field, when using a diaphragm or " stop," of the largest possible aperture, which other circumstances admit of.

In respect of the specious argument advanced first by Mr. Sutton, and reiterated by " C. J. F.," viz., that *that* construction which is best suited to the case of a view-lens of the larger aperture is not necessarily the best in the case of the smaller; and, therefore, that the experiment which I originally proposed for ascertaining the least best aperture was not applicable (or conclusive), I would here observe that, if any one competent to the matter will only make a diagram of an ordinary view-lens, and examine the passage of a pencil (central or lateral) as it occurs in practice, through the lens, he will find, that of the four surfaces of the compound, the difference (for either the large or small construction) is *nothing* for the first, second, and third surfaces, and for the fourth surface so little as not materially to affect the general result; and, consequently, I assert that the experiment, as originally proposed by me, is *conclusive*. " C. J. F.'s" assertion that all it (the experiment) proves is, that the outside of the picture is produced by the outside of the lens, is simply absurd.

Lastly, I would observe, that two-and-a-half years having now elapsed (" C. J. F.'s" paper is dated May 5, 1855), and view-lenses being still, with few exceptions, made and used of the larger aperture, we can scarce help coming to the conclusion, independently of my arguments, either that " C J. F.'s" partially to the smaller lens has been misplaced, or that opticians are a sadly incorrigible class, or photographers a very soft one, to purchase and carry lenses of twice the diameter, four times the price, and eight times the weight necessary.

As a postscript (and lest silence should be construed into assent), I desire to state that I have not found the *radius of curvature of a field*, given by a plano-convex lens (plane side next parallel rays) to be equal to focus + radius of convex side, as Mr. Sutton said I would.

The subject which I propose to discuss on the present occasion has been selected more for reason of its importance, than probable interest. If (as I apprehend) error is being disseminated and acted upon by photographers, the sooner that more correct views are arrived at, the better.

It will be necessary, as I proceed, to speak occasionally of "*angular aperture*;" and, to avoid digressions, I would beg here to remind those who pay little, or only occasional attention to such matters, that while "aperture" (of a lens) means, simply its effective or exposed diameter—"*angular aperture*" is the diameter, taken in connexion with its focal length. Thus we may have lenses single or compounded of various sizes, and all of the same angular aperture; and, conversely, we may have several lenses of the one actual aperture or diameter, but of various angular apertures (provided their foci differ). It is important to photographers to have a clear conception of angular aperture, as with it varies the intensity of the chemical, as well as visual images, this intensity being as the square of the angular aperture.

[On account of the length of Mr. Pretsch's and Mr. Grubb's papers, we are compelled to omit a large portion of the latter, and also the discussion which took place upon both of them, till the publication of our next number, when we intend giving a diagram in illustration of the remarks of the latter gentleman.]

Experience has proved that self-taught photographers are the most successful operators we have among us. In every respect they excell. A man who is obliged to seek the assistance of another on every occasion of a failure, and must depend upon that assistance for correction of the evil, can never become a first-rate photographer. Self-reliance is the only sure road to excellence in any study or business.

OUR PHOTOGRAPHIC ILLUSTRATIONS.

I.—GARDEN SCENE,

In Cambridge College Botanical Gardens.

Negative by Messrs. Whipple & Black.

This is a very good view of a part of one of the finest botanical gardens in the United States. It contains a very large collection of rare and useful medical plants, and is principally devoted to the use of the students.

II.—PORTRAIT OF MRS. J. M. MOZART.

Negative by Mr. J. B. Heywood.

This is a very excellent portrait; but we regret to say that the negative was somewhat marred in printing, and that some of the positives are not quite as good as they otherwise would have been.

Both these pictures are printed on our American paper—which prove to be a much better article than Canson's, and only inferior to Saxe in the coarseness of texture. It would be better for life-size painted portraits. We shall, however, hereafter use it in different ways to test it further. The formulas for printing were the same as for January. The March picture will be printed different.

From the Liverpool Photographic Journal.

REMARKS ON PHOTOGRAPHY.

BY C. BURNETT, ESQ.

Mr. Burnett has favored us with the following report for insertion in this *Journal*:—

At the July, 1857, ordinary meeting of the Scottish Photographic Society, W. Walker, Esq., in the chair, some specimens of unburnt photography on glass, parian, and porcelain having been exhibited, the Hon. Secretary mentioned that Mr. Burnett had some communications to make to the Society on the subject of photography on such materials.

Mr. Burnett then remarked that he had been long trying* to stir up our photographers to immortalize their works on porcelain, glass, and allied imperishable materials, and was much pleased to see the interesting specimens then exhibited, but must, at the same time, fairly tell them that,—although by preparing the surface for the reception of an ordinary silver picture and subsequent varnishing, we might, as these specimens exemplified, produce tolerable, or very good, photographs, and find porcelain and allied fabrics—in some respects convenient supports for an ordinary picture (it might be for one with other materials)—to give photographs, on such fabrics, their only real and characteristic value, the photograph must be burnt in. It was only thus that the photograph could be made to partake of the imperishability of the fabric on which it was placed. The great obstacle and cause of failure, or poor success in the attempts at burnt-in photography which had been hiterto made, arose from the change of color which the silver photographs underwent, generally turning yellow in the process of burning—nothing standing more in the way of progress here, as well as elsewhere, than the notion, which photographers in general seemed to be possessed with, that everything must be done by silver. In photography which was to be subjected to the action of the furnace, he must lay it down as a law, and it was only by directing all our efforts in subservience to this law, that we could hope to get results worth having. We must direct our attention exclusively to the color which the substance, or mixture of substances, of which the photograph was composed, would assume after the operation of burning, not to that which it would present before burning. These two colors, it would be found, were by no means necessarily, and were seldom the same—frequently altogether unlike. These changes of color had been long known and carefully studied by the painters, stainers and decorators of pottery and glass, having to be allowed for in all their operations; and

* Both privately and publicly, see report on February paper, in *Photographic Notes* of May 1, page 162.

their recorded experiences as to colors obtainable from various oxides, and their mixtures, as well as their respective fixities in the furnace, and the methods of burning-in, should be carefully studied by photographers.

Next, as to the *practicability* of procuring photographs with more suitable substances than silver, he had been engaged at intervals, during the last two or three years, in an extensive series of experiments with a great variety of chemicals, partly to try whether he could not find some material at once less costly and less subject to change than silver for our ordinary paper photographs; but also, in a great measure, he might almost say principally, with a view to burnt-in photographs on pottery and glass, to the production of photographs containing such substances as would give black, brown, or other generally useful tints, after their passing through the fire. He had already published, in a little fragmentary pamphlet,* the remarks in which as to the desirableness of producing from nature decorations for our pottery, tiles, &c., as well as otner of our remarks about photography on curved surfaces, &c., were intended to apply equally to true photography on porcelain, the means by which black, one-colored, or many-colored impressions from photographically-prepared stones or plates might be produced on porcelain or glass, and the principle, as far as the study of change of color, was the same as he now described and insisted on. As to the mode of application of the photograph to the surface, in the case of the true photography with which they were now concerned, he named, amongst other varieties, the burning-in a print made with suitable materials, as preparations of chrome, iron, copper, gold, uranium, &c., or their combinations, or suitable preparations of them applied to a film of collodion, albumen, gelatine, dextrine, silica, alumina, or other suitable substance, or mixture of substances, with which the porcelain or other fire-proof material has been coated. The organic matter would turn away in the furnace, and the fixed oxides, or other substances or compounds contained in the photograph, would sink down and amalgamate with the substance or the outer coating of the vitreous or ceramic material. Photographs on paper and other materials (and films of albumen and collodion, &c, with the photographic impression on them), might also be, he would suggest, after they were printed, attached to porcelain, &c., by an organic or inorganic cement, and all organic matter burnt away in the furnace as before. In this case, and we might also apply it to the film in the former case, he then would recommend for trial the application for some inorganic flux or vitrifiable substance, as borax, boracic acid, borate, silicate, or other substance, or mixture of substances, to the paper or other film, either after its cementation to the porcelain or glass, or before its cementation, or this application might be made to act also as the cement. Such an application might promote the amalgamation of the oxide contained in the photograph with the fire-proofs materials on which it is placed, as well as promote the fusion of the paper ash, and might, in the cases of pottery or other tablet, serve as its glaze, or might assist the vitrification of the surface. Nitrates, or chlorates, either alkaline, metallic, or earthy, and many other substances might be useful.

As to the photographic chemicals which might be available for this photography, iron, copper, chrome, uranium, cobalt, gold, tin, manganese, nickel, bishmuth, antimony, lead, titanium, tungsten, molybdenum, and probably other metals were likely to be more or less available, many of them much more usefully so than silver, which, instead of being exclusively looked to, must be looked to as only an occasional variety for certain colors, or along with other metals.

As to the means of their obtaing photographs with the desirable metals or their oxides, they might be many. His experiments pointed out that chromic acid, and the chromates applied in various ways, would enable us to fix photographically, or obtain photographs containing a considerable variety of metals likely to be useful. The ferrocyanides and ferridcyanides, and other allied salts, also came into play here, along with chromates, as also separately in other ways (*e. g.* by themselves or with uranium or other metals). Copper, iron, and chrome, separately, or in combination, any two or all three of them, from their inexpensiveness and their fixity in the fire, were particularly deserving attention. Copper and iron oxides, in combination, were already in use by porcelain printers, and furnished, after burning a good dark color, such as would be suitable for landscapes, portraits, &c., &c. These dark colors and blacks obtained from the burning-in of photographs containing the already-mentioned oxides, or such other mixture of oxides (as cobalt and iron, cobalt and copper, cobalt, iron and copper, cobalt and iron or copper and manganese, &c.) as were in use in glass or porcelain staining, as might be found to answer, or blacks of uranium, were of course, the great desiderata, but at the same time it was well to know that we had, at our command, a variety of other and bright colors, as from cobalt, chrome, silver, lead, antimony, uranic oxide, &c., which might be brought into play for the colored decoration of pottery, glass, or allied materials with true photographs,† either simple photographs or kaleidoscopically combined. For compound colors and neutral tints, we might be considered as well prepared, as there was no difficulty in fixing any reasonable number of oxides at once in one photograph, through the instrumentality of the chromates, with or without the assistance of other metallic salts, and ferrocyanides or ferridcyanides, and other metal-cyanic salts.

Various circumstances, as well as his time, having been much taken up with a variety of experiments in other directions as well as that of photography, had interfered to prevent his having here any burnt in specimens on porcelain or glass to show them, but he would show them a few practical results on paper, the results of his experiments with some of the metals which he had recommended, and he had no hesitation in saying that, by calling attention to the cause of previous want of success, and by pointing out the direction in which we must look for a remedy ; and the practicability, which he came prepared to prove to them, of producing photographs containing the suitable substances, he had removed at once the great difficulty which had been allowed hitherto to stand so formidable in the way, and placed it at once in the power of any person of ordinary intelligence and capability,‡ having the proper ma-

* Photography in Colors; a Fragment. Published by Edmonston and Douglas. Edinburgh; Hamilton, Adams and Co., London. June, 1827; and republished in *Notes* for August. Is it not rather amusing to find Mr. Thomas Sutton, after publishing in his *reprint* of my pamplet months ago, in his *Notes* this plan of mine for burning into porcelain impressions or prints from photographically-prepared stones or plates, now trying to bring out the very same thing as a novelty of his own. This very remarkable *re*-suggestion was first made in *Notes* of 1st October, page 365—"It has occurred to us that photographs might easily be printed on paper, in colored inks, from photogalvanographic or photo-lithographic plates, and sent to the potteries to be burned into crockery of all sorts." On the receipt of the *Notes* containing this, I wrote Mr. Sutton, quietly calling his attention to the fact that he was bringing out as his own what he had already published as mine, and calling attention to Mr. Poitevin's new form of photo-lithography, as especially suited for the carrying out of this plan. Well, what sort of acknowledgment does Mr. Sutton make of this? what step does he adopt to clear himself from any possible suspicion of the intention to appropriate the property of another. In the last number of the *Notes* (Nov. 15), adding to it this new hint, he again brings the plan before the public, *still as his own!* Mr. Sutton writes me that my papers are " very suggestive,"—so are the pockets of one class of her Majesty's subject to the fingers of another.

† For all decorative purposes (kaleidoscopic and non-kaleidoscopic), photographic and other, we would direct particular attention to the Diatomoceæ, Foraminifera, and other microscopic forms.

‡ E. *g.* Mr. Forrest, who, at the last meeting of the Liverpool Society, not only brought out, as something entirely new and out of his own head, my already published plan (see *Journal* for August) for getting rid of the obstacle which had hitherto obstructed all progress towards anything like a good burnt in photography on porcelain, enamel, glass, and similar fabrics by substituting other materials, on the principle of attention to their burnt colors for silver, but actually brought out, on the same occasion, describing it step by step as his own, my copper-printing process (cuprotype), as published, both in the same August *Journal* and in the *Photographic Notes*, particularly in one number, in a letter of mine, in connection with the contents of which Mr. Forrest had actually written to me for information! and had a reply from me giving it. I am of opinion that the public is often most unreasonable bored about questions of priority and originality in mere trifles; but, where a man has freely made a gift to the public of an invention by which he might had he chosen to make a patent monopoly of it, have coined thousands of pounds, he has some little right to ask that the acknowledgment due to him should not be given to another. I need hardly put the question, is it at all likely that a practical dealer and manufacturer, such as Mr. Forrest, would have

terials and appliances at command, to produce a really good dark colored burnt-in photograph on percelain, glass, and allied materials.

These remarks, giving the only means of attaining a really useful or valuable true burnt-in photography on porcelain, glass, tiles, enamelled surfaces of metal, stone, brick, &c., had been excluded from the little fragmentary pamphlet before alluded to from want of space in its single sheet; but he had much pleasure in now communicating them freely to the public, and to put any attempts at monopoly out of the question;—lest any one should think of taking out a patent for for them, he would now place in the hands of the Honorary Secretary the notes from which he had read. After shewing some specimens of ink phographs, with remarks, and some green photographs of leaves, (the coloring matter being Prussian blue, along with yellow nitro-prusside of iron,) the latter interesting to contrast with with the brown autumnal-looking specimens he would next show them, and remarking that all these processes, as well as the cyanotype prints, &c., might be applicable to burnt-in photography, from the iron they contained. Mr. Burnett then proceeded to show a variety of specimens illustrative of photography, with materials suitable forning-in and to give explanations and answer questions as to the processes by which they were obtained or might be obtained. The red-brown autumnal-looking photographs consisted of ferrocyanide of copper. They are obtained by—1st, preparing paper with a mixture of bichromate of potash and sulphate of copper; 2nd, exposing in pressure frame under negative; 3rd, washing it to get rid of unacted-on chemicals, (a little citric acid being added to the water); 4th, developing it more fully by a bath of ferrocyanide of potassium; and, 6th, washing again, and drying. There were other ways of obtaining the same result, some of which no doubt would be preferable, as by substituting an alkaline bichromate less soluble, and giving rise to less soluble products as well as less stable, we both quicken the printing and prevent crystallization, which was sometimes apt to be troublesome. With the latter view also nitrate of copper might be substituted for sulphate. He expected also to find the substitution of a pure bichromate of copper for the mixture of salts an improvement. It was only as applicable to burnt-in photography that he then brought these prints before them. Their red color would interfere with their being generally valuble for our ordinary printing, but there was a method of toning them (by iron) by which he expected to get rid of the red tone and to produce photographs suitable for all purposes. He hoped by such toning to bring copper printing into general use as a formidable rival to silver, and the toniug would probably also add to the value of the photograph for burning-in by adding more metal to it. He answered enquiries as to the probable permanence of such photographs in the unburnt state, &c. The very distinct and dense olive-brown photograph was obtained on paper prepared with bichromate of potash and sulphate of manganese. Some other photographs shown, contained mixtures of copper or cobalt, with manganese and chrome, &c., mixtures of several metals being obtainable either by mixture in the paper preparation or by their after addition. Among the cobalt photographs shewn, the very dark brown ones, which might deserve consideration for unburnt photography as well as for burning-in, had been prepared by toning chromate of cobalt prints with sulphuretted hydrogen and sulphohydride of ammonium. The uranium and iron photographs were their old friends of last Exhibition, and which he had explained in his yaper of February, when he had alsa called attention to them and others in connexion with burning-in. In his allusion to burning-in in that paper, as printed in the *Photographic Notes*, the word silver was somehow substituted for copper. The gold photographs were developments of iron-prepared paper (Sir J. Herschel's chrysotype), and of uranic papers, and highly gold-toned ordinary silver prints. The most desirable gold-print would be one containing it in union with tin, and he hoped to succeed, but had not yet, in getting any good photograph of this description.* Hunt's silver chromotype should be tried with or without addition for color-printing. As to his own chromic printing processes, the specimens shewn were all on paper, but his experiments pointed out that they were likely to be equally available on animal and vegetable films, as albumen, gelatine, dextrine, &c., so as to be applicable in this way for burning into porcelain, glass, and allied fabrics. There would be no use in then entering into any further particulars of his chromate processes. For further information he referred them to the accounts which would be published.† His intention was to commuuicate the whole freely to the public, so that any one might be able to give them a trial, either as far as any of them were adapted for positive printing on paper, &c. (porcelain and glass being here also, though much less importantly, included), or for the system of burning-in on porcelain, glass, tiles, enamel, metal, stone, slate, &c., as regulated by the burnt colors in connection with which they had been then brought forward, and which he had no doubt would give results of the very highest value in a vast variety of ways.

From the Liverpool Photographic Journal.

THE "PENCIL OF NATURE" PROCESS OF MR. FOX TALBOT.

Mr. Talbot's work, "The Pencil of Nature," published in 1844, by Longman and Co., will always be of historical interest to photographers, since it was the first work of any magnitude that was illustrated by actual photographs. We propose to give an outline of the method by which its illustrations were prepared. The negatives, obtained by the calotype or Talbotype process, having been selected, some being waxed and others unwaxed, were copied upon chloride-of silver paper in the following manner:—Hollingworth's "Whatman's Turkey Mill" paper was taken, by preference, and dipped into salt and water, and left there for about two minutes; the salt being in the proportion of from one to two ounces to a gallon of water, varying with the quality or properties of the sample of paper used; and this variation was carefully attended to. The paper thus prepared was called salted paper. The excess of solution of salt was removed by laying the wet sheet upon a square of glass or a clean deal board, and dabbing its surface with a smooth cloth folded up into a sort of pad. As soon as one surface was freed from the solution the other side was turned up and treated in the same way. The sheets were then dried by leaving them spread out on clean paper in a warm room. It was subsequently found that pressure in an ordinary press, after immersion in the salt and water, was sufficient to remove the excess of liquid; the paper being afterwards dried in any convenient manner. To render this paper sensitive, a solution was prepared called *ammonio-nitrate of silver*, a preparation long known in pharmacy, but, we believe, first applied in photography by Dr. Alfred Taylor, the well known toxicologist. This was at first made by adding gradually caustic ammonia to a solution of nitrate of silver until the precipitate of oxide of silver which was at first thrown down was re-dissolved. Such a solution, spread upon salted paper and left to dry, gave a more sensitive surface than could be readily obtained by the

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been willing to forego such an opportunity of making a fortune, or would have made a free gift to the public, had it been in his gift or refusal of a secret of such value? Mr, Forrest would have shared with his brother munufacturers the profits of the opening up a new branch of art, and he might have been content with this. At the Liverpool meeting, and elsewhere, Mr. Forrest has recorded nothing, as far as I can see, but substantial failures, from the employment of silver, till after the date of my suggestions for the substitution of other metals, on the principle of attention to their burnt colors. Has Mr. Forrest shewn that, up to the date of my suggestion, he had done anything more than hammer away, painfully and helplessly, as others had done before him, at the useless silver, or that *since* he has done anything more than carry my plan into practice, with the advantage of the furnace, the want of which "he so much regrets must prevent his brother Protos from carrying on any such experiments? The only thing like original idea which I have found in his papar, and for that he conscientiously acknowledges himself obliged to the suggestions of a friend, is the having found out that milk produces a film better adapted for carrying out such processes than starch.

* We would suggest the burning-in of a gold photograph on a surface of porcelain or glass already containing the oxide of tin, which, by itself, is white.

† See *Journal* of the Photographic Society for August, page 21, and *Photographic Notes* of Sep. 1 and 15, &c.

use of salt and nitrate of silver only; but it was soon found that some uncertainty attended the use of this preparation, the pictures frequently turning out to be "smoky" in appearance, and of a cold, slate-colored hue. To remedy these defects, Mr. Talbot advised the use of nitric acid, an agent which has lately been recommended by Mr. Hardwich, doubtless without knowing that Mr. Talbot had long ago relied upon it to improve the ordinary ammonio-nitrate solution. One formula was this:—Take of solution of nitrate of silver, of sixty grains to the ounce, any convenient quantity; add to this, solution of ammonia, until the mixture became almost free from the precipitated oxide of silver, the brown color of which served as a test of its presence. Then render the mixture as clear as possible by the addition of diluted nitric acid. No exact proportions could be relied upon. If the resulting prints were too red, a portion of the acid was neutralized, or the salt varied. If the color obtained was too cold, more acid was added, and sometimes the nitrate of silver had to be increased to obtain, with certain samples of paper, a good rich velvety "mulberry tint." The action of the nitric acid seemed to be an obscure one. It did not act merely by forming nitrate of ammonia in which oxide of silver is soluble, for a solution of oxide of silver in neutral nitrate of ammonia did not give the same result. And we do not know that it can be said that the process was fully under control; much depended on the sample of paper used. A paper called Nash's paper required no salting, and lately we have seen that Towgood's paper gives a peculiar tone to prints made with the ammonio-nitrate preparation. This subject still needs investigation. The solution was applied by a brush and left to dry spontaneously, using only at last slight warmth to insure the absence of all moisture. The paper so prepared was generally used the same day, or, if kept, submitted to pressure and partial exclusion from the air by means of a copying frame or press. The prints were chiefly made in sunshine, and printed only a little stronger than the depth required in the finished print. Those over-printed were left longest in *fresh* hyposulphite of soda, or lowered by *immersion in iodide of potassium* and *subsequent exposure to light.* Some fine results were obtained in this latter way. Of course, hyposulphite was used to remove the iodide of silver from the paper. The fixing liquid for these was used hot, and contained one part of hyposulphite of soda to about ten of water. This overdoing and lowering gave a new contrast to the lights and shades. The prints, when removed from the copying frame, were washed in *warm water* to remove the excess of nitrate and some superficial deposit. The fixing took place in a FRESH solution of hyposulphite of soda, consisting of about one part of a saturated solution of the salt in ten parts of water; this quantity served for about twenty-five prints of seven inches by nine inches: it was then put aside or thrown away. The prints remained about ten minutes in the fixing bath, after which they were washed in only three or four changes of water. The absence of the well-known sweet taste of hyposulphite of silver being taken, *with the consent of high scientific authority*, as indicating a *practical* removal of the fixing liquid. About two or three gallons of water were taken for each batch of twenty-five prints, and the washing pans were arranged in series, so that the prints passed from pan to pan; being finally placed in thick blotting-paper to remove the excess of moisture. The drying took place nearly spontaneously, upon paper placed on shelves in a cupboard in a warm room. Latterly the prints were toned by heat near a fire, or by using a hot iron applied to the paper. Although it was observed that heat alone appeared to modify the color of the fixed print, it was found that a trace of the fixing liquid was required to give a purple or deep tinge to the finished picture. *Pictures repeatedly washed would not take a deep tone by the action of heat;* and, what is important to observe, pictures so toned have remained good from that time, 1844, till now. We at present believe that they must have contained a trace of the fixing liquid. Experiments, *requiring time*, are in progress, with a view of ascertaining how long hyposulphite of soda can remain exposed to the air without oxidation and consequent *destruction.*

From the Jour. of the Phot. Soc.

FILTERING GELATINOUS LIQUIDS.

Marsten Rectory, Rugby, Nov. 10, 1857.

To the Editor of the Photographic Journal.

DEAR SIR,—The filtration of a strong solution of gelatine, sometimes required for photographic purposes, is a very difficult matter, from the necessity of the operation being performed whilst the solution continues at a high temperature. An ounce of "Swinburne's Patent Isinglass," dissolved in about a pint of water, begins to thicken, sufficiently to interupt the progress of filtration, at a temperature a little below 180° Fahr. The following is the method which I have adopted, as the most simple, for the removal of this difficulty, in cases where the quantity required is limited to 10 or 12 ounces:—

A cylindrical vessel, of common block tin, is made of sufficient capacity to hold 5 or 6 ounces of water, and to admit of a vessel being suspended above the surface of this in the interior: the height altogether must be sufficient for admitting the funnel. The water is brought to the boiling-point, and the steam, which fills the interior of the vessel, and of course, surrounds the gelatinous solution, keeps it in a state perfectly mangeable liquidity as long as is reguired.

I always use a piece of sponge, or tuft of cotton lightly pressed into the neck of the funnel. WILLIAM LAW.

From the Jour. of the Phot. Soc.

ACCOUNT OF A NEW PHOTOGRAPHIC PROCESS BY M. DUPUIS,

Officer of Health to the French Army of Occupation at Rome.

BY SIR DAVID BREWSTER.

[Read before the Photographic Society of Scotland, Nov. 5, 1857.]

When I was in Rome last winter I became acquainted with M. M. Dupuis, a celebrated amateur photographer, who had produced the finest binocular pictures of the public buildings in that city. He mentioned to me that he had discovered and used with success a new process of dry collodion, which possessed all the advantages of that of Taupenot, without its inconveniences. This process was first published in some of the French Journals in 1855, and afterwards, in an improved form, in 1856, both in *Cosmos* and *La Lumiere.*

The following process, which he sent to me, is considerably different from those previously published:—

The collodion is formed of—

Ether, spec. gr. 60	80 cubic centilitres.
Alcohol, " 36	40 " "
Gun-cotton	1 gramme.
Iodide of zinc	1 "

Iodide of ammonium is more rapid, but not give so good blacks.

The sensitizing bath is formed of—

Fused nitrate of silver	10 grammes.
Distilled water	150 "
Acetic acid (commercial)	15 "

Wash afterwards in distilled water, and coat with a solution of dextrine, of the consistency of 3° of the syrup-measurer of chemists.

Developing solution:—

Pyrogallic acid	1 gramme.
Distilled water	300 "
Citric acid (crystallized)	1 "

The picture can be strengthened by adding some drops of nitrate of silver. Half the above quantity of citric acid might be enough, and would allow the exposure to be shorter.

The mode of developing the picture is the same as that which is published in *Cosmos*, 28th November, 1856; or in *La Lumiere*, of the 8th of November.

In order to test the value of the process, M. Dupuis prepared six plates: one exposed and developed in Rome; two prepared and exposed in Rome; and three prepared in Rome, but not exposed. These plates were prepared on the 6th of May, and the box which contained them was not opened till I arrived in London on the 27th of June, having been preserved from the inspection of the Custom-house officers through the kindness of Lord Normanby, who had the box placed in a Foreign-office bag as despatches of which I was the bearer.

On my arrival in London, I had two of the plates which had been exposed in Rome, developed by Mr. Davis, the photographer to the Stereoscopic Company; and one, both exposed and developed in London. An accident, however happened to this plate, and to another of the same kind, so that there is now only one remaining of the prepared plates. (The negatives were exhibited and much admired.)

The following is M. Depuis' memorandum respecting the time during which the plates should be exposed.

The two plates that are marked have been exposed; that on which will be found the picture of Trajan's Forum, was exposed two and a half minutes in bright sunshine at noon. The Panoramic View was exposed five minutes, without sunshine, at 5 P.M. The three other plates have not been exposed. When they are exposed, it will be necessary to regulate the time of exposure according to the following direction:—exposure in sunshine from two and a-half to three minutes with a small single lens, of $\frac{1}{6}$th plate size; diaphragm 8 millimetres, focus 15 centimetres.

From the Liverpool Photographic Journal

MANCHESTER PHOTOGRAPHIC SOCIETY.

The monthly meeting of this Society was held on the 2nd instant, at the house of the Literary and Philosophical Society, 36 George street, the Rev. W. J. Read presiding.

The Secretary (Mr. S. Cottam) stated that Mr. Mann had presented three photographic pictures to the Society's portfolio, (very beautiful prints from negatives by the oxymel process); and that Mr. Joseph Sidebotham had sent two colored photographs, which he had done, to try the effect in using them for the magic lantern. In his letter accompanying the photographs, Mr. Sidebotham stated:—"I think, with care, and avoiding too much color, some beautiful effects may be got in this way; the photographs should be lightly printed and not developed too deeply, otherwise the foliage, which is the great beauty of many pictures, would be lost. The colors I have used are the ordinary colors prepared for oil painting, selecting only the transparent ones. Crimson and yellow lake, gold ochre, burnt sienna, brown pink, Prussian blue, and ivory black will be found to be sufficient. The plan is to put a little of the colors from the tubes on a piece of blotting-paper, which soon absorbs the oil; then work them with a medium composed of turpentine six parts, and Canada balsam one part, using camel's hair pencils; and for the sky, on any part where shading is required, nothing appears to answer better than the end of the finger."

A conversation took place respecting the recently announced experiments of Niepce St. Victor, referring to which subject Mr. Mabley stated that having occasion to cover some sensitive paper, it became impressed with the photogenic image of a label on a portfolio which he placed upon it.

Professor Roscoe said that the subject was one which had been long under consideration, and was related to the theory of latent light, as it had been investigated by Möser; it might be enquired whether to other causes than light the effect may be referred.

Mr. Wardley said that gummed labels placed upon prepared plates, had had the effect of preventing development on the side opposite to that on which they were placed.

Mr. Pyne stated that some plates prepared under the superintendence of Dr. Hill Norris, had given good results, say in three minutes, with a quarter-inch aperture, six inches focus.

Some remarks ensued respecting the use of rock crystal for lenses, when the Chairman enquired if any one had perceived the effect of stereoscopic pictures taken with lenses less apart than the usual two and a-half inches, which produced an enlarging instead of a solidifying result.

Mr. Nield thought it might be caused by the size of aperture used, large lenses at the usual distance not producing the same effect as smaller ones.

The next meeting will be held on January 6th, when Mr. Mann, who is a very successful operator, will give the Society the benefit of the details of the oxymel process as he practises it. Mr. Neild promised to show some pictures with the oxycalcium light at a future meeting.

ART IN BALTIMORE.

Dear Snelling,—There has been since last I wrote you, little or nothing done in the artistic world. I have visited nearly all of the galleries within the past week, and I find the proprietors and operators all on their oars. J. H. Whitehurst has a beautiful gallery, splendid tapestry, carpets, curtains of the richest damask; instruments of the best possible kind, operating-rooms fitted up with great neatness, and yet he does not begin to pay rent clear of stock. Dr. Bushnell is the operator; a clever gentleman and does his best to please: but Mr. W. has almost lost his ambition, his spacious walls look blank, but fine specimens. All looks deserted. What is the reason ? Some will ask, why has Mr. W. lost his popularity? The question may easily be answered—by not strictly attending to his business. Mr. W. had at one time more real genuine taste and energy, than all the daguerreotype men in the whole country. But "alas poor Yoric;" his ambition is gone, his popularity died out, and he is left solitary and alone, with no one to mourn over his loss or follies. But Mr. W. is young, and he may spur up and yet be able to come out winner in the race. I hope he may.

Mr. J. W. Perkins has retired from the artistic world, as I have been told, and took a partner for life who was blessed with plenty of money.

Mr. Tuttle occupies Mr. Perkins' old gallery. Mr. T. is not only a good operator, but a gentleman of the first water. By his manly bearing, he has won for himself a host of friends.

Mr. B. F. Hawks late of Whitehurst's old gallery, has the old stand of Mr. W. fitted up in good style. He takes photographs and ambrotypes—some of the specimens I was shown were very good. I have not learned his operators name. Mr. Dan. Bendam was formerly engaged by him.

Mr. Pollock, I learn, does a very good business. He is probably the most particular man in the business in Baltimore, and if you step on his toes he'll tell you very quick, maybe. He and Mr. Whitehurst have long been rivals, and now their glory seems to have departed. Mr. Pollock and Mr. W. both have Woodward's *Solar Camera*, but don't make much use of it.

Mr. P. L. Perkins.—Of this gentleman I could say much, for he is a prime good fellow. Mr. P. takes good ambrotypes and fine photographs. Mr. Shaw is the operator. Mr. P. takes a great many life-size photographs and has them painted. They fail in comparison to their other work. Ambrotypists think that an oil painting must necessarily be as smooth as glass, and they endeavor to get it done so. But the idea will soon explode, for any picture, no difference how rough, can be made as smooth as glass; so the roughness is no fault, so the picture is well colored and well drawn. The best painting I ever saw, was the roughest. The colors were literally put into the canvas in some places, with a palette knife. In time, the painting will soften itself, and if painted properly will improve much. There is not a great deal of taste displayed in the arrangement of pictures in Mr. P.'s rooms—I would specially call his attention to the fact.

Mr. Israel, who is a great rival of Mr. P. L. Perkins, has his gallery but a few doors below: he displays more taste than any operator in Baltimore, and makes the best show. Mr. I. is a plain blunt man, and often offends when he does not intend to: his manners are not in the least prepossessing. But those who know him love him much; I have watched his course closely and long; and I believe he intends to do the right thing. But there is such a spirit of rivalry here, that when a man says anything, 'tis misconstrued so that great mischief is often made, without even intending to make it. As regards the little gossiping between different operators, and different proprietors of different galleries, it should be stopped, there is nothing gained from this backbiting. One proprietor of a gallery, for instance, in Baltimore, exhibited some pictures said not to be made by himself, in his establishment. This was said publicly, and a protest was entered to the directors of the Fair, at which the exhibitor of the pictures feeling himself agrieved, have entered suit against the parties for libel. What the result will be can be well told: a lawyer will get his fee, and the case will be quashed.

Mr. Davis has a neat little gallery on Market street near South, and his specimens in photography are equal if not superior to any in the street. He has a liberal share of the public patronage, and deservedly so, for Mr. D. is an old operator.

Mr. Morrow has a neat little gallery below the Sun iron building. His photographs are not so good as many, but experience will teach him.

Mr. Walzl has opened a gallery for cheap ambrotypes; some of his pictures equal the best.

Mr. McCan uses Woodward's *Solar Camera* for all of his pictures. He drives a big trade copying small engravings, and making them large and coloring them in oil.

The *Solar Camera* is the greatest invention in photography of the day; no one in Baltimore has yet discovered the greatest powers of this instrument. But the inventor deserves to have himself well lectured for not making his instruments more known; but time will prove its valuable qualities. Mr. Woodward has placed his instruments at such a low figure, that every body can get one. In fact, I think Mr. W. has placed too low a value on the *Solar Camera.*

I was shown some late improvements in the workings of this instrument, which places it beyond comparison with all other instruments of a similar kind. In my letter from Cincinnati, I said Mr. Hall's instrument, used by J. P. Ball, was a similar invention; I think after a careful investigation I am mistaken. Mr. W.'s instrument must take precedence over all other inventions of similar kinds.

The developing process is used in producing pictures by the *Solar Camera* in five seconds. This instrument is used at all times, even in cloudy days.

Mr. Jas. K. Harley, the artist, was married last week: I wish most cheerfully a merry christmas and a happy new year to the artist and his fair bride; may he now be inspired by his loving wife, to add great laurels to his name and fame.

Mr. Elisha Lee has had large orders for his photographic canvas from the South.

Col. John R. Johnston has his new studio in Carroll Hall, No. 5, where a room full of visitors may be seen at all times. His studio is full of work, mostly full-length pictures of children.

A large sale of old paintings took place last week at the Baltimore Museum. Some of them were sold very cheap. Mr. Carvalorigh sold them.

Mr. A. J. Way, the portrait-painter, is still here.

Mr. T. Wood, the artist, has just returned from an Eastern tour, and is busily engaged upon numerous orders.

We have many amateur photographic artists here, whom it is not best to slight in my notice. Capt. J. P. Dukehardt, conductor on the Baltimore and Ohio Railroad, is one of the best operators in photography in Baltimore: strange to say, this gentleman is an old practical chemist, and for his pleasure made photography a study.

There is nothing much in the artistic world, or I should be most happy to write you.

Respectfully yours, J. R. J.

Baltimore, Dec. 27, 1857.

From the Jour. of the Phot. Soc.

THE EXPERIMENTAL COMMITTEE.

To the Editor of the Photographic Journal:

Sir,—Your remarks in the last Number of the Photographic Journal (on the difficulties which an Experimental Committee would meet with in testing the various preservative processes) will be read with regret by many who have become confounded amongst the numerous conflicting discoveries, modifications and remodifications which have been brought before the public, and who have tried in vain to hit upon one which possessed the advantages state by its author. To such (and I have no doubt but they are legion) the formation of such Committee would be the greatest boon.

Obstacles such as you state might present themselves, but are they insurmountable? The photographer is constantly contending with and overcoming difficulties, and these would be more than counterbalanced by the resulting advantages.

What is the character of the opposition with which the Committee would have to contend? Probably some bigoted discoverer or modifier, or prejudiced operator, each clinging to his own peculiar crotchet, might attempt to ignore the proceedings of such a committee; but the opposition would be of a very harmless nature, and would not prevent the decision having its due weight with every unbiassed photographer.

But it may be said that there is no prescribed path to success in the art, that the same results can be produced by nearly every preservative process published; but this has not been satisfactorily proved, for if we are to accept the statements of the various authors, each one is better than all the rest. It may be urged that perfection has not been attained by any of the known dry processes, and that the labors of the Committee might be rendered useless by a discovery that the preserved plate could be made as sensitive as moist collodion; but without wishing to discourage any one experimenting in that direction, it would be of the greatest importance to the amateur to know what are the comparative merits of each known process, and only a Committee, such as suggested, can decide.

If the author of a process or modification could not take part himself in the experiments, he could delegate some successful operator who would do it equal justice.

If the experiments were conducted impartially, and the results submitted to a General Meeting of the Members of the Society, the decision would be looked for with the greatest interest by all who are anxious for the progress of the art. It would be the means of checking those prolific sources of annoyance to the amateur, termed improvements (?), unless it could be proved that they possessed some great advantage over processes already tested.

Take collodio-albumen as a standard, which is perhaps the process most generally acknowledged that pictures can be produced by it which have never been excelled by any other; but the tedious manipulation, liability to blisters, &c., are urged as objections to the process.

We have honey, oxymel, gelatine, metagelatine, glycerine, dextrine, gum-arabic, treacle, sugar, &c., the addition or substitution of a single ingredient constituting a new process and rival claimants contending for the laurels.

Can we wonder that an amateur, pursuing his path in the dark among such rocks and shoals, should so often founder. Can it be shown that any of the above will produce a more vigorous negative, with greater certainty, with less exposure, and with finer delineations in detail than collodio-albumen?

It can only be decided satisfactorily by an Experimental Committee.

Every photographer is indebted to those gentlemen who, apart from all mercenary motives, have given the results of their scientific experiments to the public; but suspicion will always be attached to the statements of those who, in publishing a discovery (?), make it a medium for advertising some special compound, which can only be obtained of certain dealers; but if amateurs would make themselves better acquainted with the theory of their interesting pursuit, the field for such photographic quackery would be greatly circumscribed.

I would commend the subject to the consideration of all who feel an interest in the future of the art, especially to those eminent professors who would take a pleasure in conducting the experiments as suggested, and which, if carried out will act as a stimulus to many a wavering amateur in overcoming difficulties of manipulation in a known good process, instead of changing with every new (?) idea, and in the end abandoning the art in despair. J. Hart.

For the Photographic & Fine Art Journal.

WHITE SPECKS UPON MELAINOTYPE PICTURES.

Hundreds of applications have been made to Mr. Neff about white specks all over the Melainotype pictures. Different methods for their prevention have been given, but never the right ones.

Take 10 or 20 grains of bi-carbonate of soda dissolved in little water ; add it to your silver bath, and it will put a stop, if not add a little more: should it make your bath milky, too much has been added; filter and add 2 or 3 drops of nitric acid. If Mr. Neff or agents would make use of this, they will hear of less complaint. We use Melainotype Plates altogether, it is so easy to work them. We never clean a plate unless we wish to be troubled; if the impression is not good, and it is washed off, rinsed and dried, and the plate cleaned with alcohol and ether, it will not work like a new one. They recommend all ambrotypists (not daguerreotypists) to take Melainotypes, whether they have a patent or not. They will have only half the work. The patent is, like most others, all humbug.*

Dayton, Ohio. Louis Seebohm.

From The Jour. of the Pho. Soc.

ARTIFICIAL LIGHT FOR PHOTOGRAPHY.

46 Camden Street, Camden Town, Nov. 11, 1857.

To the Editor of the Photographic Journal :

Sir, I beg, through the medium of our Journal, to bring before the photographic public a very ingenious application of the signal-fire (prepared by pyrotechnists) to the purposes of photography.

Those who practise photography in such places as London, Liverpool, Birmingham, Manchester, Bristol, &c., have no doubt experienced considerable interruption, perhaps loss, from the prevalence of fog for nearly a fortnight lately, and as the year declines, more of such anti-photographic weather must be expected.

Those photographers, therefore, who may wish to pursue their practice without interruption from foggy weather, will find this application of the light by which theatrical fairies are beautified in the eyes of mere mortals to be a very useful and respectable substitute for the sun's rays. The employment of this fire, and the mode of burning the photogenic compound, are secured by patent to Mr. Moule of the Hackney Road, who is himself a good photographer, and the inventor of a large lantern especially adapted for displaying the light.

The lantern is closely glazed, is formed of galvanized iron, and has at its top a wide tube to convey away the sulphurous acid fumes caused by burning the fiery compound.

The mode of proceeding is this. If the weather be foggy, or if the light be required in the evening, the lantern and stand just described (both being of very light weight) are placed in the operating-room, and the sitter stationed about four feet from the lantern. The picture, by means of a lamp or candle, is focussed on the ground glass, the ready sensitized and collodionized plate placed in the camera, and the shutter raised; the lamp is then placed aside: about 2 ounces of the composition previously weighed out are then introduced, by means of a small door, into the lantern. The composition is then fixed and the door shut; a brilliant blueish-white flame immediately ensues lasting for about 15 seconds; when the flame is over, the plate is removed from the camera and developed either as a positive or a negative, according to the intention of the operator; it will be found that the light has had sufficient actinic power to give a well-defined image.

The preparation of the plate, and the development of the picture, differ in no respect from the ordinary collodion process.

I have no interest in, nor knowledge of, the patent, nor of the patentee, beyond having witnessed with much pleasure the very ingenious and simple method employed by him to produce photographic pictures at night.

The composition to be burnt in the lantern is supplied in tin canisters, each containing 12 lbs. weight, and it costs 8*d*. per lb., which will show the inexpensive nature of the light.

No electrical machine is required, no galvanic battery, no gas bags, nor any other troublesome apparatus; nothing is wanted beyond the lantern, so constructed by the inventor that the light shall be given out with the greatest effect, a supply of atmospheric air provided, and the stifling fumes of the light completely carried off.

With a few modifications, I consider this light might be rendered available not only for portraiture, but for printing from negatives, an operation sadly interfered with by foggy weather.

I hope at the next meeting of our Society to be enabled to place the entire apparatus before the members, as I consider the invention well deserving of their notice. The patent has only just been obtained, and at present but very little publicity has been given to it. R. W. Buss

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From the Jour. of the Phot. Soc.

BLACKHEATH PHOTOGRAPHIC SOCIETY.

ORDINARY MEETING.

At a meeting held October, 19, 1857, at Yverdon House, the President in the Chair, the minutes of the last meeting were read and confirmed. The President (James Glaisher, Esq., F.R.S.) read a paper describing the progress of the Photographic Art since the Great Exhibition of 1851, and referring to the respective advantages of the several processes. He exemplified his remarks by a number of pictures taken at different periods, and by various methods during the last six years. The thanks of the meeting were unanimously voted to the President for his able address. Mr. Heisch, F.C.S., Vice-President, exhibited several interesting photographs, displaying the effects of disease upon the human body.

After a few introductory remarks, a brief review of the history of photography and its advance since the Great Exhibition of 1851, Mr. Glaisher proceeded to observe,—

"As a local society we are in a favorable position. Some among us are members of the Photographic Society, and are thus in a position to bring into metropolitan notice any experiences which may appear worthy of being brought forward.

"In relation to our common pursuit, I can fancy nothing more agreeable than the collecting together our different successes and experiments. At the present time there is open to every one who practises, a variety of process, each one tolerably assured in its action, and each one easily distinguishable in its results, forming as it were different styles in photography, analogous to different styles in painting, some more applicable under certain circumstances than others.

Collodion, which in 1851 was but little known, and still less practised, is now generally received as the most important process of any in use, and many, I doubt not, consider it to be the only process worthy to be worked, whether for portraits or general application; and this has had a somewhat depressing influence on some, who, unwilling or unable to cope with its inconveniences, have given up the pursuit entirely. For, myself, I have worked but little with collodion, and had no other process been open to me, must have given up the practice of photography. Three years ago I worked almost entirely with iodized paper. By this process I have obtained, with rare failure, a large number of excellent negatives, some of which are not greatly behind collodion: the subjects have been in all cases build-

* Men differ on this subject and as in all patent matters, the dispute can be decided by the United States Court only.—Ed. P. & F. A. Jour.

ings or landscapes; in the latter the foliage has been superior in general effect at times to that given by collodion."

Mr. Glaisher here exhibited some negatives of the Royal Observatory, taken recently by the iodized process, and illustrating the progress of a building erecting for the reception of a new instrument.

"The improvement of the lenses used in photography is a very serious subject of consideration. It is is my opinion, that in ten years not one of the lenses now in use will be employed. One of the most decided improvements in this direction is that communicated to me during the last month by Herr Pretsch. The improvement consists of a combined lens for photography, possessed of a comparatively short focus, and producing an even flat picture as sharp at the edges as in the centre, and reproducing the different distances sharp without disturbing the correctness of proportion. This evening is exhibited the first picture taken with such a lens of 3 inches aperture. The picture is 16 in. by 13. in., and is remarkable for the equally clear and sharp definition of the multitudinous subjects it comprises. The curvature of the lens was calculated by Professor Petzval of Vienna, and the lens was executed by Mr. Diezler, optician, who likewise executed the photograph—an indifferent copy but sent only as an illustration of the power of the lens. Very shortly we shall have better lenses in the field than we now possess; their effect will be very perceptible upon all photographic results."

In conclusion, Mr. Glaisher observed,—"But photography, difficult as it is to bend to the rules of composition and those of art in general, possessed too as it is of a mannerism, which beats that of Turner even in his later days, must be pressed into the service of art, and fill a utilitarian place for years to come, supplying us continually, and at a moderate cost of time and money, with copies of objects both in art and nature, either educational to the young, or of peculiar and rare interest to the cultivated and well informed. In my opinion no tolerable photographs of ordinary interest should be lost or destroyed; and as the published productions of authors of all grades find certain recognized depositories by a wise regulation of the State, so should copies of all photographs find recognized depositories, and nowhere could such be so well originated as with private societies, of which our own is one only of many springing up in various quarters for the furtherance of photography."

From the Jour. of the Phot. Soc.

LE GRAY AND THE DISCOVERY OF COLLODION.

Alma Cottage, Bishops Stortford, Herts, Oct. 29th, 1857.

To the Editor of the Photographic Journal:

Sir,—I have taken the liberty of forwarding to you a copy of a small Manual published by Mr. Archer, my late husband, in 1852, in consequence of a paragraph in a letter from Mr. Tunny, which appeared in the last Number of the Photographic Journal.

That gentleman does not seem to be aware that Mr. Archer always acknowledged M. Le Gray to be the first to published the *possibility* of the use of collodion in photography, as mentioned in the Introduction of the accompanying work; but whoever will refer to the Practical Treatise,' will find that *no process whatever* was given. Collodion was merely suggested as one amongst several available media for photography.

No one could appreciate the value of M. Le Gray's labors more highly than Mr. Archer did, nor could any one be more anxious to give him, and every one else, his full share of merit. It was quite contrary, to Mr. Archer's character, even *to wish* to appropriate to himself the merit due to another.

Amongst the numerous letters of condolence I received, was one from a dignitary of our Church, who had known Mr. Archer for many years; as it contains a most just delineation of his character, I hope you will pardon me for quoting a passage.

"In my humble judgment Mr. Archer was a man of extraordinary merit in many ways, not simply as an Artist, but in his whole tone of thought and feeling."..."He was sometimes pleased to say he owed much to me; I must in justice to his worth mention, that I was myself benefited by him, in the example he gave of meekness, gentleness, and goodness, which is not often seen, and which indeed I have never known exceeded."

Pardon me for endeavoring to rescue the name of such a man, even from the slur of *concealing* the merits of another.

Fanny G. Archer.

RECOVERY OF SILVER.

Dayton, Ohio, Dec. 1857.

Dear Sir,—The following plan for the recovery of silver, is well worth being tried by all operators:—Keep a large bucket or tub to receive the water from the washing of plates after developing the picture; whenever this vessel is filled, dip out one-half without stirring the sediment; do this all through the year: finally pour all the clear solution off, put the sediment in an earthern or glass vessel, add some nitric acid, and put in a warm place. When the solution is almost clear, filter all; then add common salt or muriatic acid, and you will probably have two or three ounces of chloride of silver, according to the amount wasted. Chloride of silver can easily be reduced to metallic silver according to Hardwich; or it may be used for the galvanic battery or toning bath.

N.B.—No cyanide or hyposulphite must be washed in the tub, as it would dissolve the precipitate.

Louis Seebohm.

From the Jour. of the Phot. Soc.

ON THE OPTICS OF PHOTOGRAPHY;

But Particularly on the Character of the Images formed upon Opaque and Transparent Surfaces.

BY SIR DAVID BREWSTER, K.H., D.C.L., F.R.S.,

President of the Photographic Society of Scotland,

[Read before the Photographic Society of Scotland, Nov. 10, 1857.]

Having for some time given up the practice of photography, it is not in my power to make any communication to you of a purely photographic nature; but there are so many accomplished amateurs and professional gentlemen engaged in the study and practice of the art, that particular branches of it should be taken up and pursued, nor merely by individuals, but by Societies, who may have sufficient funds to give honorary or other rewards for valuable discoveries or improvement in the art. The photographer who works in Daguerreotype and Talbotype,—in taking negatives on glass, paper and porcelain,—in copying oil and other paintings (a very important and difficult art), and in stereoscopic, microscopic and telescopic photography, is not likely to make much progress in any of them.

Having turned my own attention principally to what may be called the *optics of photography*, I trust that a few observations on the subject will not be regarded as an inappropriate introduction to the business of the Session. In doing this, you must allow me to take for granted, what may not be true, that you are tolerably ignorant of the subject; and you will probably not take much offence at this assumption, when you have found from the sequal of this paper, that the authors of communications printed by the Royal Society of London, and graduates from the University of Cambridge, are assuredly more ignorant, than I have presumed you to be. In making so grave a charge before you, it is but fair that I should make an apology, for its truth, in so far as it is trne. *The formation, upon a plane surface, of the images of solid objects, or objects in relief, by means of lenses of various forms and sizes* (the very foundation of photographic optics), has not been treated of in any work, from the treatise of Euclid downwards to the present day, and I believe has never been taught in any of our schools or universities.

It will, I presume, be *universally* admitted, that a photographic portrait is not a favorable representation of the sitter. It will be *generally* admitted that many of these are hideous portraits; and there are *some* who maintain that the photographic patient, male or female, often ceases to be human. Without noticing the error of transferring to the sitter the blame which belongs to the art, we may accept as true the character of Sun-portraits, as involved in an expression used by the editor of the '*Times*,' who speaks of the *terrible faithfulness of photography*.*

It is not difficult to ascertain the nature and amount of the defect in the portrait, if any, arising either from the motion of the sitter or from the expression which he assumes. If any sharp or well-defined line lying at right angles to the direction of the motion is not doubled, we have a sufficient proof that the sitter has not moved to an injurious extent; and if a bystander is satisfied that the expression of the sitter is good, we must seek for another cause of the painful expression in the photograph; or, what is the best test of all, we may ascertain from the portrait of a person asleep whether the *terrible reality* attaches to the art, or to the motion and unnatural expression of the sitter.

Before proceeding to consider the reasons which make photographic likenesses *terrible*, we must first explain what really is a true representation of the human face and figure, upon a plane surface. In every treatise on Perspective we are taught, that if from a single point in space we draw a number of lines passing through every point of an object in relief, the figure delineated upon a plane, placed either before or behind the object, is a correct representation of it as seen by an eye looking through the smallest possible aperture placed at that point. In such a picture every point of the object supposed to be stippled on the plane with the same color, would be equally distinct. If, instead of viewing the object through the small pinhole, we look at it with one eye through the pupil, when $\frac{1}{10}$th of an inch in diameter, the picture will be less perfect: every minute point which was formerly single will be expanded into a very minute circular disc, and it is demonstrable that the visible picture will be a combination of an infinite number of pictures, as drawn by the rules of perspective, from every point in the pupil. The imperfection thus produced is too small to be recognized by the human eye; and therefore we may assume that, when viewed with one eye, the pictures of objects in relief are perfect representations of them.

When we are thus looking at an object in relief, with one eye, let us open the other eye, and, while the head is fixed, direct it to the object. The point of sight being now $2\frac{1}{2}$ inches from the first point of sight, the lines drawn from it will delineate a very different picture, leaving out of it certain parts of one side of the figure, and introducing into it certain parts of the other side of the figure. Hence the dissimilarity of the pictures of solid bodies, as seen by each eye, is the mathematical result of the ordinary rules of perspective.

I need hardly say, that a picture, as seen by the eye, is the same as the image formed on the retina; so that a picture or image formed by a lens on paper or grey glass, is the very same picture that an eye would see if the pupil were of the same size as the lens.

Let us now suppose that we take the photograph of an object with a lens *one* inch in dimeter, i. e. *ten* times as broad as the pupil of the eye; then it is evident that the separation of the individual points in the picture, as drawn by the rules of perspective, from every point of the lens, or of the one-inch pupil, will be ten times greater, and the incoincidence of the numerous images ten times greater. In order to make this more intelligible, let us suppose that the image is formed by lines drawn from two points in the margin of the pupils or lenses $\frac{1}{10}$th of an inch, and 1 inch in diameter; then it is obvious that the distance of similar points, which is a measure of the incoincidence of the images, is *ten times* greater in the large than in the small pupil or lens. These results, derived from the rules of perspective, have been proved by direct experiment, and entitle us to conclude that the imperfections of photographic portraits arise principally from the size of the lens with which they are taken, and increase with the diameter of the lens.

I have not alluded to another defect in large lenses, in consequence of which they introduce into the photograph objects actually behind, and eclipsed by, opaque objects whose breadth is less than the diameter of the lens, having already treated the subject fully in my book on the stereoscope.

The property of large lenses to give a combination of incoinciden images, and to introduce into the photograph, parts of the head and figure of the sitter, which cannot be seen from any one point of sight, has been admitted by every competent judge. The truth is indeed so obvious, that it may be demonstrated to the youngest pupil, male or female, who has mastered the first lesson in perspective; and yet Mr. Thomas Sutton, B.A., the editor of "Photographic Notes," has pledged himself to demonstrate that it is contrary to theory and experiment, to the teaching of our Universities, and the practice of our best opticians! I cannot condescend to discuss a question in optics with a person iguorant of its most elementary truths. It will be sufficient to state the opinion of the most scientific of our professional photographers, Mr. Claudet, who has so far adopted my views as to affirm, in the printed Proceedings of the Royal Society, that there are formed on the ground glass of the camera obscura an infinite number of dissimilar and incoincident images†.

The portraits taken by large lenses are subject to a *second* imperfection, which increases, like the former, with the diameter of the lens. When the photographer has adjusted his camera, so as to give distinct vision of the middle distance in the object, the parts of it nearer the camera, and more distant from it, are less distinctly painted on the grey glass, and the degree of indistinctness increases with the diameter of the lens, because it is measured by the section of a cone of rays whose base is the lens itself.

A *third* optical imperfection in photographic portraits arises from the great focal length of the lens, which makes the image a magnified representation of the object. The consequence of this is, that the pores in the skin, the wrinkles, and other superficial imperfections, are magnified to such a degree as to produce very disagreeable portraits of persons advanced in life. The method of removing this imperfection in using the present cameras I shall presently have occasion to notice.

If the photographer acknowledges the existance of these defects in his art, or rather in his instruments, he will of course desire to correct them, which may be done in *three* different ways:—

1st. By using *small* lenses in the cameras which are now in use.

2nd. By a new method of taking portraits with the present cameras with large lenses.

3rd. By taking very small portraits in cameras an inch or two long, furnished with small lenses like the object-glasses of achromatic microscopes, and then enlarging them.

I. When small lenses are used, the time of sitting must necessarily be prolonged; and a new imperfection might arise in the portrait, from the motion and change of expression in the sitter. The risk of such an imperfection, however, is not so great as might be supposed, for I have found that in an ordinary state of the atmosphere, a portrait may be taken in sixty seconds with a lens less than half an inch in diameter, and in a strong light the same result might be obtained in half the time. These experiments were made by Mr. Szabo and myself with a single lens of rock crystal, intended for the lens of a pair of spectacles, and with its curves not suited to give the minimum of sperical aberration. The portrait, thus produced, was regarded by every peron as greatly superior to the best portraits of the same person produced by Mr Szabo's finest lenses, when considered only as a likeness; for, as might have been expected, the other details of the picture were much more distinct when it was taken by the large achromatic lens. This defect, however, would not have existed had the small lens been corrected for spherical and chromatic abberration. When the photographic process

* "Most Portraits rather surprise the original at first sight, and the terrible faithfulness of photography has disgusted many a would-be Narcissus."—*Times*, Oct. 10, 1857.

† Vol. viii. No. 27, June 18, 1857.

becomes more sensitive, so as to shorten the time of sitting, and when the public learn that small lenses will give better portraits of them, our present cameras will be used for landscape scenery alone.

The second imperfection of large lenses, even when otherwise perfect, which consists in their making the near and distant parts of an object indistinct when those in the middle distance are exactly in focus, will likewise be diminished by the use of small lenses; but the *third* imperfection which I mentioned, of magnifyining roughnessses in the skin, will not be diminished by employing small lenses, as it depends on the focal length, and not on the diameter of the lens.

II. I come now to describe the second method of taking correct portraits with our present cameras and large lenses.

All the imperfections of large lenses, acting photographically, are increased as we increase the size of the portrait, by bringing the camera nearer the sitter. The dissimilarity of the combined images becomes enormous when a large lens approaches an object in relief, and it increases with the depth of relief. The effect thus produced may be seen in its most exaggerated form by looking at a bust with both eyes, at the distance of a few inches from its nose, and by opening and shutting each eye, alternately. The *second* imperfection, or the indistinctness of the image of the near and remote parts of the objects, is increased in a very great degree, both from the proximity of the object and the depth of its relief. The *third* imperfection, or the enlargement of all pores, wrinkles, and irregularities in the face, is likewise increased in the magnified image.

In order, therefore, to have a photographic portrait approximately perfect, it should be taken at a great distance, and the negative subsequently enlarged to the desired size in a magnifying camera; or what is perhaps better, a positive of the required size may be obtained from the small negative by a single process. A positive of the same size as the negative might in many cases might in many cases be preferred, and looked at occasionally by a magnifying glass, either held in the hand, or permanently connected with the photograph.

III. The third method of obtaining approximately correct portraits is, to employ small cameras an inch or two long (or even less than an inch), furnished with small achromatic lenses like the object-glasses of the compound microscope.

In applying this method, we may use lenses whose diameter is equal to the pupil of the eye, so as to obtain portraits exactly the same as those which we see with one eye. A lens, like Ross's *quarter of an inch* object-glass, would answer this purpose, while one like his *eighth* or *twelfth* of an inch would give a portrait almost identical with the true perspective representation of the original, as formed by lines drawn from a single point of sight. These small negatives may be either enlarged, or employed to give positives directly, of the size we require. The beautiful microscopic photographs executed by Mr. Dancer of Manchester, prove that the grain of the collodion is not visible even when highly magnified so that it will not affect injuriously the large positives obtained from the diminutive negative.

Portraits taken by the two last method, but especially by the latter, will have an important application in steresoscopic photography, when the public are better instructed, and employ those photographers who work only according to the rules of science. To combine portraits which no eye ever saw or can see, and to combine them when taken at angles under which no two eyes ever could see them, is a practice which cannot be too severely condemned. If binocular pictures were taken at the proper angles corresponding to $2\frac{1}{2}$ inches, the average distance of the eyes, they might be made available to the sculptor who desired to execute a bust of the sitter, or to a surveyor who wished for information respecting certain distances in a building a city, or a landscape. The distances between every pair of similar points in the two dissimilar pictures, mark the position of each point in space, and the difference between the distances of any two pair of points is a measure of the relief, or the distance in space of these two points. Hence it is possible, by nice micrometrical measurements, to obtain useful information from correct binocular pictures; and though the idea may appear extravagant, it is nevertheless true, that if a witness should state that he saw from a certain point of space a criminal act perpetrated at another point of space, his evidence might be confirmed or disproved by binocular pictures truly taken; and on the other hand, the testimony of a false witness might be sustained by the same pictures taken from points at a great distance*.

Having directed your attention to those optical topics which relate to the images of objects in relief, as formed by large and small lenses, I come now to consider what has been called "The Phenomenon of Relief of the Image formed on the ground glass of the Camera Obscura." An ingenious paper bearing this title was read on the 17th of June at the Royal Society of London, by Mr. Claudet, F.R.S., and has just been published in their Proceedings†. The apparently important discovery which it contains is thus described by Mr. Claudet:—

"Having observed that the image formed on the ground glass of the camera obscura appears as much in relief as the natural object when seen with the two eyes. Mr. Claudet has endeavored to discover the cause of that phenomenon, and his experiments and researches have disclosed the singular and unexpected fact, that although only one image *seems* depicted on the ground glass, still each eye perceives a different image; that in reality there exist on the ground glass two images, the one visible only to the right eye, and the other visible only to the left eye. That the image seen by the right eye is the representation of the object refracted by the left side of the lens, and the image seen by the left eye is the representation of the object refracted by the right side of the lens. Consequently these two images presenting two different perspectives the result is a stereoscopic perception, as when we look through the stereoscope at two images of different perspectives. It appears that all the different images refracted separately by every part of the lens, are each only visible on the line of their refraction when it corresponds with the optic axis, so that while we examine the image on the ground glass, if we move the head we lose the perception of all the rays which are not corresponding with the optic axes, and have only the perception of those which, according to the position of the eyes, gradually happen to coincide with the optic axes. Consequently when we look on the ground glass perfectly in the middle, the two eyes being equally distant from the centre, the right eye sees only the rays refracted from the left of the lens, and the left eye only those refracted from the right of the lens."

After endeavoring to establish these points, by various ingenious experiments, Mr. Claudet concludes his paper with the following description of a new stereoscope which is to throw into relief a single plain picture composed of two right and left eye pictures superimposed.

"The consideration," he observes, "of these singular facts has led the author to think that it would be possible to construct a new stereoscope in which the two eyes looking at a single image, could see it in perfect relief. Such a single image being composed of two images of different perspectives superposed, one visible only to the right eye, and the other to the left. This would be easily done by refracting a stereoscopic slide on a ground glass through two semi-lenses separated enough to make the right picture of the slide coincide with the left picture at the focus of the semi-lenses. The whole arrangement may be easily understood; we have only to suppose that we look through a ground glass placed before an ordinary stereoscope at the distance of the focus of its semi-lenses, the slide being strongly lighted, and the eye seeing no other light than that of the picture on the gronnd glass. The whole being nothing more than a camera having had its lens cut in two parts, and the two halves sufficiently separated to produce at the focus the coincidence of the two opposite sides of the stereoscopic slide placed before the camera."

The elaborate analysis of the ground glass image by Mr.

* An experimental confirmation of these views will be found in an excellent anonymous article in the National Magazine, part vi. p. 365, by a writer of whom I have no knowledge. He will do a service to the Art if he discusses more fully the subject of the proper angle for stereoscopic photographs.

† Vol. viii. p. 569. It has been translated into French and published in *Cosmos*, Oct. 9, 1857.

Claudet, and its application to a new and remarkable stereoscope, though it evinces much ingenuity and careful research, is yet incorrect, and it is not possible to con-truct the stereoscope which he describes. I should not, under ordinary circumstances, have felt it necessary to discuss Mr. Claudet's opinions on this subject, but having been attracted by their novelty, and having found that they were not compatible with my own published opinions, I am obliged to defend truths which I hold to be rigorously demonstrable by the refutation of opinions which are diametrically opposed to them.

The primary assumption of Mr. Claudet, that the image on the ground glass is in true stereoscopic relief, is not correct. The relief which does exist in the image of a landscape, is similar to that which appears in fine photographs seen with one eye, or in photographs of bas-reliefs, (such as those on the table) seen by both eyes; and it arises in the case of the landscape, from the perfection of the picture which like the original, seen with one eye, possesses all the distance-giving criteria, such as indistinctness in remote parts,—diminution of known objects,—gradations of color, and aêrial perspective.

In order to prove that the relief is not stereoscopic, let us throw upon the ground glass the picture of three discs of white paper strongly illuminated, placed at different distances from the camera, so as to produce a high stereoscopic relief when the semi-lens images of these are combined. When is done, they display no stereoscopic relief, because the picture affords none of the criteria of distance seen in the landscape. There is, however, a slight relief when the two eyes view the picture perpendicularly, and this relief may be explained by the fact that the rays which form the picture of the distant parts of the object diverge from foci a little in front of the ground-glass surface, while the rays which form the picture of the nearest parts of the object diverge from foci a little behind the ground-glass surface. But if we view the luminous discs obliquely with both eyes, no stereoscopic effect whatever is produced: and it is of importance to observe that the small degree of relief under consideration is diminished in coarser ground glass.

Mr. Claudet's statement that there are combined on the glass *two* right and left eye pictures is not correct. There are not, and cannot be, any such pictures. The image on the ground glass is a combination of incoincident images formed by every point of the glass, and the two eyes cannot select from the combinations, and unite the pairs of right and left eye pictures which it contains, because different pairs required different degrees of displacement.

Admitting, however, the existance of a right and left eye picture on the glass, and the possibility of uniting them, the stereoscopic picture would be seen above the two pictures from which its component images have been displaced.

Whenever a stereoscopic picture is obtained from a binocular slide, either by the two eyes alone or by semi-lenses, the two original pictures are doubled: the nearest two of the four namely the two displaced images, coalesce, as it were, into the solid, leaving the others behind; but when the original pictures are already combined as on the ground glass, the stereoscopic figure, if it could be produced, would be obliterated by the two pictures, which, though doubled, are but slightly distant from the two which are displaced. Hence it follows that the new stereoscope, described by Mr. Claudet, cannot possibly produce the effects which he expects from it.

It would be a waste of your time to pursue this subject any farther, and to explain how Mr. Claudet has misinterpreted the the experimental results which he obtained, and especially the partial evanescence of the images, by shutting each eye, and phenomena presented by the *blue* and *yellow* glasses. If he repeats his experiments with objects which have no mutual connexion, and are either strongly illuminated or very bright, such as candles or luminous discs, he will not fail to discover the causes which have misled him.

Sulphuret of Silver is prepared by passing sulphuretted hydrogen through a solution of nitrate of silver.

Personal & Art Intelligence.

— This number is teeming with interesting and valuable matter—too valuable for any to be crowded out by our own scribbling—our editorial must therefore be brief. We must, however, explain the reasons why matters of interest, and which we have promised our readers, are necessarily deferred. We have found—on entering upon the entire direction of our Journal and office matters—so many things to attend to, overhaul, and correct, that it has thus far been more of a tax upon our time than the establishment of an entirely new business could have been. A number of our subscribers, also, have put us to extra labor, and taken up our time unnecessarily in the collection of our dues—time that should have been devoted to the editorial department of the Journal. We are sufficiently posted up in the Photographic Art, to give considerably more original matter in each number, and the only cause of our neglect in this department, is the backwardness of subscribers in remitting. They should understand that it requires *cash* to carry on such a Journal as ours, and that it is to our subscribers alone we have to look for the means. While clamoring, therefore, with us for more original matter, they should remember that we can only be enabled to devote the required time necessary to produce it by being as free as possible from the necessity of asking repeatedly for our dues. They should remember that now more than ever, prompt remittances from every one is of great consideration to us, and that a little more interest taken in the advancement and circulation of the Journal by its friends, will tend greatly to increase its value and usefulness to them. It is our desire—and it should be that of every one of its subscribers, both for its prosperity and their own—to make it the first Journal of the kind in the world. We shall do our part to effect so important a result, and we trust its friends—particularly those who are so constantly—like Oliver Twist, "asking for more"—will do the little we ask of them in return. If every subscriber would add but one to our subscription list, he would be the gainer by the improvement we should be—as a consequence—enabled to make. We wish to call the attention of our readers to every article in this number, for, although they are "*not original*," they are no less valuable, and we know they cannot be studied without profit to every one practicing the Photographic Art. Messrs. Pretsch, Brewster, and Grubb's articles on optics and lenses, will furnish ideas decidedly new to every reader, and add much to their means of understanding many things that have heretofore been obscured to them. Those who make stereoscopic picture sand Hallotypes, will be assisted by the articles "Novel Method of taking Stereoscopic Views," and "On Improving the Tint of Transparent Slides." Mr. Burnett's article on Photography is very interesting, as is also that "On the Method of Producing Minute Photographs." In fact there is not an article in this number which will not improve the operator if studied; but we will call particular attention to Mr. Keith's article on the "Operating Room." The old readers of this Journal will find confirmation of many ideas we have, from time to time, advanced and insisted upon in our columns. They may be depended upon as correct, and that those who adopt them will reap a rich reward. The improvements therein suggested will add facilities to photographic portraiture of priceless value. They are not mere theoretical speculations: but are advanced after careful and lengthy experiments, and we hope our first class operators, at least, will not pass them by thoughtlessly. The Photographic Artists of our country—so far as regards improvements—may be placed in the same line with our old Dutch farmers, who believe all book learning to be rubbish. We recently read an anecdote that applies as truthfully to the former as the latter class. A farmer going to his labor one morning, met an artist sketching in his field and making notes of what he saw. As usual with his class, he took occasion to inveigh against those who devoted themselves to such idle employment, and to pouring over musty books and inventions of new things—in his mind all nonsense, capable of no good results. The artist contented himself, in reply, by asking whose plough he used. "Oh!" said the farmer, "Mr. —— and I would not be without it at ten times its cost. It is the greatest plow out." "That plow," said the artist, turning over the leaves of his sketch book and exhibiting a drawing of the identical plow, "was invented by me." This proves, that a man, although may not be a practical worker in a particular branch of industry, may often work out for and teach those who have devoted all their lives in its employment. None but the most arrant fool will scoff at written knowledge, and there are too many of the class among photographers and ambrotypists--the latter particularly. The only safe road to preferment and success in photography--eminently a scientific art--is diligent study. Every hour not devoted to its *practice* should be given to its *theory*—the two are handmaids that cannot be separated with impunity.

— We had occasion to visit Mr. Bogardus' gallery in this city, and were highly pleased, not only with his arrangements, but with the majority of his pictures. Mr. Bogardus is one of those who attends strictly to his business, pleases his customers, and finds his advantage in the attention he bestows.

— The following article we copy from the Augusta (Ga.) *Dispatch*. Messrs. Tucker & Perkins are two of the most enterprising and gentlemanly men engaged in the Photographic Art, south of Mason and Dixon's line. We have never been favored with specimens of their work; but if Mr. Perkins works the photograph half as well as he did the daguerreptype, he cannot do otherwise than excell. We have not the slightest doubt of the correctness of all the editor of the *Dispatch* says of them:—

"It is as great mistake to suppose that *anybody* can become a good photographist, as to conclude that any one can be a Hiram Powers or a Shakspeare. There was a time within the memory of all our readers, when the entire country was overrun with a set of *one horse* daguerrean operators, whose claims to the name of *artist* were about as well founded as those of the Rev. Dauphin Williams to the throne of France. This "noble army of martyrs" has been gradually decreasing for some years past, and a very superior class of men are taking their places. Photography occupies now an acknowledged position among the Fine Arts, and has been brought to a high degree of perfection, by the combined efforts of genius and labor. Mere dabsters have been taught that two or three weeks' is not sufficient to place them on a par with men who have spent years of toil and study in developing and perfecting the art.

"No operators in this country have kept up with the times, more thoroughly, than Messrs. Tucker & Perkins, of this city, whose galleries are now attracting the attention of citizens and strangers. Their photographs, both plain and colored, are almost unequalled and nowhere surpassed in the Union. Both members of the firm are artists—men who understand their business, in all its branches. They are old operators and have not only kept *up* with other establishments, but far in advance of many of much greater pretensions. Their facilities for doing work in the best manner and at the shortest notice are unequalled in this region. With two sky-lights, a full and well drilled force and a thorough knowledge of the art, we do not wonder that they turn out an immense number of pictures, while their disposition to please and accommodate, added to the attractiveness of their galleries, render it not at all remarkable that they are always crowded. In this connection, we desire to call attention, particularly, to their plain photographs, which are gems in their way, and afforded at so low a price as to be within reach of all.

"They have lately introduced a new and beautiful style of pictures, known as Hallotypes. To enable them to turn out these pictures in proper shape, they have secured the services of Mr. Foster, a talented and accomplished artist from London. His Hallotypes and Photographs, colored in oil and water, are among the most beautiful specimens of the art we ever saw, and those who have seen specimens of his work will bear us out in this opinion.

"Messrs. Tucker & Perkins are also extensive dealers in such chemicals and other stock as are needed by the profession. Their chemicals are of their own manufacture and such as they use in their own business. They now supply most of the operators in Georgia, South Carolina, Alabama, Tennessee and Florida, and their business is daily increasing.

"Such of our readers as have not yet visited their gallery, will, we feel sure, thank us for directing their attention to it. A more pleasant place to spend a few hours in we do not know of."

— A Petersburgh (Va.) Paper gives us the following. Our inability to speak of Mr. Minnis' skill personally, is caused by our never having seen any of his pictures. The fact, however, that he has been able keep two galleries (one in Petersburgh and one in Richmond) in *successful* operation until the increase of business, prevents his attending properly to both, and obliges him sell one, speaks well for his skill:—

Daguerrean Tour.—We have always had a passion for sight-seeing, and from the happy days when molasses candy, hobby horses, and things of that description were our delight, until even now, you might as well have asked an urchin of five to keep his hands out of his pockets, when first provided with that luxury, as to keep us from a peep at any thing beautiful or wonderful in nature or art. Moved by this spirit, we dropped in at the Daguerrean Galleries of this city on yesterday, and commenced a tour of inspection. Both of the "Galleries" were well attended by ladies and others, whose evident object was the securing of an agreeable surprise present for some loved friend. We noticed one person whose intention could not possibly be mistaken; it was a youth of some twenty winters, on whose upper lip bristled an incipient moustache, which compared favorably with the general expression of his face. The youth was in love!—in his hand he held a locket which was destined to contain a duplicate of himself, to be presented to some dear "Arabella" (Oh!)

"We first visited Minnis' Gallery, and immediately entered upon the pleasures of our investigation. The room itself is one of the largest we ever were in, and is fitted up with that regard for beauty, as well as utility, which every where characterize the galleries of this famous "operator." Friend M., who is, let us say, *sub rosa*—an artist and a gentleman, aided us in our explorations, giving us the names of the numerous handsome faces which adorn his walls. The beauty, fashion and, we may add, "*humor*" of Petersburgh, together with a splendid collection of the talent of our country, are here fixed on the sensitive iodized plate and gives a "local habitation." He who desires, at a small cost of time, to look at the greatest men and women of the Union, can here be accommodated. Mr. M.'s collection of "colored photographs" of large sizes cannot be surpassed. He will soon have more of these mammoth pictures, the highest triumphs of the art, which have won for him such an enviable reputation.

"From this spacious gallery we directed our steps to that "gem of a place," Hopkins' gallery. Here we found friend "Compass," whose works have already been spoken favorably of far and near, up to his eyes in business. Mr. H. has but lately completely renovated these rooms, which, for compact elegance, can scarcely be equalled. Call on him and take your friends along, and if you have the slightest leaning for —— somebody, or a desire to leave your "counterfeit presentment" with a relative friend, call on "Compass," and be assured you will have a picture of the first order in tone, coloring and finish."

— W. Notman, Montreal, C. E.—This gentleman has sent us a very good positive portrait. He will excuse us, however, for saying we think the negative was a little over-exposed. He cannot regret more than we ourselves do, that we are obliged to draw so largely upon our English brothers for photographic matter. We do not suppose that they object to our giving the wide publicity to their articles we are enabled to do, as their object is, undoubtedly, to do the most good to the greatest number; but our regret is that we cannot repay them in kind, and return some of the obligations we owe them. One cause of this is, that the only class of experimentalists we have among us are so ambitious to see themselves first in English print;

that they jump over us and the entire Atlantic Ocean to find a market for the products of their brains instead of fostering the home market located at 95 Duane street, New York. We hope for better things in the future. Among our practical photographers, many valuable ideas and formulas are to be found; but *their* greatest care is to prevent their publication in the Journal, from the false notion that they would lose by the operation. We have administered many a dose of physic in hopes of purging them both of the notion and their experience; but we have found no medicine powerful enough to cause even a movement. We have tried *oil*, *soft-soap*, and *Spanish flies*, equally without effect. We have also tried the virtues of a Photographic Society, on the mutual benefit principle, and although all talk favorably, none put their shoulders to the wheel of fortune offered them.

— C. J. Quimby.—The specimens sent us by this gentleman are well printed and toned, and the negative in detail, intensity and sharpness, is undoubtedly a good one; but we must advise him to pay more attention to position. The figures in the group all want ease and grace. This is a main point in perfect pictures.

— F. A. Wenderoth.—This gentleman has discovered a process for printing life-size photographs instantaneously, (which we have published for him in book form) by the *Solar Camera* or in the pressure frame. Mr. Wenderoth desired to place his process before the photographic public at as cheap a rate as possible, and get paid for the expense of the series of experiments by which he arrived at the process. While negotiating with ourselves for its publication, a man by the name of Holman visited the galleries of New York, and professed to teach Mr. Wenderoth's process—asking a consideration—and claiming it as his own discovery. These facts we communicated to Mr. Wenderoth, and the following is his reply, with the request to publish it. We do so in justice to Mr. Wenderoth, and as a caution to our photographers:—

Philadelphia, December 31, 1857.

Mr. H. H. Snelling—*Dear Sir*: The contents of your letter of the 29th inst. took me by surprise. I had been expecting a letter from you for some time, as the one you speak of has never reached me.

I never thought that a man would sell his honor so cheap as Mr. Holman has. The afternoon before he left for New York, he came to my rooms and told me that he was going to Norwich to take life-size photographs, and that it would be a great service to him to have my "Quick-working Process," but that he could not buy it. In answer to which I told him that I had made arrangements with you for the publication of said process, which prevent me from giving it to him. After which *he pledged his word* not to communicate to anybody what I would tell him. But having little faith in his pledged honor, I gave him one part of the process, the formulas for iodizing, but not those for the silver solution, which is the most important part, and which produces the quickness of working and the depth of the pictures. The formulas I gave him will work, but in no way like those I communicated to you.

My whole conversation with him did not last longer than 15 minutes, and after he had left me, reflecting on his character, the thought struck me, that he would try and make some money by selling the formulas I had just given to him, for my "quick process;" which to prevent, I immediately wrote a letter to him, directed to the care of Mr. Gurney of New York, where he was to call, informing him of the fact.

His pretention that my "quick process" was his discovery, is just as shameless a lie as the selling of it by him against his pledged word is an infamy. Last summer, Mr. Holman tried the developing process for the Solar Camera; the formulas he used were the same which have been used from the time the wet process was discovered, and similar to the one which has been recommended by Mr. Whipple for paper negatives, and by which he got a picture in from three to six minutes, but very faint, and which almost disappeared in the soda, by dissolving out the iodide of silver.

Mr. Holman would like very much to get up a name and make some money to boot; as he has not got talent himself, he tries to filch it from others.

After some more experience in working the "quick process," I find that it is important to put the paper on the silver solution first with the back side (not with the front as first recommended), and keep it so for 1 minute, then turn it on the front side, which, now being somewhat moist, will readily take the solution without producing marks, which often cannot be avoided by putting the frontside on the solution first. If possible, it would be good to mention it in the book.

As I have left it entirely to you to arrange this affair, you are at liberty to do as you think best.

Most respectfully yours,

F. A. Wenderoth.

This letter came too late to add the paragraph regarding the silvering in the book; but it will have the desired effect in this place.

— We do not often publish letters of the character of the following, and we do so now only as an acknowledgment of improvement in our Journal. Had we room we might give many more:

Brantford, C. W., Jan. 20, 1858.

Mr. Snelling—*Dear Sir:* On Saturday last, I received yours of the 13th inst., and also three numbers of the *Photographic and Fine Art Journal* completing my set, and gratifying me very much with the beauty of some of the plates, especially those of the January number and the Negress. I can scarcely fancy any thing of its kind better than the "Heywood Group;" they do everything but speak, and there is so much animation and intellect in their faces, that it is a cause of regret they cannot do that; as any thing they would say must be worth listening to. "The Negress" is a "chattel," with more mind and more soul in her, than a vast many of the "free and independent," whether on your side of the line or ours. Altogether, "the lot" has caused us much pleasure, and as you still promise improvement, I live in hopes; especially of being lucky enough to get choice impressions.

I thank you for your offer to duplicate any numbers that may fail to reach me, and I will let you know if they do not arrive, but not so early as the 6th or 8th of each month, because so recently as Monday the 18th, the sett you mailed on the 2nd, were received at the Post Office here. Where they were detained, or how they could be so long on the road, I do not know.

I will return them if you wish it, or dispose of them in any other way you may direct. I think you will not accuse me of impatience in writing to you on the 8th, for numbers which you had told me would be mailed in New York on the 1st.

I think your mails for this part of Canada, cross the frontier at the Suspension Bridge over the Niagara river near the Falls.

Yours truly, Chas. H. Stokoe

We are glad to hear that both sets reached you, for more reasons than one, particularly as it gives us additional evidence to place before Congress on the mismanagement of our Post Office department. The extra set you may dispose of where it will do most good. You need not return them.

— William Armstrong, Esq., Toronto, C. W.—We have received several fine photographic views from this gentleman, one of which we have selected—by his favor—to illustrate the Journal. We have since received the negative, and are now printing the positives for our March number. We shall in that issue, speak of them more at length. Mr. Armstrong will please accept our thanks for his favors.

Mr. J. Rogers will please accept our thanks for his kind appreciation of our efforts. We shall strive to be more deserving hereafter.

— Gentlemen writing for specimen numbers of the Journal, must enclose 50 cents to pay for it. *We find* that *many find* it a *very cheap* way of obtaining the Journal, to order specimen numbers every month under various *aliases*. As we have lately detected this dodge, we are compelled to adopt the rule to send specimens to those only who inclose the price—50 cents.

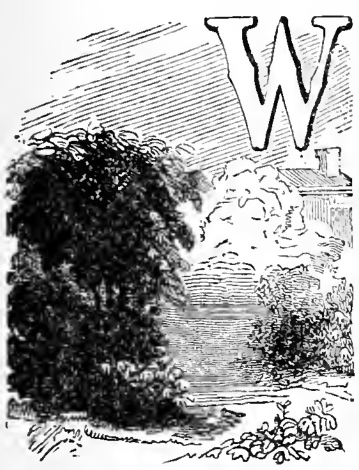
JEREMIAH GURNEY, ESQ.

H. H. Snelling, Print.

From the London Art Journal.

RAFFAELLE IN ROME.

BY F. W. FAIRHOLT, F.S.A.



We consecrate the memory of great men, and when the master-spirit has flown to him who gave it, is it not pardonable—aye, laudable—that we treat reverently the relics of their sojourn here—that we endeavor, as best we may, to call up to the mind's eye the very habit and manner of the great souls long departed, and let the mind linger over their earthly haunts as if awaiting their presence again to revivify the scenes made sacred to us by such connection? There is, perhaps, no spot of "mother earth" more abounding with associations of all kinds, to interest men of every civilized country, and induce many hundred pilgrims, than those few miles of ground upon which stands Rome, that imperial ruin in a papal garb:—

> "We cannot tread upon it but we set
> Our foot upon some reverend history."

The mind is here overwhelmed by the crowding memories of the great events of bygone time—"centuries look down upon us" from the ruined Colosseum—from the ivy-clad masses of wall where once stood the palace of the emperors of the world. These arches record their victories and their triumphs. This dirty, ill-enclosed space, now named from the cows who rest upon it after dragging the rude carts of the peasantry into Rome, was once the Forum—the very focus of all that was great in the whole history of the old world:—

> "Still the eloquent air breathes—burns with Cicero."

On this small patch of ground occurred events which form the most cherished memorials of history. Around us on all sides are the crumbling mementoes of the great of old, whose presence stirred the nations. The very fragments—the shadows of a shade—of their past greatness have been sufficient to revivify the human mind after many ages of mental darkness; and the long-buried works of the old Romans, in the palmy days of Michael Angelo and Raffaelle, quickened the genius of their great minds, guided their thoughts aright, and ultimately led to the purity and nobility of modern art.

The great revival of learning in the fifteenth century led the student back from the legendary history of the middle ages to the more ennobling study of the classic era: and this acquaintance with the acts of the great led to the desire to possess more tangible relics of their period. Here coins and medals were sought after, not merely as works by ancient hands, but as authentic records of their history, rendered the more valuable by their autograph character. Inscriptions were sought for the same reason. Statues were untombed, and gazed at in wonder, for the truth and beauty of their proportions, as contrasted with the gaunt conventionalities of their own schools of sculpture. Men regarded these works as the productions of superior beings; but such contemplation resulted in elevating the minds of the students, and slowly, but surely, the long-lost Arts broke in full radiance from the clouds which had so long obscured them.

It was in these great days of resuscitation that Raffaelle lived. The popes and the nobles vied with each other in obtaining the best works of ancient Art, and liberally rewarded the discoverers.* Lorenzo de Medici, well distinguished as "the Magnificent," made his palace at Florence a museum of Art, and liberally gave free access to all students who chose to come there. Michael Angelo was of the number who studied in the beautiful garden where the sculpture was located, and the great duke often spoke encouragingly to the young lad who labored there so thoughtfully and so well. Words led to deeds, and it was not long afterwards that the duke adopted Michael as his *protege*, gave him a room in his palace, and was the friend of him and his family, death only severing the tie. Many other artists had to thank the liberal duke for the use of his Art-treasures, and Raffaelle was among the number. The Cardinal Bembo, one of the most enlightened men of that day, rivalled the hospitality of the Medici, and received Raffaelle into his palace as a honored guest;—and are not the names of both noble men more nobly immortalised by such patronage?

The early life of Raffaelle was happily circumstanced. His father was himself an artist, who saw his son's great genius, and fostered it from the birth. The child's early life was passed in a lovely home, rendered cheerful by the practice of refined pleasures, the only labor known there being the cheerful toil that awaits the student of Art. Of pleasant manners and agreeable looks, the boy-artist made friends everywhere, and the record of his whole life is a narration of the accession of new friends. In the Italian cities where he went for study he made warm friendships with the best and greatest in Art and literature. It rarely falls to the lot of a biographer to narrate a life of such unvarying happiness as that of Raffaelle. Pleasant and profitable as this genial study and companionship would naturally be to the young painter, whose devotion to Art never relaxed, and whose patrons increased with his years, greater triumphs awaited him in the imperial city itself; and hither, in 1508, he travelled at the request of Pope Julius II., to decorate the halls of the Vatican, the invitation having come through his uncle Bramante, the great architect, who enjoyed the patronage of that pontiff. The artist was now twenty-five years of age, and had already given evidence of his powers; he had the fullest scope for their exertion, and the remainder of his too short life was devoted to the glory of the church and its head in Rome.

In the labyrinth of short streets that lead to the heart of the old city, opposite Hadrian's Bridge, is situated the house in which Raffaelle first resided. It is in a narrow street, known as the Via Coronari; the tall houses close it in, so that the sun never reaches the lower stories,—a valuable arrangement where shade is to be most courted, but which gives a gloomy and stifling look to Italian towns. The house is featureless, and might not be recognised but for the nearly decayed chiaroscuro portrait of its great tenant, which was painted by Carlo Maratti in 1705, when it was renovated and partly rebuilt. The interest of this house, in connection with Raffaelle, did not cease with his life; it was ceded at his wish to the Church of St. Maria della Rotonda, after his death, by his executor, Baldassare Pescia, the Papal Secretary, that a chapel might be endowed to the honor of the Virgin in that venerable building, where prayers should be said for the repose of his soul. At that time the house produced a rent of seventy crowns per annum. In the year 1581, at the desire of Siticella, arch-priest of the Pantheon, Gregory XIII. united the property to the revenue of his office; and in the year 1705, the arch-priest of that time mortgaged the house to pay for the repairs noted above. It now produces a very small surplus, and that is said not to be applied to the purposes indicated in the will.

The chief memorials of Raffaelle's residence in Rome, are the immortal works which still decorate the papal palace of the Vatican. The hall called *della Segnatura* was first decorated

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* Felice de Fredis, who discovered in 1508 the celebrated group the Laocoon, in the Baths of Titus, had bestowed on him in consequence, by the Pope Julius II., the lucrative gift of the tolls and customs received at the Gate of St. John Lateran—an ample fortune in itself. Michael Angelo, who was in Rome at the time, describes the excitement the event caused. By a happy omen had his god-fathers named him *Felice*. The gift was so large that the Church of St. John importuned the succeeding pope to compound with him for its restoration; but he only gave it up for the noble place of Apostolic Secretary, which he enjoyed until his death in 1529. He lies buried in the left transept of the Church of the Ara Cœli. The inscription on his grave-slab is nearly obliterated. Is there no kind hand in Rome, the city of sculptors, to recut the few lines recording the name of one who did the world of Art much service?

by him with the great compositions known as "The Dispute of the Sacrament," "The School of Athens," "The Parnassus," and "Jurisprudence." They occupied him nearly three years. Toward the end of that period the sight of Michael Angelo's grand conceptions in the Sistine Chapel are believed to have influenced the young painter to a greater elevation in the treatment of his works. The sybils and prophets in the Church of Santa Maria della Pace, as well as the painting of the prophet Isaiah in the Church of St. Augustin, executed about this time, are cited as proofs of this influence. On the walls of the palace of Agostino Chigi he had painted his famous "Galatea," and had achieved for himself a fixed and honourable position in Rome, surrounded by friends of the highest and most influential kind, and some few scholars who aided his labors.

In 1512 the second hall of the Vatican was commenced, in the February of the following year the pope died. Julius was more of a soldier than a churchman; and is recorded to have told Michael Angelo to place a sword rather than a book in the hand of the bronze statue he destined to commemorate him. Leo X. had more refined taste, and became celebrated as a patron of the Arts. To narrate all of Raffaelle's labors for this pontiff would be to swell this page with a list of world-renowned works, familiar to the whole world for their lessons of beauty, cultivated by the highest technicalities of Art. Suffice to say that the Art-labors of the Vatican never ceased, and when Bramante died Raffaelle was appointed his successor. His first architectural work was the rows of galleries which surround the court-yard of the Vatican, the foundations of which had only been laid by his uncle Bramante. These triple arcades rising above each other, and commanding magnificent views over Rome, were richly decorated by Raffaelle with designs which startled the world by their novelty, and capcaptivated by their beauty. Founded on the antique mural decorations then recently discovered in the Baths of Titus, the genius of the painter adopted their leading ideas, infusing the composition with his own fancy and grace; and thus gave a new decorative art to the world. Raffaelle was ever alive to the progress of Art, and its interests were consulted by him in the largest way. He fostered the genius of Marc Antonio Raimondi, the engraver, at a period when the graphic art was looked on merely as a curiosity; in the midst of his laborious occupations he found time to design for him subjects for his *burin*, and to superintend their execution. But more than all, he defrayed the whole expenses of these engravings himself, taking Marc under his protection, until the new art had established itself in popular favor, and could be followed as a lucrative profession. To Raffaelle, therefore, the art of engraving, and the traders in prints, owe a deep debt.*

The early artists were men of multifarious accomplishments: they were not painters only. We have record of their power in many branches, and examples of their versatility still remain to us; hence we need feel no surprise that the painter Raffaelle was installed to the post of papal architect. Michael Angelo also practised architecture, as well as sculpture and painting; but more than this, he fortified the city of Florence, and successfully superintended its military defence during six months, when it was attacked by the Prince of Orange in 1529. Benvenuto Cellini has also left record of his fighting powers, when he served in the siege of the Castle of St. Angelo, in 1528. Albert Durer introduced the Italian style of fortification to his native city of Nuremberg, and wrote a treatise on the art; he was also painter, sculptor, designer, and engraver on wood, copper and stone. Leonardo da Vinci excelled in the arts, and added thereto such sound philosophical views as to have been greatly in advance of his age; indeed, his research in optical science has led to his being considered the father of the modern daguerreotype, inasmuch as he propounded the possibility of securing images by the action of light alone.

Of Raffaelle's architectural powers Rome has varied examples. The principal are at the Vatican and St. Peter's, whose construction he superintended during the rest of his brief life. On the authority of Vasari we may attribute to him one of the most beautiful of the Roman *palazzi*, the Villa Madama. The Caffarelli Palace is also known to be his design,† as well as the very beautiful funeral chapel for his friend and early patron Agostino Chigi, in the Church of Santa Maria del Popolo. Among the quiet gardens of the Celian Hill is one of his most picturesque works, the little Church of Santa Maria in Navicella, an edifice abounding with the most interesting artistic associations. It stands on the site of the house of one of the earliest Christian saints, St. Cyiac, and was built by Leo X. entirely from Raffaelle's design, with the exception of the simple and elegant little portico, which is by Michael Angelo. The paintings within are by Raffaelle's favorite scholars, Julio Romano and Perino della Vaga. This interesting church takes its distinguishing name from the marble galley placed on a pedestal in front of the portico, by that famous patron of the Arts, Pope Leo X., in whose time it was discovered. It is a very curious work of the Roman era.

Raffaelle had achieved so high a position in Rome, and was so overwhelmed with commissions, that his scholars and assistants increased greatly. But for their aid it would have been impossible for him to have executed the large number of works he did. It became his practice to design, superintend, and finish only; but the labor of carrying out his works was left to his scholars, who all became men of mark. The chief was Julio Romano, who painted a large portion of the Vatican. The Loggie was the work of many hands; the figures, the flowers, the scrolls, and the ornament, were all apportioned to the facile and ready powers of the army of artists the "divine master" had at command. It is recorded that he had a retinue of some fifty who were thus employed; these formed his train in public, so that "he appeared like a prince rather than an artist;" the fascination of his manners led to affection for himself irrespective of his genius.

But death came to carry the artist away in the midst of his triumph, ere he had entirely reaped the full harvest of his fame, leaving the world greatly the loser. Raffaelle, now a wealthy man and living like a noble, had purchased for himself a mansion worthy of a nobleman born. His affianced bride, the niece of Cardinal Bibiena, died in 1518, and was buried in the Pantheon; and in April, 1520, the painter was laid in his tomb in the same edifice. It was less than twelve years of thought and action that had sufficed him to found immortal renown in Rome, and leave that city the bequest of the most glorious Art-treasures in the world. His life had indeed been sacrificed to his eagerness to serve the pope; harassed by a multiplicity of engagements, Raffaelle had hurried from the Farnesina, the palace of the wealthy banker Chigi, which he was engaged to decorate, to consult with the pope about his works at the Vatican. He had overheated himself with running this quarter of a mile; and he felt a sudden chill as he stood in the cold unfinished building; he went to his palace (a very short distance only), and in the course of a few days died there at the early age of thirty-seven, April 7th, 1520.

The last home of Raffaelle is still pointed out in Rome; it stands in the district termed the Trastavere, in the small square midway from the Castle of St. Angelo and St. Peter's. It occupies one side of this square, and is an imposing structure. The architects were Bramante and Baldassare Peruzzi; it is now known as the Palazzo degli Convertiti, and devoted to the reception of converted heretics. Here his body lay in state in

* It should be noted, however, that Albert Durer was really the chief popularizer of the art. His prints on copper and wood (the latter particularly) had circulated over Northern Europe, and were well-known in Venice. Raffaelle saw at once the latent power by means of which he might propagate and perpetuate his own designs, and at once encouraged the labors of Raimondi. This engraver had copied in Venice many of Durer's engravings, to his detriment, and Durer had complained to the magistracy for redress. It is to Durer we owe the discovery of etching and corroding a plate by acid, one of the greatest boons to the engraver, and an enormous saving of labor.

† It is opposite the Church of St. Andrea della Valle, and is now called the Palazzo Vidoni; the upper portion is not Raffaelle's work.

front of his unfinished picture of the "Transfiguration,"* his greatest, as it was his last, work. There was a grandeur in such a death—a glory in such a death-chamber, "which time has not yet effaced from the memory of man. It was no doubt one of these *impromptus* of the eloquence of things which owed its effect to a cause so much the more active and fruitful, because it was natural and not arranged."†

——" And when all beheld
Him, where he lay, how changed from yesterday—
Him in that hour cut off, and at his head
His last great work; when, entering in, they looked
Now on the dead, then on the master-piece;
Now on his face, lifeless and colorless,
Then on those forms divine that lived and breathed,
And would live on for ages—all were moved;
And sighs burst forth, and loudest lamentations."‡

All Rome mourned the death of the great painter. The pope wept bitter tears; his loss was indeed great, for the spirit who could make his pontificate glorious had departed, and left none to fill the void. "Rome seems no longer Rome since my poor Raffaelle is gone," writes Castiglione to the marchioness his mother. His funeral *cortege* included in its ranks the greatest men in station, and the most talented in Art and literature. These, with his friends and pupils, marched amid the lamentations of the whole city to the Pantheon, and reverently laid the painter beside the altar he had endowed.

Rome—perhaps the world—possesses no building of more interest than this. The ancients described it with admiration eighteen centuries ago, and it still remains the best preserved monument of modern Rome.

"Relic of nobler days, and noblest arts!
Despoil'd, yet perfect, with thy circle spreads
A holiness appealing to all hearts—
To art a model; and to him who treads
Rome for the sake of ages, Glory sheds
Her light through thy sole aperture; to those
Who worship, here are altars for their beads;
And they who feel for genius may repose
Their eyes on honor'd forms, whose busts around them close."§

Let us enter this noble relic of the past, sacred with the associations of ages. Over the portico is an inscription, recording its erection by Agrippa in his third consulate (B. C. 25); the pillars of this "more than faultless" portico are Corinthian columns of oriental granite. The bronze doors are antique; so is the open grating above them: you pass them, and the interior strikes you at once by its simple grandeur. It is a rotunda supporting a dome, the only light being received through the circular opening in its centre. The rain falls freely upon the floor; and in the pavement may be noted the star-shaped apertures by which it may descend to the drains beneath. No antique building exists for modern uses so unaltered as this.|| In the walls are seven large niches, and between them are eight *ædicula*, or shrines which have been converted into altars of the Christian saints. Opposite the entrance to the left of the centre, the visitor will notice an altar, in front of which hangs a triple light, supported by a silver monogram of the virgin; the same monogram is above the altar. It is that founded by Raffaelle, for the perpetual support of which he gave the house for the saying of prayers for his soul. The figure of the Virgin and Child, now known as "La Madonna del Sasso," was sculptured by his pupil Lorenzo Lotti. Under this altar the body of Raffaelle was laid, and upon a lower panel of marble to the left of it is the epitaph to the painter written by Cardinal Bembo. On the opposite side is the epitaph to Annibale Caracci; and in other parts of the building are buried Raffaelle's betrothed wife, and his scholars, Giouanni da Udine, and Perino della Vaga. Baldassare Peruzzi, one of the architects of Raffaelle's palace, also lies here; as well as Taddeo Zuccari, and other eminent painters. Its most modern artistic monument is Thorwaldsen's bust to Cardinal Gonsalvi. Where can the Art-pilgrim pay a more soul-inspiriting visit than to this

"————sanctuary and home
Of Art and piety?"

Carlo Maratti desired to place a more striking memorial of Raffaelle's resting-place than the simple inscription, and accordingly, in the year 1674, a marble bust of the painter, executed by Paolo Nardini, was placed in one of the oval niches on each side of the chapel. The epitaph to Maria Bibiena (Raffaelle's betrothed) was removed to make way for Maratti's new inscription; and it was currently believed that the skull of Raffaelle was removed; at least such was the history given of a skull shown as the painter's, religiously preserved by the Academy of St. Luke, and descanted on by phrenologists as indicative of all the qualities which "the divine painter" possessed. But scepticism played its part: doubts of the truth of this story led to doubts of Vasari's statement respecting the exact locality of Raffaelle's tomb. Matters were brought to a final issue by the discovery of a document proving this skull to be that of Don Desiderio de Adjutorio, founder of the society called the Virtuosi, in 1542. Thereupon, this society demanded the head of its founder from the Academy of St. Luke; but they would neither abandon that, nor the illusion that they possessed the veritable skull of the great artist. Arguments ran high, and it was at length determined to settle the question by an examination of the spot, which took place on the 13th of September, 1833, in the presence of the Academies of St. Luke and of Archæology, the commission of the Fine Arts (including Overbeck and others), the members of the Virtuosi, the governor of Rome (Monsignor Grimaldi), and the Cardinal Zurla, the representative of the pope.

The result will be best given in the words of an eye-witness, Signor Nibby (one of the commission of antiquities and Fine Arts), who thus described the whole to M. Quatremere de Quincy, the biographer of Raffaelle:—"The operations were conducted on such a principle of exact method as to be almost chargeable with over nicety. After various ineffectual attempts in other directions, we at length began to dig under the altar of the Virgin itself, and taking as a guide the indications furnished by Vasari, we at length came to some masonry of the length of a man's body. The laborers raised the stone with the utmost care, and having dug within for about a foot and a half, came to a void space. You can hardly conceive the enthusiasm of us all, when, by a final effort, the workmen exhibited to our view the remains of a coffin, with an entire skeleton in it, laying thus as originally placed, and thinly covered with damp dust. We saw at once quite clearly that the tomb had never been opened, and it thus became manifest that the skull possessed by the Academy of St. Luke was not that of Raffaelle. Our first care was by gentle degrees to remove from the body the dust which covered it, and which we religiously collected, with the purpose of placing it in a new sarcophagus. Amongst it we found, in tolerable preservation, pieces of the coffin, which was made of deal, fragments of a painting which had ornamented the lid, several bits of Tiber clay, formations from the water of the river,¶ which had penetrated into the

* The picture was afterwards finished by his pupil Julio Romano. It had been ordered by the Cardinal Medicis for Narbonne, but was placed over the high altar of the Church of St. Pietro in Mortorio, at Rome. It was then removed to the Vatican; from whence it was carried by Napoleon to Paris, but was restored to Rome at his fall.

† Quatremere de Quincy. ‡ Rogers' "Italy."

§ Byron, "Childe Harold's Pilgrimage." The busts are now all removed.

|| "Though plundered of all its brass, except the ring which was necessary to preserve the aperture above—though exposed to repeated fire—though sometimes flooded by the river, and always open to the rain, no monument of equal antiquity is so well preserved as this rotunda. It passed with little alteration from the pagan into the present worship; and so convenient were its niches for the Christian altars, that Michael Angelo, ever studious of ancient beauty, introduced their design as a model in the Catholic Church."—FORSYTHS' *Italy*. The bronzes here alluded to, which once covered the interior of the dome, was stripped off by Pope Urban VIII., and moulded into the great canopy now over the tomb of St. Peter in Rome; the rest was used for cannon which were placed on the Castle of St. Angelo. Venuti has computed its weight at 450,250 pounds.

¶ This will be understood when we remember that the Tiber has inundated this lower part of Rome several times. On the external wall of the adjoining Church of Santa Maria sopra Minerva, are the marks of the height to which the waters rose, and which is five feet above the pavement level.

coffin by infiltration, an iron *stelletta*, a sort of spur, wit which Raffaelle had been decorated by Leo X., several *fibulæ* and a number of metal *anelli*, portions of his dress." These small rings had fastened the shroud; several were retained by the sculptor Fabris, who also took casts of the head and hand, and Camuccini took views of the tomb and its precious contents.

On the following day the body was further examined by professional men: the skeleton was found to measure five feet seven inches, the narrowness of the coffin indicated a slender and delicate frame. This accords with the contemporary accounts, which say he "was of a refined and delicate constitution; his frame was all spirit; his physical strength so limited that it was a wonder he existed so long as he did." The investigation completed, the body was exhibited to the public from the 20th to the 24th, and then was again placed in a new coffin of lead, and that in a marble sarcophagus presented by the pope, and taken from the antiquities in the Museum of the Vatican. A solemn mass was then announced for the evening of the 18th of October. The Pantheon was illuminated, as for a funeral; "the sarcophagus, with its contents, was placed in exactly the same spot whence the remains had been taken. The presidents of the various academies were present, with the Cavalier Fabris at their head. Each bore a brick, which he inserted in the brickwork with which the sepulchre was walled in." And so the painter awaits "the resurrection of the just," and the fellowship of saints and angels, of which his inspired pencil has given us the highest realisation on earth.

From the Liverpool Photographic Journal.

LIVERPOOL PHOTORRAPHIC SOCIETY.

At the monthly meeting on Tuesday night, December 22nd, at the Royal Institution, Colquitt Street, there was an unusually good attendance, owing probably to the rumour that a proposition was to be made to to merge the Society in the Historic Society of Lancashire and Cheshire. In the absence of Mr. Corey. Mr. Bell, one of the Vice-Presidents, was called to the Chair.

Mr. Forrest, the Treasurer, exhibited some beautiful specimens of the collodio-albumen process, by Mr. Robinson, of Leamington, and a vignette portrait, printed on glass, by Mr. Keith, of Liverpool, burnt-in by himself, in enamel colors fluxed on the glass, and burnt-in over the photograph. Though hurriedly done that afternoon, and subjected only to one burning, the result was highly satisfactory, as showing what may be done in this phase of the art. The outlines were beautifully sharp and distinct, the colors bright and natural, and the image perfectly indelible.

THE POSITION OF THE SOCIETY.

The Chairman said he had received a note from Mr. Greenwood, the Proprietor of the *Liverpool and Manchester Photographic Journal*, copies of which would doubtless have been sent to all the members, conveying the surprising intelligence that this Society had amalgamated with the Historic Society. He supposed they should hear something more about it, if they called upon Mr. Keith, who had received some communication from the Historic Society.

Mr. Keith, Hon, Secretary, read the following letter:

Liverpool, 18*th Dec.*, 1857.

Dear Sir,—At the council meeting of this Society last evening your letter to Dr. Hume was discussed, and a deputation of three members, viz., Messrs. Sanson and Baxton, and the Rev. A. Hume, D.C.L., &c., hon sec. to the Society was appointed to confer with the delegates of the photographic Society on the subject of your communication.—I am, dear sir, yours obediently,

J. H. Lever, Asst. Sec.

J. A. Forrest, Esq., &c. &c. &.

Mr. Forrest, in reply to a member, said the communication from himself, to whith this was an answer, was merely opening the question of amalgamation on the proposed basis of last year. He suggested that a deputation should be appointed to meet a deputation of the Historic Society, reporting the result of the conference to a future meeting.

The Chairman supposed that the active members of the Society, after giving it another year's trial, had not met with the support they had anticipated, very few members having come forward to assist the council with papers and photographic information, although the usual meetings had been pretty well attended. His own impression was that by amalgamating with the Historic Society, which had a vast number of members, they would be advancing the interests of photography in Liverpool, and therefore in England, and therefore in Europe, by bringing the science before a larger body of members. He opposed the proposition last year because he did not consider the Society would be joining hands with the Historic Society on fair terms; their affairs were, however, now in a better position, and he had not the same objection he had then.

Mr. Forrest observed that with hard dunning and fighting the Society had this year paid its way, and he had in his hands a balance of £10 11s. 6d., against which there was an old unsettled account, which had stood over for three years, in connection with the Photographic Exhibition. When that was discharged there would still be a balance of £3 11s. 6 in favor of the Society. With respect to the amalgamation he stated that for the past four years he had devoted a great deal of his time to the Society but that now, owing to the ill-health of his partner he should be compelled to direct his entire energies to to his own business, and he should therefore be unable to take any prominent part in the work of the Society.

In reply to Mr. Cook, Mr. Forrest stated that the grounds of the proposed amalgamation were, that they should enter the Historic Society as members—the payment of an annual fee of one guinea without paying the entrance fee; that they were to have the full privilege of attending all the meetings of the Historic Society; that the council would enter into and form part of the council of the Historic Society, the officers of each acting together. It would, in fact, just be a transfer, having all their privileges and rights reserved.

Mr. Cook—What guarantee would there be that we should have any photographic communications, and that we should continue to be a photographic society?

Mr. Bell.—There would, no doubt, be a photographic section every month.

Mr. Forrest.—The Historic Society has a night set apart for the scientific section, and for miscellaneous matter.

Mr. Corey, who aad just come in, on being appealed to for his opinion on the matter, as one who had taken a very prominent part, in the affairs of the Society, said:—Mr. Forrest has stated so much that he has left very little for me to say. We are entirely in the hands of the present meeting. I can bear witness that it has been a great labor to some of us to provide entertainment. for members from time to time, and I for one say that I cannot do so any longer, though I am afraid, if we do amalgamate, that our individuality will be lost—that we shall no longer exist at a Photographic Society. But, I do not think that the members of the Society should look to a certain few of their body to provide them entertainment, month after month., When we can do this no longer, we must give it up, as we are obliged now to do. If other gentlemen will come forward to provide papers and information for their ordinary meetings, I, for one, shall be prepared, most gladly, to add my quota towards the continuation of the Society as it is; and I came here to-night, prepared to support the continuance of the Society for another year, inasmuch as we should start on a much more advantageous circumstances than ever before. I don't think, however, unless there is some great change, some infusion of new effort and energy, that this can be done with success, and I shall therefore support the proposed amalgamation with an elder brother—the uniting ourselves with men of great talent in literatnre. We shall still have opportunities of discussing our own matters, on as many occasions as we shall be able to provide matter for them.

Mr. Keith thought the proposed arrangement was highly desirable.

A Member asked what arrangement would be made about the *Photographic Journal* being furnished to them, if they amalgamated with the Historic Society? Upon which the Chairman referred his interrogator to Mr. Greenwood. Some conversation ensued, during which some remarks were made by those members whose communications in the *Journal* had been commented upon in "foot-notes," by the Editor, to which subject it will be seen we have referred in our address.

On the proposition of Mr. Forrest, seconded by Dr. Ayrton, Messrs. Corey, Keith, and Foard, to whom the name of Mr. Forrest was subsequently added, were appointed a deputation to meet the deputation of the Historic Society.

Mr. Foard consented to act as auditor of the accounts for the year just passed.

CASEINE AS A SUBSTITUTE FOR COLLODION.

Mr, Berry said he had been for some months past making experiments with the view of finding a substitute for collodion, and he had at length arrived at a tangible result, and hoped, on another occasion, to be able to submit specimens to the meeting. He had always, he said, considered collodion perfection, as a surface to work upon. They knew that it was perfectly fluid; that when poured on the plate it set with an equal thickness all over by the evaporation of the ether; and at last, while still moist, and the pores still beautifully open, when plunged into the bath it imbibed the nitrate of silver, and the necessary chemical decomposition took place. He had always kept these qualities in mind in searching for a substitute for collodion. Many organic bodies had been tried, as starch, for instance, which yields a very porous film, but does not adhere with sufficient tenacity to the glass. Starch pictures, too, were, nearly as rapid as collodion. With albumen it was the converse; it was perfectly fluid, and would imbibe the chemicals required; but when poured on to the glass it gixes off only water, and the result is a solid film almost perfectly impervious to the action of the bath. Albumen requires a sixty grain bath, at least. After casting about for some months, it struck him that *casein*—the rejected substance of Mr. Sutton's process, he using the *serum* only—if it could be made into a liquid which would be volatile, would give a pure homogeneous surface. In experimenting he found that it was soluble in strong acetic acid; and it struck him that a solution of casein and *acetic acid* would be a proper medium for receiving pictures. Unfortunately all the *iodides* and *bromides* he tried precipitated the whole of the casein from its solution in acetic acid. There he left it, believing that *casein* was not the thing at all. Accidentally turning over a chemical work one day, he found another peculiar property of *caseins i. e.*, that it is very soluble also in alkalies, and especially in *ammonia*. It then struck him that if the *casein* dissolved in *ammonia*—would hold in solution the iodide and bromide required to make the surface sensitive, it might answer. He proceeded immediately to prepare some. He washed away the acetic acid from the precipitated *casein*—then some five months old—dissolved it in *ammonia*, adding the iodide, and he obtained a perfectly homogeneous fluid. There was a separation of a portion of the cream. In precipitating the casein from the skimmed milk, there would necessarily be some cream carried down; and when that was dissolved in the ammonia, it formed a kind of soap, and was difficult of separation. If it had not been so, he should have had some perfect negatives to have shewn them. They might make the solution as thick as thick as treacle if they liked; it would still be perfectly fluid. Casein, at a certain temperature, combines with oxygen and becomes insoluble in water; therefore, in preparing the plates, they should not be exposed to a heat of more than 212°, but with that they would form a glossy surface, which could not be distinguished from albumen. If plunged in an ordinary thirty-grain nitrate bath, it coated almost as quickly as colldion, and it might be used either in its wet or dry state, developing with ordinary pyrogallic acid. He preferred using the citric to the acetic acid, because the latter had a tendency to dissolve the film: they must not use cyanide because it dissolved caseine as well as albumen. When the picture was cleared, all they had to do was to dry and heat it again, and then the film was so hard that they could scarcely scratch it with the finger nail. He had obtained very good negatives in a room with it, in two minutes, and they would have to give a minute at least to wet collodion.

In reply to Mr. Cook, Mr. Keith, and other members,

Mr. Berry stated that applying heat about 212° the ammonia was driven off; the bath was not extra acid; he preferred the positive bath. It did not injure the bath in the slightest degree. He cleared with hypo; if the negative was weak, and they cleared with gold, it would intensify the image very much. Unlike albumen, which a short period would serve to destroy, this casein substitute for collodion would keep twelve moths or longer. It was a chemical compound, just as soap was: it was, in fact, a solution of *casein* in *ammonia*. With a little care they could get rid of the oily matter precipitated by the *acetic* acid.

The detail of the pictures obtained by this process was splendid.

A Vote of thanks was on the motion of Mr. Forrest accorded to Mr. Berry, who, in responding begged every one would try the process, the strength of the iodizing mixture to be used being six grains of iodide of ammonia to one ounce of this solution. They must not use the metallic iodides and bromides, because they precipitated the casein. He was inclined to think that potash or sodia was the best. The strength of the ammonia was quite immaterial. When the ammonia was evaporated the film was colorless, and they would not know there was anything on the glass. He had seen very good positive pictures from it, as far as color went. He would not think of trying it for portraits, because it was not so sensitive as collodion; but for large surfaces it was much more economical.

Mr. Bell said he had seen two of Mr. Berry's plates, and he thought it was the greatest desideratum they had yet possessed.

After some further conversation, the subject dropped, and a vote of thanks to the Chairman terminated the proceedings.

From the Liverpool Photographic Journal.

BURNT-IN PHOTOGRAPHY.

To the Editor of the Liverpool Photographic Journal:

Sir,—With a proper care, there is no doubt but that, even in this climate paper, or still more, parchment paper, (or silica† or alumina-prepared paper,) may endure for a very long period; but the mischief is just this, that one week's, or perhaps one day's carelessness, the entrance of a few drops of rain, or the attacks of vermin, even some insignificant insect, might destroy what had stood for ages. In the case of photography used for book illustration, these risks are not perhaps so great, and must of course, from the nature of the case, be submitted to as far as they go, but in the cases of portraits, landscapes, copies of paintings or engravings of the larger size, such as might be suitable for the decoration of houses or public buildings, how very desirable to secure for the support of the picture a tablet of some material which shall both be itself indestructable from time, damp and the ravages of vermin; and of such a nature as permit the penetration and amalgamation of the metallic oxides, or other substances of which the picture consists, to such an extent as to secure the picture's partaking of the imperishableness of the tablet. That this absolute amalgamation is an essential requisite we see from the old daguerreotype which, though on an imperishable tablet, is itself one of the most easily injured of photographs. Porcelain, glass, and many other vitreous and ceramic, vitrified or semi-vitrified compounds, such as may be produced by the artificial combination of earths, alkalis, borates, &c. &c., (and metal, stone, slate, &c., with a coating of glass or allied compounds,) from the facility with which the metallic oxides, metals, or their compounds contained in the pictures may be made to adhere to, or amalgamate with them on the ap-

† See my February paper in *Photographic Notes*.

plication of heat, hold out exactly what we are looking for. The same substances as supports for films of collodion, &c., may no doubt give very valuble and beautiful results, even without burning in; but this still does not exactly give us what we are so much in want of—a photograph which, though not of course proof against intentional injury or violence, shall yet have a durability identical and co-entensive with that of the undecaying fabric on which it is fixed a work of art which, (whether the photograph be the principal consideration or only decoratively employed,) shall give promise of such integrity after the lapse of ages as we now witness in the products of the potteries of ancient Etruria, of China, or of India. This I have long been wont to consider, (and I suppose I have not been altogether singular in my estimate of its desiderableness,) as the second great desideratum in photography, to be placed alongside that already alluded to, of a cheap and permanent, (as far as the paper will allow,) process for purposes of book illustration, and natural history delineation; and it has been also in a great measure—I may perhaps say fully as much with a view to the attainment of this second desideratum—that my experiments have been carried on, and it will, I believe, be found that the processes which I have already enumerated, along with the indicated variations, afford the means of producing good dark neutral tints, such as may be useful forall ordinary purposes of photography, (which silver has never yet been made to yield,) as well as a minor but still very interesting consideration—the means of decorating our pottery of every description, tiles for architectural purposes, glass, &c. &c., with an endless variety of photographic designs, simple or kaleidscopic, in a great variety of neutral tints or color, and we may even produce more than one color in one compound design, printed at one time, *e, g.*, by printing in the first instance with the bichromate of *ammonia, soda*, or potash alone; and in the after stages managing so that different metals shall be precipitated on the different parts of the design. We might even hope in the same way to obtain something like an approach to the representation of certain subjects in natural colors, though for this it is probable that the system of photo-chromo-lithography, which I have elsewhere described, might be found more workable. In all burnt in photography, the principle of attention to the color of the metallic compounds which form the residue of the picture after its passing through the fire, particularly as affected by heat, by these combinations with salica or silicates, and other substances which exist in the glass, porcelain, or other tablets, or its superficial glaze or enamel, or with each other, as already well known to, and carefully studied by, the painters, stainers, and printers, must be kept constantly in view. The cause of the imperfect success, as far as any generally valuble result goes, of all attempts at burnt-in photography of which I have heard, has been the yellow color which silver produces in combination with silicates. My object at the meeting of July 14th, was to place the *photographer* on glass, on porcelain, &c., in something like the same position with regard to *neutral tints* and colors in which the *un-photographic printer*, painter, and stainer had long been.

This, I did by calling attention to the metals calculated to give the requisite tints and colors, and showing at the same time a variety ol photographs, with the metals recommended—cobalt, copper, iron, manganese, &c , combined in various ways, (with explanations of processes,) as proofs of the perfect possibility of producing photographs containing the materials which I recommended, supplying thus the hitherto wanting link in the chain. Want of proper appliances and convenience for the purpose, &c., prevented my having the actually burnt-in specimens to show, but though there may be room for much further experiment as to the minutæ of manipulation, composition of cements, fluxes, enamels, &c., the daily experience of burning-in the un-photographic pictures and prints, is quite sufficient to settle the possibility of burning in the photographically prepared prints with the same materials, and were it not by rough experiments which I have been able to make, are quite enough to show the possibility of burning in photographs in a variety of ways, from paper as well as other films with some variety of the metals recommended, as well as with silver. In burning-in these we do not employ any *vitrifiable* mixture to form a glaze above the photograph. The silver, or silver and gold photographs, do appear as would be expected to burn in much more readily, and at a lower temperature than most or any of the others. With most metals it seems to be necessary, unless we have a vitrifiable glaze above the photograph, that the surface which it is to be made to amalmate with should be exposed to sufficient heat to bring it into a state of fusion, or something very near it, and this, of course, necessitates that in burning into glass, in this way, the glass should have previously received a coating of some vitrified (or vitrifiable) mixture, glass or enamel, which will melt or soften sufficiently at a considerably lower temperature than the glass itself. In burning in with various descriptions of pottery, porcelain, tiles, &c., further experiments can alone decide whether the photograph should be applied to the tablet in its unglazed or in its glazed condition; whether any vitrifiable mixture (and of what exact composition) should be applied to the photographic film of collodion, albumen, &c., after it is printed on, or to the film of paper, after it has been attached to the tablet. Gum appears to answer pretty well for the cementation of the paper photograph to the tablet, and it may be that the mixture of a little nitre or borax, &c., with the gum solution, or the soaking of the paper in some such salts, or both, may turn out to be an improvement where we do not intend applying any vitrifiable mixture to the paper after its attachment. In experimenting in a common fire, the sudden combustion and draught is very apt to carry away the paper entirely—the more gradual application of heat in a furnace, &c., will avoid this. To prevent the breaking-up and detachment of the paper photograph, a very good plan will probably be, to keep it flat by a heavy or loaded slab of stone, glass, metal, or other material, till carbonization is absolutely complete, and then, it may be, remove the weight, and then either apply a vitrifiable mixture, or trust to heat and the softening of the surface enamelled and attraction to produce amalgamation. The application of the vitrifiable mixture to the photograph, after it has been once in heat, unless either the plate has been cooled before the weight has been removed, so as to retain the carbon of the paper or other film, or unless we first again expose the plate to a heat sufficient to cause a sort of superficial attachment before we apply the final glaze, is hardly to be recommended, as, where practicable, it would be very generally without an object. In the case of each description of tablet, experience of the ready trained workman, with all his appliances at command, will very soon decide whether it is better to trust entirely to the glaze below, or partially or entirely to a vitrifiable application above the photograph; and there are many other points of detail which his experience can alone, and will very readily decide, *e. g.*, as to the best cement, where our photograph is attached to the tablet after printing, as I have recommended with paper, &c. I have considerable hopes from collodion In many respects paper has advantages. I have tried various organic cements. As to the production of any required shade of color or neutral tint, we have to set to work on the same principle as we have described for unburnt photography, only devoting our attention entirely to the color which the picture will assume after, and not to that which it will exhibit before burning, and regarding, of course, the cyanogen—radical salts merely with reference to the heavy metal contained in the radical, the ferro, and ferrid-cyanides, being thus valued on account of their iron, and the cobalt cyanides for their cobalt, &c. It is likely that both in neutral tints and in colored photography, the cobalt, cyanides, and other salts, which I have noticed, &c., of comparatively small value in unburnt photography, may be here among the most useful agents. Cobalt is not only valuable for the blue color of its silicate combination, but for the formation of many intermediate colors with other metals, and of most valuable neutral tints and very near approximations to black with manganese, copper, iron, &c. Such mixtures of metals are easily produced either by an original mixture, of the metals in the sensitizing solution, by a judicious after-application of metallic salts, or of the metal organic salts. Both in copper, iron, cobalt, chrome, nickle, and manganese, which are the metals I have principally directed my attention to, there seems to be no difficulty in fixing any number of them, and in almost any required proportion in one photograph. To attempt any *detailed* enumeration of all the ways in which this might be done (besides being in some degree a repetition of what I have given in my former letter, would be filling pages to little purpose, as the general principle of acting once laid down, and the most desirable chemicals enumerated, the application become insufficiently evident, but we may notice generally, some of the principal ways of securing the presence of a plurality of metals (or one metal) in the photograph.

I.—In the first stage, that is before the metal organic developement, this may be accomplished. 1st.—By introducing one or any number of the metals not including the chrome of the chromic acid) at the very commencement of all, into the solution used for film or paper sensitizing, this being managed either by employing a bath, containing at once in alkaline-bichromate, and a salt or mixture of solts of the metal or metals desired, or else by dissolving the oxide or oxides, or neutral chromate or chromates of the same in solution of chromic acid (or the chromates in sulphuric or other acids), giving thus a bath containing metallic bichromates alone. 2nd.—By sensitizing with the bichromate of potash, soda, or ammonia (or some of the complex alkalis) alone, and not applying the metal or metals till after printing, as practised in the ink process of M. Sella, lately published. In the case of some metals, as copper and cobalt, it appears pretty indifferent in which of these ways we introduce them in this stage; but this was not always so. With iron for instance, the dark solution after precipitation from protosulphate and bichromate of potash does not answer well.

II.—In the second stage we have the choice of a variety of metal cyanides, &c., for the expulsion of the chromic acid. The iron cyanides and cobalt cyanides act readily. It must be recollected, however, that for burnt-in photography we do not gain in atomic quantity of metal by this developing unless we mean to follow it up by the application of the final metal bath, corresponding to the iron bath in the cuprotype as described, and still farther, that unless we use for the development a salt of a metal cyanide or other metal containing acid or radical, that we actually lose metal by the expulsion of the chromic acid. The object in going through this second stage for porcelain printing is therefore generally to substitute some other metal for the chrome and to supply by the proportion of the alkaline metal cyanide retained by the image, a basis for the introduction of additional metal in the third stage.

III.—As to the third stage, the last opportunity of introducing metal by the final toning bath, we must depend here either altogether on the alkaline metal cyanide retained, or else trust wholly or partially to the superior affinity of the metal in the toning bath for the metal cyanogen radical in the picture. Cobalt and copper, for instance, will, in many cases, replace iron with ferro-cyanogen and cobalt cyanogen, and iron or uranium will supplant other metals in other cases. We need hardly enlarge upon the command which the power of introducing metals at any one or in all of these stages gives us over the result. Where we wish a photagraph containing one metal alone, we might either accomplish this by the expulsion of the chromic acid, by an alkali, alkaline carbonate, or by a salt of some organic acid, *e.g.*, the mellonide of potassium, or what may be generally found much preferable in many respects, secure its isolation in some such way way as the following. Develop a washed chromate of cobalt print by cobalt cyanide of potassium; wash, and tone by cobalt bath, with iron we may adopt the same system, substituting the ferro-cyanide of potassinm; however I dont think that iron alone in this way is likely to be so very useful. The developing of an iron print with ferro-cyanide or cobalt-cyanide, and toning with iron, copper, or cobalt, might give more useful results, but there *are* serious objections, however, to the introduction of iron in the first stage at all. I have already, I think, mentioned that the mixture of the protosulphate with bichromate of potash does not form a good bath (possibly the sulphate or other salt of the higher oxide or solution of it in chromic acid might answer better), and even where we print first with an alkaline, bichromate alone, there is sometimes a little difficulty to get perfectly clear lights owing to iron remaining in them (probably from its peroxidation by air, or precipitation by other impurities in the water. To prevent this I have used a mixture of very little acid with some amount of success, still there is a risk of the acids attacking the chromate of iron of the picture, and on this ground it appears better to commence with another metal, as copper or cobalt, and to leave the introduction of the iron till afterwards, either by means of the ferro-cyanide bath or by the final toning bath, or we may introduce it in both of these stages in one print,, as in the cuprotype process. This ought to be a good process, and the experiments which have I have been able to make, though giving nothing like presentable results, gave very good promise, and sufficiently indicated that even a paper cuprotype, with no more metal in it than can be easily got, will give an effective burnt-in print. I have burned it into glass with enamel or flux below even without any vitrifiable mixture above the paper, the best results being obtained when the heat for burning in was pretty quickly got up. Among the processes on this model (or formula) likely to give good results may be named a chromate of copper prints developed in the same way,'but toned *by cobalt* instead of iron in the final bath, or perhaps a chromate of cobalt print developed by iron, and toned by iron or by copper (or uranium or manganese). When our final toning is done by iron I have generally used, and believe there is advantage in using, a little acid mixed with the water with which the print is afterwards washed (as well as a little added to the bath). There is not the same risk incurred here as by its use in washing the print in its chromic stage, as the metallic ferro-cyanides and their allies are not nearly so easily acted on in this way as the chromates are.

Manganese is a metal likely to prove highly valuable in burnt-in photography, particularly in union with cobalt, iron, and copper. I have obtained photographs containing these differently combined in various ways. On the whole the most successful of my manganese experiments have been those in which I stopped at the first stage, a very good dense photograph containing manganese and chrome being obtainable on paper prepared with bichromate of potash and sulphate of manganese. I have managed to introduce iron, copper, and I rather think also cobalt into this by subsequent actions; but perhaps as good a plan with manganese, where the presence of chrome is not objectionable, is to mix a little sulphate of cobalt with the bichromate of potash, (or ammonia) and sulphate of manganese used in preparing the paper, (or film,) and the chromic acid might be at least partially removed by the application afterwards of an alkali or carbonate, &c. It is probable, but my experiments do not enable me to speak with any confidence on this point, that manganese might also be employed in some cases as a final toning bath.

As to photographs for burning in colors, chromate of nickel, (Mr. Bingham's chromatype,) a very distinct print might be likely to answer well, and the addition to it of cobalt, easily made, might be an advantage. Chromate of silver, (Mr. Hunt's chromatype,) with the addition of cobalt, might also give a good green, as might a cobalt-cyanide of iron, or cobalt-cyanide of silver. As to purples, tin and gold, with or withaut cobalt, might come into play, and tin, chrome, and cobalt might possibly answer; uranium also, along with cobalt, coppel, nickel, and other metals might not improbably give good results. Chromate of cobalt, and I have alredy alluded to cobalt-cyanide of cobalt for blue. Let the photographer on porcelain only study the means I have pointed out of fixing the different metals, and then take up such a volume as the "Porcelainier Fayencier et Potier de Terre, Paris, Libraire Encyclopedique de Roret," or any similar treatise, and find what mixture of oxides he wishes to obtain, and he need not remain long in difficulty as to obtaining photographs containing most of them.

It must be observed that, though I have now been directing attention principally to processes of which the chromates are the basis; there are many other processes which may enable us to fix a variety of metals and their combinations for the same purposes. The prints by solarization of papers containing ferrid-cyanide of potassium or ammonium, (or ferro-cyanic acid, would, but for their slowness of productions, be also a very convenient basis, giving pretty clear prints, and the iron of the base, after washing, being replaceable to a certain extent, more or less, by another metal or metals—copper, cobalt, or nickel for instance. It is likely also that by the cobalt cyanides, we might replace the ferro-cyanogen with cobalt-cyanogen. Chrome-cyanides and cobalt-cyanides are little acted on by sunshine by themselves. Prints produced by developments of ferric salts might be tried, though I have got no very clear prints in my trials in that direction, gold and silver excepted. To return to the chromate prints; in point of facility of getting a print perfectly clear in the lights, I am not sure but what the method of printing in the first instance, with a bichromate of ammonia, soda, or potash alone, has often been in other metals, though not so very materially as in iron, the advantage over other forms of the first stage. I have found it answer well among others, with copper and with cobalt, and for one application of burnt-in photography, it will be by far the most convenient process—I allude to where we intend to produce on one piece of pottery, tile, or glass, a design containing more than one color or tint. In this case having sensitized the film with the alkaline bichromate, we might even print the whole design at once from one negative, and regulate the colors of different parts by the application of the solutions containg, and consequent precipitation of different metals in different parts of the design or picture. We have here obviously the same choice as elsewhere of the three different stages for the introduction of each metal, the same choice of chemical agents, metal salts, metal cyanides, &c.; with these successive applications also given us, the power of depositing any required mixture of metals.

The separate actions on the different parts of the film might be secured in various ways—by forming cells on the surface, if tolerably level for the reception of the different solutions, or in any case by immersing the whole in the different baths, having previously taken the precaution to protect against the action of such bath, by a coating of gutta percha or other easily removed impervious substance, the parts not wished to be acted on by that particular bath; (might it be possible that in this or other ways some approach to natural shading of colors could be obtained?)

A few words as to the applications of burnt-in photography. How desirable to have portraits of our friends, or of historically interesting characters enlarged from small pictures, and fixed imperishably on slabs of porcelain, tiles, or other vitrified or semi-vitrified composition, or on enamelled plates of copper, stone, or brick. What an interesting gallery such portraits would form. They might, of course, be hung up like ordinary portraits, but by far the better plan would be, either by fixing them into panel frames in the walls, or building them permanently into the stone-work of our public buildings and galleries. How important thus to be able to decorate our public buildings with absolutely permanent memorials of the great men of our and all succeeding ages; and both public and private buildings with similarly imperishable landscape photographs, as well as copies of all that is most interesting in the way of sculpture, painting and engraving, either of fair size, or of any size suitable for their position.

As to copies of paintings, there are difficulties from color, though these may no doubt be, in a great measure, got over, either by making our second negative from a judiciously touched positive, or by having the picture first translated into light and shade in china ink or sepia, by the original or other competent artist. The system of photochromo-lithography might enable us to give an approach to permanent reproduction in colors, if found practicable, and without colors. Photo-lithography in pictures of oxides, giving good neutral tints, might to a considerable extent, take the place of the true burnt-in photography for many classes of subjects.

C. J. Burnett.

In youth study, in maturity compose, in old age correct.

From the Liverpool Photographic Journal.

ACCOUNT OF A METHOD Of Converting Collodion Negatives into Positives, by Heat.

BY JOHN F. CAMPBELL, ESQ.

In the end of 1854, I observed that a broken glass negative changed color on being thrown into the fire.

I then tried several experiments with small negatives. I held the glass by one corner with the tongs, and passed it gradually into an ordinary coal fire, selecting a place between the bars of the grate where there was a good red heat and no flame or smoke. By carefully and slowly drawing the glass out after it had got to a red heat, by avoiding contact with the fuel, and by holding the collodion side of the plate downwards to avoid dust, I succeeded in producing a number of positive pictures, which I varnished and backed with black varnish in the ordinary manner.

Many glasses were broken in my first attempts. Some pictures were too pale, some were yellow, some were too white; but the defects in those which escaped breakage appeared to be due rather to the chemical than the burning process, and I persevered.

I have made a number of experiments since 1854, and the result is the following process, which I have found toleraby successful.

PROCESS.

Take a picture by the ordinary collodion process on plate glass, which stands heat better than the other kinds usually sold for photographic purposes. Carefully remove all traces of iodide of silver, which gives a yellow color in the shadows if any is left; dry, and varnish with amber varnish.

The negative may now be used for printing in the pressure frame. To convert it into a positive: lay the plate, varnished side upward, on a layer of pounded chalk or white sand spread evenly on an iron tray (a shovel or a frying-pan will do). Heat the whole to a dull red heat over a fire. It will be well to protect the plate from dust during the process by covering it with a bit of talc.

The layer of chalk or sand distributes the heat gradually and evenly over the plate, and diminishes the risk of breakage. The *whiteness* of the layer permits the process to be more easily watched. The varnish first smokes; the picture becomes clearer and darker, then darkens all over—turns from black to grey.

It then assumes a variety of colors, which by reflected light are very brilliant. It becomes orange in parts, then blue and purple in parts, the slate-colored in parts, lastly green in patches, and then a white positive picture.

When the high lights are blue the shadows are generally orange, when the high lights first turn white some parts of the picture remain blue. One picture was stopped at this point, and retains some color in the dresses. The faces and one corner were beginning to whiten when the operation was stopped, but being backed with varnish, poured on the collodion side, the colors are faint, and by lamp-light hardly visible.

When all parts of the picture first become white it is at the best.* It is then time to remove the plate from the heat, and allow it to cool gradually. Heat continued weakens the shadows by whitening them. Still more heat weakens the whole picture, probably by altering the condition of the silver.

Seen through a microscope of strong power, by reflected light, the picture shines as frosted silver, in points of colored light on a dark ground.

The points are nearest each other in the high lights. By transmitted light the plate appears covered with a fine dust, scattered thinly in the shadows, more thickly placed in the half lights. In the high lights the silver appears as a contiu-

* The rays of the sun collected in a strong burning glass act on the collodion pictures in the same way as artificial heat, and change the silver from black to white.

uous film, with small holes in it at regular intervals. Seen by both reflected and transmitted light, the silver appears like a white sand distributed on the glass, in several layers in the white lights, but scattered in the shadows and lights.

The possibility of producing photographic pictures with the natural colors by some modification of this process, has frequently occurred to me, and though I have hitherto failed to produce *local* color, I would suggest that those who have more leisure to devote to such experiments should turn their attention to the subject. Many substances may be made to appear of any color by dividing them into plates sufficiently thin.

The brilliant colors which succeed each other while the collodion is burning away, probably depend on the thickness of the film through which the silver dust is seen. The rate at which the collodion burns must depend on the conducting power of the substances in contract with it, and the thickness of the film may depend on the amount of silver deposited on various parts of the plate. It may be that by some improvement of this roasting process, the film may be so affected by the silver deposited in it, as to vary in thickness to the amount which will produce color in its proper position. I have once succeeded in stopping the process when the sky of a landscape was blue and the trees green, but that result was accidental.

The uses to which this burning process can be turned are numerous. Pictures taken on metallic plates, glazed with a dark glass, would be less liable to break in heating. By fusing an enamel over the silver, photographic enamels could be produced. A gentleman who superintends the glass works of Messrs. Powell, undertook to try some experiments for me several months ago, but I do not know if he has produced enamels. The same gentleman was kind enough to allow me to use one of his furnaces, where, with his assistance, I succeeded in roasting a number of good-sized plates, with very few breakages.

I have thought that the silver might be made by a great heat to sink into the glass and produce depressions on its surface, from which, the silver being removed by acids, prints might be taken with ink.

I have tried to engrave a glass plate with fluoric acid, after removing the collodion by heat, but hitherto I have failed in my attempts at photographic engraving on glass; others may be more successful.

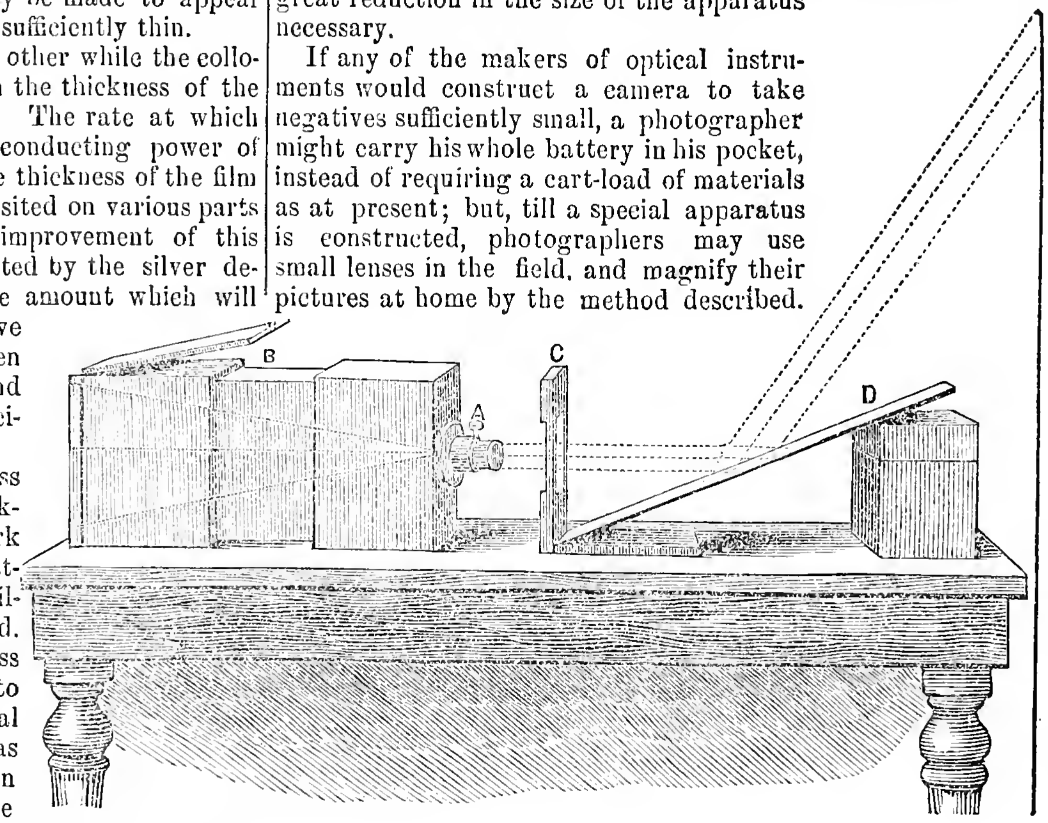
It may be interesting to your readers to know that transparent pictures copied in the camera, from glass negatives, make good ornaments for windows. Smaller transparencies make good slides for magic lanterns. They may be backed with white or with colored oil paints, when they appear like drawings or oil pictures. These plates must be varnished before they are painted. When the oil paint is dry, or while wet, the pictures may, with care, be removed entirely from the glass, and kept in books, while the collodion is wet, it may be transferred from the glass to paper. A process for coloring paper photographs, in oil, was patented by a gentleman of the name of Duppa, some years ago. The method of coloring transparent *collodion pictures* is preferable, but any one desirous of carrying on this process for gain, would do well to consider the terms of Mr. Duppa's patent.

The oil coloring of prints made transparent with varnish, has long been practised, but the patent, referred to, for so coloring paper photographs, may include the use of oil paints in coloring photographic drawings of all kinds.

Colored pictures resembling oil paintings, six inches square, have been made with a part of a microscope from a negative taken from nature, with a small lens, at a distance of about twelve yards. The arrangement for copying the negative was as follows:—

The glasses were removed from an ordinary portrait lens, and the inch power of the microscope was screwed into the diaphragm (A). The brass of the portrait lens, with the inch power and diaphragm inserted, was then replaced in a long-bodied camera (B), constructed, at my request, for this purpose, by Mr. Ross, last August. The negative was placed in an upright stand (C), and a looking-glass (D) was so placed behind it as to reflect light from the sky. The whole apparatus stood on a table near a window. The advantage of taking negatives of small size, and magnifying them afterwards, is the great reduction in the size of the apparatus necessary.

If any of the makers of optical instruments would construct a camera to take negatives sufficiently small, a photographer might carry his whole battery in his pocket, instead of requiring a cart-load of materials as at present; but, till a special apparatus is constructed, photographers may use small lenses in the field, and magnify their pictures at home by the method described.



From the Report of the Royal Cornw. Polytech Soc.

PRETSCH'S PROCESS OF PHOTO-GALVANOGRAPHY.

BY ROBERT HUNT, F.R.S.

Read before the Royal Cornwall Polytechnic Society, 1856.

Mr. Hunt, F.R.S., said, in front of the platform there hangs a series of pictures which are now exhibited for the first time to the public in this country, the production of Mr. Paul Pretsch, the late director of the imperial Printing Office at Vienna. They were produced by a process which he designates by the compound term of photo-galvanography; that is, pictures which are drawn by the light, and are engraved by electricity or galvanism. The process is an exceedingly simple and beautiful one and I am indebted to Mr. Paul Pretsch for allowing me to communicate to the society, in the present state of the invention, the whole of the process, he having furnished me with the materials. You are aware of the processes, now so common, for taking photographic pictures; but the ordinary process is not that employed by Mr. Paul Pretsch. Mr. Mungo Ponton, fourteen years since, discovered that a well known salt, the bichromate of potash, was susceptible of change when exposed to the influence of sunshine in connection with organic matter; and one of the most beautiful and simple photographic processes I am acquainted with, is simply to wash a piece of letter paper with a solution of bichromate of potash—a salt which may be obtained in any druggist's shop —placing on that paper any object you wish to copy, such as fern-leaves or engravings. In the course of a short time the result is that you will obtain an image; one part of the yellow paper having changed its color, and the other remaining unchanged. By soaking this paper, which has undergone this photographic change, in water, all those portions not changed in color are readily dissolved out; whilst those which have changed color remain permanent and fixed; the rationale being, that the bichromate of potash parts with one portion of its chromic acid, and this chromic acid combines with the size, and forms a chemical combination of chromate gelatine or of fibrine, whichever, it may be. Mr. Paul Pretsch, in pursuing his investigation, does this:—he takes a plate of glass, and on that spreads his material, the material being ordinary glue, to which bichromate of potash is added, and to which a small quantity of nitrate of silver has also been added. For instance, he takes two or three solutions of glue, into one of which he puts a little nitrate of silver, into another bichromate of potash, and into another iodide of potassium. He uses the silver and the potassium for the purpose of producing a little iodide of silver on the sensitive film, so as to produce on the picture that grain which is necessary for holding the ink in the process of printing. He then takes the photographic picture, obtained by any of the customary processes, and this being placed on the sensitive plate, on the glass thus prepared, is exposed to the action of light. In the course of a short time, (all those parts which are dark in the photograph, protecting the plate from change, and all those which are white, allowing the sunlight freely to pass through and the change to take place), we have a combination of bichromate of potash and gelatine in two different states, one soluble and the other insoluble. Consequently, the plate is then put into water, and all the parts which remain soluble are dissolved out, whilst the other parts remain as they were; and we have the picture produced not only in different lights and shades, but also in different depths, the solution being eaten into by the process (Mr. Hunt here exhibited plates showing the stage of the process). When the plate is prepared to this point, there is poured upon it a preparation of gutta percha, which being kept under pressure for a short time, receives the reverse image of the potographic picture. This is now prepared for the voltaic battery, by being simply rubbed over with fine black lead; and it being placed in connection with the trough, copper is precipitated on the plate, which receives an image the reverse of the mould. Then by the ordinary electrotype process another plate may be obtained, from which prints like this (exhibiting one) have been printed. The capabilities of the process are evident when we examine the extreme beauties of detail, and the marvellous ærial effect of those pictures, all the middle tints being preserved. There have been several methods by which engravings have been produced from photographs; one by Mr. Talbot, in which he uses a steel plate and bichromate of potash, the plate being afterwards etched by bichloride of platinum. There are other processes, amongst them that of Niepce; but in all these we have only the high lights and deep shadows, the whole of the middle tints being sacrificed; whereas, in this picture of York Minister, (taken by the process I am describing,) I would direct your attention to the beautiful ærial effect of the middle tints; and details of the tower are faithfully given, as of the building on either side. We are also enabled by this process to take a photographic likeness of any person, from which copper-plate prints can be obtained, in any number; and by the use of the camera the pictures can be copied of any size. This process is now being brought before the public by Mr. Paul Pretsch, for the purpose of illustrating works of natural history, books of travel, and other works of that kind. He (Mr. Hunt) hoped he had rendered himself intelligible in bringing before them the details of a process which promises to rival anything that had hitherto been done in the photographic art.

Biphosphuretted Hydrogen.—This gas is prepared by exposing to the action of heat phosphorous acid and water, in a small glass retort; in this process the oxygen of part of the acid and part of the water convert the other part of the acid into phosphoric acid, the remaining part of the phosphorous unites with the hydrogen of the decomposed water, and forms the biphosphuretted hydrogen. It does not detonate spontaneously, but when mixed with oxygen and inflamed a violent explosion takes place.

From the Liverpool Photographic Journal.

ON SOME OF THE OPTICAL PRINCIPLES Involved in the Construction of Photographic Lenses.*

BY MR. GRUBB.

[The following is the concluding portion of the paper read by Mr. Grubb, at a meeting of the London Photographic Society, on the 3d of December. In our last publication we promised to give a report of the discussion upon this, and also Mr. Pretsch's paper, but upon reconsideration, as no really practical conclusion was arrived at, we have decided upon omitting it.]

The acting angular aperture of a photographic lens (view or portrait) is varied *pro tem.*, not only by the addition or substitution of a stop, but also by approaching the object to the lens, and thereby causing its image to be formed at a greater distance on the other side; and in portrait photography the difference caused by the latter change is often considerable. It will, however, be sufficient for the present purpose if we consider the angular aperture as that which the lens or compound has *for parallel rays;* this is at once the maximum angular aperture, and that which is to be generally understood as meant. It is desirable also to premise that in speaking of the focus of a portrait combination, its equivalent focus is generally to be understood.

The focus of an ordinary view lens is approximately that of the distance of its first surface from the image (of a distant object). The equivalent focus of a portrait combination may be readily found with sufficient accuracy by dividing the measured focus of a spectacle-lens (by preference one of nearly the focus of the compound), by the fraction representing the respective linear dimensions of the images of a large distant object formed by the compound and the single lens; for example, say that the focus of the spectacle-lens is found to be ten inches, and the images formed by it and the combination are as 5 to 4 in linear measurement—then $10 \div \frac{5}{4} = 8$ inches, the equivalent focus required.

The portrait photographer, desirous of reducing the time of action to a minimum, seeks by all possible means to effect so desirable an object. Amongst others, he tries that of lenses of increased angular aperture, but the difficulties of keeping all portions of the object in tolerable focus (previously sufficiently harrassing) are now increased. Lately this difficulty is *professedly* solved; lenses are advertised of a "long chemical range," and, in some cases, at least, lenses have been selected for use—less for their intrinsic merits in other respects, than for the lesser indistinctness (supposed or real) of their ages, or objects out of focus.

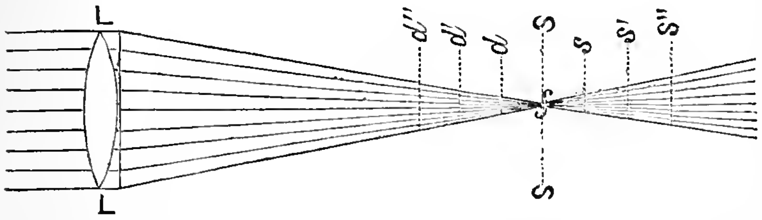
Now the term "long chemical range" must, from the manner in which it has been used, be understood to mean a longer chemical range than other or previous combinations of the same aperture and focus possessed; while any party who selects a lens out of several of the same nominal size, as having an apparent longer visual range than the rest, must be under the impression, that not only the chemical, but also the visual "ranges" are not constant for a given aperture and focus. Conceiving that herein is error, at once directly opposed to optical truth, and calculated to retard sound photographic progress, I propose to consider *whether the whole affair is not simply a delusion, which, the sooner it is discarded the better.*

The first step herein is evidently to examine the origin and nature of the confusion arising from the ground glass (or sensitive surface) of a camera not being in the plane of the image, or (in photographic language) in true focus.

Let L L (see diagram on page 75) be a lens free from aberration, and forming a distinct image of a small brilliant object (a star for example) at *f*. This image (if bright enough) will be seen as a luminous point on a suitable surface placed vertically to the axis of the lens at *f*; but if this surface be moved alternately within and without the focus, the brilliant point

* Continued from p. 52, vol. xi., no. ii.

will swell out into a disc of light, increasing in magnitude as the surface *s s* is made to recede from either side of the focus.



And, as that which is true for any one point or star is also true for any number, so the confusion or indistinctness which we have under consideration is caused by the overlapping of an infinite number of little discs, instead of as many distinct and separate points being represented or projected on the surface placed to receive them. In other words, let an image be considered as made up of an infinite number of distinct points, and let each one of these be supposed as spread out into a disc of greater or less magnitude, and we have a correct idea of the nature of the indistinctness caused by an image (or rather the converging pencils which would form such) not been received at the true focus on the surface intended to receive same.

So far for the *nature* of the indistinctness; *next for the laws which govern its amount.*

Chemical or antinic rays afford no exception to the general laws of optics, that rays proceeding through a medium of equal density, and not affected by any extraordinary force, do so *in straight lines.*

In the case before us, speaking strictly, and supposing the lens L L to be perfect; or, speaking practically, and supposing it to give as distinct an image as that given by a good photographic portrait combination, then it is obvious—first, that the diameter of any disc (or traverse section) of the converging beam, L *f* L (which is also a measure of the confusion of the image) is directly proportioned to the distance of said section from the true focus, and the diameter of the lens conjointly; secondly, that traverse sections of the beams, taken at equal distances, as d, d', d'', s, s', s'' (before and after convergence), from the point f, will have equal measures and equal intensity; or let A be the aperture of the lens, f its focal length, d distance from f (if any section of the beam), and c the confusion of the image; then

$$C = (A \times \frac{d}{f})$$

Such is the case so far as a single combination is concerned, which, as before stated, I have supposed to be aplanatic; and, without grossly departing from this latter condition, no practical (or decided) amount of difference in that under consideration can be obtained. I am, of course, aware, that by adopting a lens with a large amount of spherical aberration, the case would be slightly altered; but what then? There would be indeed a diminution of the circle of confusion on one side of the focus but there would be at that same time an equivalent, increase of the same on the other side; while the lens would, from its great spherical aberration, be worthless as a portrait-lens.

I desire here to be clear, even at the risk of repetition. The ordinary view-lens will answer for illustration. It has a large and unbearable amount of spherical aberration *for the whole aperture;* but a small amount only for the diameter of any one pencil of rays, as admitted by the stop in front. Now in this lens, and using the ordinary sizes of stops, no appreciable lengthening of the focal range on *either side* of the focus can be obtained, while an attempt to use a much larger aperture of the lens would at best produce as much *shortening* of the focal range on one side of the focus, as *lengthening* of the same on the other. Any one who has access to a camera, &c., can test what has been advanced, practically, in the absence of daylight, as follows:—

Near to one end of a room place the camera, and at the other a good Argand-lamp, without a muffled shade; screen the direct light of the lamp from the camera, and place a mercurial thermometer, having a spherical bulb, about one foot from the source of light, and so that the rays falling on the bulb will be reflected towards the camera. Thus will be provided an "artificial star," which, being focussed in the camera, will be found useful for many experiments with lenses, both simple and compound.

To prove the correctness of what has been insisted on, in respect of a corrected pencil of converging rays, proceed as follows:—mark, or in any other way, register, the adjustment of the focussing when the image of the lucid point of light is distinct on the greyed-glass (by using a portrait-combination with its full aperture, the results will be the most decided); then move the greyed-glass, by measured quantities, alternately within and without the focal distance, and measure the diameters of the respective discs at each position. If the lens be even moderately good, the appearance inside and outside the focal distance will be singular, and agree, in all respects, with what has been stated. By using an ordinary view-lens, (after all stops and diaphragms are removed, and its whole aperture exposed), the effects due to positive spherical aberration will be very apparent, and also be in accordance with what I have advanced in respect of such, viz., than any lengthening-out of the focal range on one side is accompanied with, and neutralized by, a reverse effect on the other side of its focus.

In the examination of any lens, simple or compound, for spherical aberration—if, on pushing the greyed surface, or screen, within the focal distance, so as to receive a section of the beam converging to a focus, the appearance is that of a luminous ring filled up with a fainter light; then on drawing the greyed surface beyond the focus, or into the beam diverging from that focus, the appearance of the section will be that of a brighter central spot surrounded by a fainter light or halo, and the lens is under-corrected for spherical aberration. If, on the contrary, these appearances are inverted, the aberration is over-corrected.

Postscript.—It may be desirable to anticipate a question which will naturally occur to some persons, viz., *how* the difference (real or imaginary), of chemical or visual "range" arises? Supposing it to be "real," I can account for it only by a small difference existing in the angular aperture of the objectives under trial. This may arise from several causes, but (when the lenses are of the same make,) most likely from a difference of distance, *inter se*, of their respective lenses. An "imaginary," or apparent, but specious difference, would arise from the several objectives not affording equally distinct images (*when in focus*). A given and equal indistinctness of objects out of focus will be comparatively, and therefore apparently, less in the case of an indifferent lens, than in one giving a very perfect image at its focus. In either case, *i.e.*, whether the "longer range" is real, or only apparent, a choice conducted in reference to this range, is likely to result in the selection of the least valuable lens of the lot.

This communication has already exceeded its intended length; I trust it adequately demonstrates that, so far as a single combination at least is concerned, no range of focus can be communicated to it other than that which is determined by the conditions of its focus and aperture. The *modus operandi* given for practically testing the matter, it will be observed, is equally applicable to all cases whether of single or compound objectives. The subject will, however, have been treated more completely, if, in a future paper, I shall show, on theoretic grounds, that compound or portrait-lenses, are placed under precisely similar limited conditions in respect of their definitions of focus, as are the more simple or single combinations.

Phosphate of Ammonia.—This salt is prepared by adding ammonia to concentrated phosphoric acid until a precipitate appears. After which, by applying heat the precipitate will be dissolved from the solution, and upon cooling the crystals will be formed.

From La Lumiere.

PHOTOGRAPHY AND ENGRAVING ON WOOD.

'The art of engraving on wood has been practiced for some time, and is now very extensively employed, in the illustration of various publications, which owe to it much of their success.

"The specimens produced by wood-engraving are in general well-executed, artistic, and cheap. Artists of taste and skill have brought this art to a degree of perfection which it seemed, at first unlikely to attain. MM. Gustave Doré and Jabyer, among others, have proved, by their splendid illustration of the 'Wandering Jew,' that wood-engraving can produce remarkable works, which, in point of size, composition, and excution, are worthy to occupy, in the fine arts, an honorable place near that of the works of the celebrated masters.

"It is precisely because wood-engraving is so highly appreciated both by editors and the public, that it cannot meet all the demands made upon it as promptly as one would desire. Many editors have therefore thought that the photographic processes, so quick and accurate in their results, might be made to assist it; so that a photograph might be obtained on the wood block, which could then be cut out in relief by the engraver.

"This result has now been accomplished.

"The inventor of the process which we are about to describe, M. Lallemand, is a skilful engraver. In consequence of his frequent transactions with the editors of works, in the illustration of which wood-engraving is often employed, he endeavored to solve the problem stated above. But at first two difficulties presented themselves. In the first place it was necessary that the wood should not be affected by the photographic chemicals; and secondly, that it should not be so coated or varnished with any substance as to interfere with the operations of the engraver. After more than a year of fruitless experiment, M. Lallemand discovered a process which is free from the above objections, and he has published it in a communication made to the Academy of Sciences, in the following terms:

"'The surface of the wood (and that only), is submitted to the action of a solution of alum, and dried. The entire block is then coated with a mixture of animal soap, gelatine, and alum. When dry, the surface which is to receive the image is placed for some minutes on a solution of hydro-chlorate of ammonia, and allowed to dry. It is next placed on a nitrate bath, containing twenty per cent. of nitrate of silver, and dried in the dark. A negative either on glass, or paper, is then applied to the sensitive surface of the wood, in a pressure-frame, made for the purpose, which allows the progress of the printing to be watched. The image is fixed by a saturated solution of hyposulphite of soda. A few minutes in this solution will suffice. It is then washed for *five minutes only.*'

"The sizing protects the wood from any moisture, and eight months experience has proved to the inventor that the employment of alum and hypo-sluphite, instead of loosening the texture of the wood, gives it a great toughness, which is favorable to engraving.

"We trust this process may prove successful, for if the publisher of illustrated works is compelled to have recourse largely to wood engraving, there are many other branches of industry equally important, which are also indebted to it. For instance, printing on textile fabrics, paper staining, &c.; and also in the sciences, chemistry, archælogy, geography, mathematics, medicine, &c.

"The process of M. Lallemand is very simple, and before long many hard woods may be converted into photographic blocks, by means of which, proofs, very superior in some respects to those which are now produced, may be multiplied.

"Photography has been reproduced on steel and marble by M. Niepce de St, Victor. MM. Baldus, Negrè, Delessert, and Riffaut, have obtained photographic reproductions on steel, and various metals. MM Robert and Bayard have produced proofs on porcelain. MM. Mayer Brothers, on linen; MM. Moulin and Leblanc an ivory, &c., &c. Photography on Wood is a new step, which we have now to record.

"The intelligent manager of the Imperial Printing-Office of Vienna has tried, in the interest of his art, most of the new processes, and has successfully employed those above-mentioned. We have been able to appreciate, in the Palais de l'Industrie, by an examination of the photographs, as well as other works exhibited from this magnificent establishment, how much is due to the exertions of M. Auer, (the manager), for its present position, and increasing prosperity."

RESTORING POSITIVES.

JAMESTOWN, January 24, 1858.

MR. SNELLING,—*Dear Sir:* Perhaps the following may be useful, perhaps not. You will of course be the judge.

A few days since, I was looking over my collection of photographs, and found one that had darkened very much. I soaked it thoroughly in water, when it was easily separated from the heavy paper to which it was attached; I then immersed it in a weak solution of hyposulphite of soda, letting it remain there several hours, I took it out and washed it thoronghly, when it appeared as good as new, with the exception perhaps of being a little weaker in tone—I think it laid in the hypo bath longer that necessary. The picture was Crystalotyped by Mr. Whipple, from a daguerreotype by Mr. Hesler; title, "Driving a Bargain," and appeared in the September No. of the *P. & F. A. Journal* for 1854.

Yours truly,

J. C. GRAY.

MODE OF TRANSFERRING

A Collodion Negative from Glass to a Sheet of Gutta-Percha, Employed at the Imperial Printing-Office of Vienna.

BY M. LEON CASSAGNE.

[Read before a Meeting of the French Photographic Society, June 19, 1857.]

"It is generally known that at the Imperial Printing-Office of Vienna, when a good collodion negative has been obtained on glass, it is the custom to transfer it by means of a double film of gelatine, and gutta-percha dissolved in chloroform. The process which I have adopted, and which has never been described in the Bulletin of the Society, consists in first dissolving,—

Pure gutta-percha............1·92 grammes.
Chloroform, or Benzole........31·09 „

or;

Gutta-percha.................2·56 grammes.
Chloroform, or Benzole........31·10 „

"You perceive that the quantities are not invariable. There are cases in which it is necessary to vary them. I shall not enter into details; the operator, in each particular case, will be able to decide for himself.

"When the negative on the glass is dry and in good condition, pour, on the collodion, side, a coating of the above solution. Let it run slowly and uniformly, that it may have time to penetrate and unite with the collodion film. As soon as this coating is completely dry, strengthen it with a second, formed of the following substances:—

Gelatine of commerce (very white)....30 grms.

Filtered water, as much as the gelatine can absorb, until it has swelled to the utmost.

Isinglass..........................5 grms.
Alcohol...........................15 "

"Melt the gelatine in the water which it has absorbed, by placing the vessel containing it in hot water. Melt the isinglass in the same way in the alcohol. Mix by degrees, and with care; stirring with a wooden spatula this species of varnish. Warm it with precaution, that it may not be injured by too much heat. Hold the negative, the coating of gutta-percha upwards, before a clear fire, or over a spirit lamp, until it is heated to 10 or 20° centigrade; then pour over it, immediately (removing it from

W. Armstrong, Esq. Neg

H. H. Snelling, Print.

HUMBERFORD, C. W.,

The property of H. J. Boulton, Esq.

the flame of the lamp), a coating of gelatine, as thin as its density will allow. It is unnecessary to say that the gelatine must be warm and perfectly liquid at the time. Leave it for an instant to cool and dry, sheltered from dust, and you will be able to remove easily, by means of the steam from boiling water, the tripple film of collodion, gutta-percha, and gelatine. This operation, which is very easy, is performed as soon as you see that the film is slightly softened by the steam, and you should then begin to remove it from the glass at the corner from which the excess of collodion was poured off when the plate was collodionized. It often happens that the film disengages itself at this corner of the glass. It is a good plan to facilitate the entire removal of the film, with a thin blade of flexible polished horn, on which, with the help of the fingers, you support the film, while you detach it by degrees, either with, or without, the aid of a thin thread of water, running drop by drop from a tap, and which insinuates itself by degrees under the collodion, between it and the glass. As soon as the entire film is raised, flatten it between two pieces of glass, having good surfaces, and sufficiently thick to act by their own weight. The collodoin used must have *sufficient* consistency, not so much however as to leave striæ or lines on the plate when dry.

"The chloroform, or benzole solution, should be allowed to stand several days before being used, in order that the coloring matter, or any impurities in it, may be deposited. Filter through paper, that the solution may be sufficiently thin, shutting the top of the funnel to prevent too much evaporation, which would have the effect of thickening the solution. Benzole, of specific gravity much less than the chloroform, gives good results, but inferior to those obtained by chloroform, which gives a solution almost colorless, and adheres firmly when the evaporation is completed; which also takes place more rapidly than with the benzole.

"The density of the solution of gutta-percha, which is always slightly colored, retards considerably its complete clarification. It is necessary to avoid all impurities in this solution."

From the Photographic Notes.

COLLODION ON PAPER.

To the Editor of Photographic Notes.

Marston Rectory. Nov. 9, 1857.

My Dear Sir,—Although agreeing, in the main, with the sensible remarks of Mr. Moultrie's letter, contained in the last number of the *Notes*, I cannot allow his opening observation to pass, without one word of explanation He conceives the direction of my experiments to tend rather to the complication than the improvement of out-of-door Photography. Now, let me assure him, that whilst I entirely concur with his description of the properties and advantages of the different processes which he recommends, and am able, from successful practice of each, fully to appreciated their various qualties, I have long thought it possible that paper photography might be improved; that, in fact, the fine definition and beautiful gradation of tone indicated in a good collodion negative, might find a rival even in these qualities, in the collodionized surface of paper; and it has been with this view simply, that my experiments, detailed in former numbers of the *Notes*, have been performed. I have many dozens of glass negatives, some of large size, and I have too often experienced and lamented the risk of breakage to which they are exposed, and it has often occurred to me to devise, or at least to attempt a remedy for a danger so imminent, and an evil so palpable. My first experiment was made in May last, upon waxed paper, and so far as the production of a picture was concerned, was perfectly successful, but I found the adhesion of the collodion to the waxed surface so slight, that it was only with the greatest difficulty that I could fix and wash it; and even when dry, the slightest touch was sufficient to remove the film. With paper moistened on one side, and then applied to a plate of glass, as described in your report of the Meeting of the Birmingham Society, the adhesion of the collodion was much greater, and the facility of manipulation vastly increased, but the repelling influence of the moisture upon the collodion still rendered the film very liable to be removed under various operations which were necessary to the production of the finished negative.

The account I sent you in my last experiment with iodized albumen, as a sub-stratum for the collodion, certainly seems to complicate the process, and to render it, as you rightly observe, less *workable*, but, in my hands it has proved very successful. The introduction of a substance into the silver bath however, so deleterous as albumen, except, as in my case, the operator has at hand an aceto-nitrate bath, used for Taupenot's process, is, if possible, to be avoided. This desideratum, I am happy to report to you, I have accomplished thus: I dissolve about an ounce of Swinbourne's patent Isinglass in a pint of distilled water; then float upon this solution (previously poured into a porcelain bath), the papers, cut to their proper size. I take them up in ten seconds, let them drain for twice that time, and then place them carefully in position upon the glass plates, and carefully press out all air bubbles, either with a piece of clean linen or blotting-paper, and finally dry them before the fire. It is not absolutely necessary to warm the plates, although I should recommend their being brought to a temperature of 150° Farenheit, before the gelatined paper is applied. Before pouring the collodion on the paper, wipe it with a silk handkerchief, to get rid of dusty particles; sensitize as usual; and in case of the exposure not being immediate, after draining as much of the free nitrate off as possible, dose the surface twice with metagelatine, prepared with citric acid, as recommended by Mr. Long. After exposure (which is about the same as is required by the Taupenot plates), soak for a minute or two in distilled water, and develop with gallic acid solution and aceto-nitrate, in the usual proportions. With each of these processes, but especially the last, I have obtained some first rate negatives, of which I will shortly send you a specimen, on which you can, if you please, report to your readers. I feel convinced the process is valuable.

When the picture is developed and fixed, the gelatine will be found so softened that the paper can be removed without any difficulty whatever. The collodion seems to be thoroughly incorporated into the paper, and when dry will bear any reasonable amount of rough handling.

Your's faithfully,

William Law.

P.S—I am continuing my experiments with paper previously iodized, in order to ascertain whether there is any advantage or otherwise, in the *thorough* impregnation of the paper with the iodide of silver. The paper I have principally used, is the thin Hollingsworth's, recommended in your *Notes*.

From the Comptes Rendus de l'Academie de' Sciences.

PHOTOGRAPHING A DRAWING

Upon the Wood on which it is to be Engraved in Relief.

PROCESS BY M. LALLEMAND.

The wood is first placed with its surface on a solution of alum, and dried; it then receives with a soft brush, a coating composed of animal soap, gelatine, and alum, upon all its faces; when the coating is dry, the surface which is to receive the picture is placed for some minutes in a solution of muriate of ammonia (sal-ammoniac), then dried; then on a bath of nitrate of silver of 20 per cent., and then dried. A cliché upon glass or paper is then applied on the wood by means of a peculiar frame permitting the process of the reproduction to be watched. When satisfactory, the picture is fixed by means of a saturated bath of hyposulphite of soda. A few minutes is enough; it is then washed for only five minutes the first coating preserves the wood from moisture; and eight months of experience, have proved to the inventor that the employment of alum and a hyposulphite, in place of destroying the wood, gives it a great strength favorable to the engraving.

From Photographic Notes.

ON THE FADING OF POSITIVES.

BY THOMAS SUTTON, B.A,

There are three important branches of every scientific investigation, viz.,—Hypothesis, Experiment, and Demonstration; or, to use plainer words, guessing, trying, and proving. Before trying comes guessing, or experiments would assume a very random character; and before proving comes trying, or demonstration would be nothing more than guessing. Again, man is a progressive being; it is not in his nature to rest satisfied with any amount of knowledge gained; he has implanted within him an insatiable thirst for more, which continually impels him to fresh enquiry; so that the life of an active, intelligent man, engaged in scientific pursuits, is passed, either in forming suppositions, or in trying experiments which the suppositions suggest, or in collecting and comparing facts and proving a position. You may quite as reasonably expect to find a man of science indulging in speculation, as in trying experiments, or establishing a principle. In short, it is right and scientific to speculate. A guess, which *appears* to explain a difficulty, is the first legitimate step towards clearing it up. It was perfectly right and scientific of Sir Isaac Newton, when the falling apple struck him on the head, to *speculate* on the cause of the accident, and *suppose* that there might be some law by which particles of matter were mutually attracted. It was also quite right of him, on another occasion, to *suppose*, arguing from analogy, that the diamond might, at some future period, be proved to be combustible. It was quite right of Columbus to *suppose* that by sailing west from the shores of Spain he might ultimately arrive at the eastern coast of Asia. It was quite right of Adams and Leverrier to *suppose* that certain unexplained irregularities in the motion of the planet Uranus might be occasioned by the disturbing influence of some undiscovered exterior planet. It is quite right of geologists to *speculate* on the previous history of the earth, from the present stratified appearance of its surface; and it is also quite right of any photographic chemist to *speculate* on the probable cause of the fading of positive prints, and to advance a *hypothesis* which appears to explain satisfactorily all the facts of the case.

These remarks are called forth by an article of Mr. Malone's in reply to ours on the Fading of Positives, which appeared in this Journal. In that article, which was *professedly speculative*, we advanced the notion that there might be two distinct sulphides of silver, a black, and a yellow; and we endeavored to show how, on this supposition, all the facts connected with the fading of positives by sulphur might be explained. Mr. Malone has discussed that article, paragraph by paragraph; but in doing so he does not advance a single argument against our hypothesis, but merely objects to it on the ground of its being, what it professes to be, a *hypothesis*. He objects, in fact, to any one's advancing any speculation or making any supposition at all, and relates the following anecdote:

"We once, in conversation with Mr. Talbot, asked,—'May we not suppose, &c.?' to which he good-naturdly replied, with a smile, 'You may *suppose* anything you please.' We felt the rebuke. There was no need to add,—supposing proves nothing."

Who ever said that it did?

But would Mr Talbot's good-humored smile and rebuke, "you may *suppose* whatever you please," be as applicable to the suppositions of Newton, Columbus, Adams, and Leverrier, as to those of Mr. Malone? We think not. They would have been singularly out of place in the cases we have mentioned. Why not then in ALL those cases in which the supposition made, no matter by how humble an individual, is consistent with the facts which it is proposed to explain.

But since it is so wrong, according to Mr. Malone, to indulge in suppositions, we become anxious to know whether he advocates any *other* mode of proceeding in a scientific enquiry than that which we have described; in fact we are doubly anxious to ascertain his opinion on this subject, because he is one of a body of gentlemen (the Printing Committee), in whose hands a sum of money has been placed to enable them to prosecute a certain chemical investigation. Fortunately Mr. Malone does not leave us long in doubt on this point. His opinion of the *proper* mode of conducting a chemical investigation is given in another part of his article. He says "We have long left off guessing, and determined to wait for more light."

To "WAIT FOR MORE LIGHT;" just as Mr. Macawber waited for "something to turn up!" This is Mr. Malone's notion of how an enquiry should be conducted. But ought it to be the notion of any man who has received a sum of money to prosecute an enquiry? Would such a notion have been publicly admitted by Professor Faraday, or hundreds of other talented men in the country, had they occupied Mr. Malone's position? We are *sure* it would not. In fact there is not a man of genius in the world who would not feel it a disgrace to have made the admission that he was "waiting for more light." There is not a wiser proverb than that which says "Providence helps those who help themselves" If there is any direct command revealed to man by instinct and observation, it is the command to USE his faculties; not to sit down patiently and wait for "something to turn up." This waiting policy, whether in matters scientific, political, or domestic, is,—to use a mild expression,—sheer imbecility.

We are sadly disappointed with Mr. Malone's article, which he has written, he informs us, with a "running reed." He has brought forward no new facts, nor arguments of any kind, which induces us to modify a syllable of what we have advanced. Our hypothesis remains untouched. But he has, he says, a strong position, from which he wishes he could be dislodged. He says,—

"We believe the sulphur compounds in an impure atmosphere have much to do with certain cases of fading, and we believe and know that a red picture will tone itself in the atmosphere,—but not with gold certainly; with what then but sulphur? and if a print can be toned by atmospheric sulphur, why cannot oxidation and more sulphur destroy this self-toned print? Let not this point be evaded. It is with us a strong position, and we wish we could be fairly dislodged from it."

Now we think this strong position of Mr. Malone's a very weak one; for a red print which has been fixed, not with hyposulphite, but cyanide of potassium, may be darkened immediately by holding it before the fire; or, in the course of a few days, by exposing it to solar light and heat. A red print, which has not been fixed with hypo, and which need contain no trace of sulphur, can be toned to a purple brown by a short exposure to heat, or by a long exposure to light. We state this fact as one which we have repeatedly proved. It may be simply tested, by holding before the fire a red collodion negative, which contains organic matter (gelatine for instance), and which has been fixed with cyanide. The reds will then become browns. All silver prints, no matter by what process they may have been obtained, or fixed, look redder in the water than they do when dry, and they darken still more by being held before the fire. The remark however, is only *strictly* applicable to *un*toned prints. On the occasion of our first visit to Blanquart-Evrard's Printing Establishment at Lille, we were surprised to see the upper story of the building with a glazed roof, and a great number of prints hanging there on lines, exposed to strong sunshine. These prints, we were informed, had not been printed black enough, and they were acquiring a darker color by exposure to light and heat for a few weeks. This effect was not due to any hypo. which the paper might contain, *because it would have occurred in precisely the same way, had they been fixed with weak cyanide.* Here are facts by wholesale for Mr. Malone; and we advise him, before he occupies "strong positions," to make himself master of such facts by becoming a practical photographer. The prints done by Mr. Talbot in 1844, and darkened by ironing with a hot iron, have not *necessarily* been toned by sulphur; *heat alone* would have toned them had the paper contained no sulphur, and the argument which Mr. Malone would found on their permanence falls to the ground. The red print which he supposes to have been toned by atmospheric sulphur was in all probability toned by light. He has adopted, as he thinks, a strong position, in utter ignorance of certain important facts in Positive printing.

But these discussions may be terminated, before many months have passed, by the introduction of another printing process, superior in many respects to any method of silver printing. We allude to the Ink process. May that time speedily arrive, and may no quibbling nor carping interfere to delay it.

In the first two paragraphs of Mr. Malone's article we entirely agree. The remainder contains much in which we differ with him, and nothing from which we gather any information.

From the Photographic Notes.

LARGE vs. SMALL LENSES.

The reader will find, on referring to p. 97 of the *Photographic Journal* for December, 1854, an article by us on this subject; and in the number of that *Journal* for April, 1855, another article, in which we stated a curious fact connected with the plano-convex lens. Now it happens, that in investigating the optical principles of the camera obscura, the lateral pencils are found to have such great obliquity that the attempt to apply ordinary optical formulæ to this problem leads to an erroneous result. The problem of determining the maximum flatness of field of the image formed in a camera obscura requires to be treated in a peculiar way. We must in this instance make a fresh start in optics, assuming nothing but the simple law of refraction, and the geometrical properties of the circle.

Proceeding in this way in the mathematics of a subject which, so far as we know, has never yet been discussed in any optical treatise, we have commenced with the simplest case, viz: that of the single plano convex lens,—and have thence conducted our enquiries through the whole subject, so far as the achromatic view-lens is concerned.

The results which we have obtained are very curious and important. But it is not possible, in a Journal of this kind, to give complete demonstrations of complicated questions in Optics, involving large and costly diagrams. We must content ourselves with simply stating the facts proved, and in one or two instances only introducing a mathematical demonstration.

In discussing the case of the single plano-convex lens, we discovered at once that the large lens, with a stop in front, gives a flatter field than a small central portion of the lens without a stop. From the demonstration by which this fact is established, it appears, that when a large plano-convex lens is presented with its plane side to extremely distant objects, the image is formed on a spherical surface, which is concentric with the convex surface of the lens, the radius of the field being equal to the focus of the lens, plus the radius of its convex surface.

As this fact stands at the very threshold of the enquiry, and as no one can conduct the enquiry in a scientific manner without at once stumbling upon it, we are much amused at finding that Mr. Grubb has taken particular pains to deny it. In his last communication, read at a Meeting of the Photographic Society on the 3rd ultimo, he says—

"As a postscript, and lest silence should be construed into assent I desire to state that I have not found the radius of curvature of a field given by a plano-convex lens, plane side next parallel rays, to be equal to the focus plus radius of the convex side, as Mr. Sutton said I should."

A day or two since, we received a letter from the Astronomer Royal, in which he makes the following remarks on this subject, which may be considered as conclusive:—

"The theorem of which you speak, relating to the images formed by parallel rays falling on the plane side of a convex lens-is perfectly correct, and (as you remark) is not to be found in any Treatise on Optics, at least any with which I am acquainted. But I suppose that people have invented it, and re-invented it, when they wanted it. You will find it in a Paper of mine, printed about 30 years ago in the Cambridge Tranactions, entitled 'On the Sperical Aberration of Eye-Pieces.' I have there given it as an instance of the application of a general formula, remarking, at the same time, that the geometrical demonstration is simple."

The theorem is therefore admitted by Professor Airy, and has been demonstrated by him in the Paper referred to. Mr. Grubb's experimental and mechanical mode of dealing with optical problems has therefore failed in this instance.

Now this remarkable theorem is approximately true in the case of the common achromatic view-lens, as we stated two years and a half ago, at the bottom of p. 153 of the Photographic Journal for April, 1855. That is to say: the image formed by an ordinary achromatic view-lens, with a stop in front when presented to extremely distant objects, lies (approximately) on a spherical surface, which is concentric with the posterior convex surface of the lens; while the image formed by the small central part of the same lens, without a stop, lies approximately on a spherical surface the centre of which is the point where the axis of the lens meets its posterior convex surface.

Here then is complete solution of the question of the large-view lens with a stop in front, *versus* the small view-lens without a stop; for whatever the shape of the lens may be, it can be proved, that in the former case, the radius of the field is longer than in the latter, and the field consequently flatter.

But this fact could never have been established by square and compasses, or by an appeal to experiment. *Geometrical* truths can only be established by *mathematical* reasoning.

We shall return to this subject on a future occasion, when a diagram will be introduced, and a demonstration given of the fundamental proposition which we have stated with respect to the plano-convex lens.

We cannot at present offer any opinion on the subject of M. Petzval's new lens. Our impression is, that it may very probably turn out to be an improvement on the present construction of portrait lenses, but that its excellencies may have been somewhat exaggerated. The fact of the posterior lens having a plane surface appears to us to be greatly in favor of the theory advanced.

ON THE ADVANTAGES
Of Ammoniacal Albumen in Positive Printing.

BY M DAVANNE.

[From the Bulletin of the French Photographic Society for Dec., 1857]

At the last Meeting of the French Photographic Society, the following communication was read by M. Davanne:--

"The idea of adding ammonia to the albumen used in photography, is not new. M.M. Humbert de Molard, and Bayard, alluded to it a long time ago, and if I now recall the attention of the Society to this old fact, it is because I am not aware that any one has made use of the suggestion in positive printing. It should doubtless have been employed in this process; and those photographers who have introduced ammonia into the iodized albumen for negatives, ought certainly to have introduced it into their chlorized albumen for positives.

"The following simple process, appears to me to offer some advantages:—

"I first prepare the albumen bath in the ordinary way, thus:—

Whites of eggs.........300 cubic centimetres.
Water................200 „ „
Salt.................. 25 grammes.

I then add about 25 centigrammes of pure ammonia. The proportions of albumen and water must be varied according to the amount of glaze which it is thought desirable to obtain. The common formula is to put equal parts of albumen and water. But in imparting fluidity to the mixture, the ammonia destroys a little of the brilliancy of the proof, so that rather more albumen must be added to make up this loss. The mixture is beaten up in the usual way to a stiff froth and allowed 12 hours to settle, but it must not be put into a varnished bowl, for ammonia attacks certain varnishes very rapidly.

"Albumen, prepared in this way, possesses the following advantages:—It does not form streaks,—gives fewer air bubbles,—can be filtered easily through paper,—and may be kept for several months without undergoing decomposition, so that it may be used to the last drop, without any waste. The ammonia, being very volatile, evaporates completely during the drying of the papers, so that there is no fear of its introduction into the nitrate bath. It may possibly affect the sizing of the paper, but I have not yet perceived any bad effect arising from this cause. My prints precisely resemble those which I obtain by the ordinary process.

"I believe this bath may be be kept a very long time, for after four months, I find it as good as on the first day of its preparation. It should be strained before use, and a few drops of ammonia added from time to time, until it smells strongly of that substance. When the bath gets low, fresh albumen may be added to it."

From the London Art Journal.

ON ENAMEL-PAINTING.*

BY CHARLES TOMLINSON.

No. III.

Twenty years ago, Mr. Alfred Essex published a paper entitled, "Some Account of the Art of Painting in Enamel,"† in which he expresses his opinion that "writers on the subject of enamelling confounded the art of painting *in* enamel with those of painting *on* glass and porcelain; although these three arts are almost as dissimilar as their products—a painted window, a richly ornamented vase, and an enamel painting."

We have received from Mr. William Essex, "Enamel-painter in ordinary to Her Majesty and H.R.H. the Prince Consort," a letter in which he makes the same complaint with reference to our treatment of this subject. According to him, the difference between the art of painting on porcelain and enamel-painting is that "the latter can be fired as many times as required. I never finish a picture," he says, "in less than ten fires, and I have subjected one to thirty, but that is unecessary, although it proves the durability of the material. The second distinction pointed out by Mr. Essex is that "on account of the great heat to which the picture is exposed, many metals are perfectly useless to the artist in enamel, such as iron, copper and, lead."

In answer to these objections, we must remark, that the chief reason why those branches of Art which depend so much for their success on chemical operations are beset with so many difficulties, is that the artists are not chemists. Hence, too, it is that the early writers on the subject are so confused and unsatisfactory; and it is not without justice that Mr. Alfred Essex, in the paper above referred to, exposes the complicated clumsiness of an enamel color which, in 1817, was crowned with the prize of the Society of Arts. Such a recipe would not have been concocted had the inventor been a chemist; and we think that Mr. William Essex's first objection would not have been made, had he taken a scientific, instead of a technical, view of the subject. The best writers regard enamel-painting, or the manufacture of enamels, "only as one of the branches of the art of vitrification."‡ Labarte also says (p. 101), The subject of the present chapter will be enamel applied to painting on a metallic excipient; and in treating of the ceramic art, we shall speak of enamel-painting upon pottery." Laborde also says, "Toute Matiére susceptible de supporter, sans brûler, éclater ou fondre la chaleur necessarie pour faire entrer l'émail en fusion, peut recevoir cet émail, pui, pour réussir complètement, doit être en rapport de dilatation et de contraction avec cette matière. L'émail appliqué sur le métal, et les émaux qui, sous le nom de couverte verte et de vernis, recouvrent la porcelaine, la faïence les briques, les grès, les schistes, la lave, et les vitraux sont les mêmes quant an rôle qu'ils jouent, etau maniement."§ Let us now see what the chemists say on the subject. Thénard says, "Les émaux s'appliquent par la fusion sur les metaux et les potteries."‖ Dumas says, "Tout le monde sait qu'on parvient á fixer sur les poteries, le verre, et les émaux des couleurs varieés, brillantes et capable de resister à l'action de l'air, de l'eau, et même à celle de quelques agens plus énergiques. C'est en se procurant des mélanges fusibles colorés par divers oxides métalliques que l'on arrive â se résultat."¶ And again (p. 629), "Il est bien evident qu'avec des precautions convenables, toute matière vitrifiable pourra servir a émailler. Rebonlleau also recognises the same fact:—"Les émaux destinés à décorer les metanx doivent avoir toutes les qualités requises pour ceux qu'on applique sur le verre ou la porcelaine."** It may also be remarked that the French apply the term enamel to the glaze which covers earthenware, the ornamentation of which we suppose Mr. Essex would scarcely object to as enamel-painting. Thus Dumas says, Tous les potiers savent fort bien preparer l'émail qu'ils emploient comme converte pour la faïence commune;" and Brongniart defines the enamel so applied as "un enduit vitrifiable, opaque, ordinairement stannifère," a definition accepted by all good chemists. Thus Professor Miller, of King's College, in his "Elements of Chemistry," published in 1856 (Part ii. p. 767), says, "*Enamel* is the term given to an opaque glass, which owes its opacity to the presence of binoxide of tin."

But notwithstanding the *chemical* identity of the processes, we are quite willing to admit the *technical* differences insisted on by Mr. Essex, and to divide the art of painting in vitrifiable colors into—first, painting in enamel; secondly, painting on porcelain; and thirdly, painting on glass. With respect to the assertion that iron, lead, and copper are never used as sources of color under the first head, we may remark that the French enamel-painters employ all three metals: the copper, in the state of deutoxide, for a green enamel; lead, in the form of minium, in what are called the *emaux de Winn*; and iron, in the form of fine filings, in a brown enamel, and, in the state of red oxide, for an orange-colored enamel. The calcined sulphate of iron is also used. Many other examples of the use of these metals might also be given, although Mr. Essex may probably, in his own practice, object to their use. But this is a matter of very small importance, our object in writing this article being to insist on the important truth, that the difficulties which beset the art of painting in vitrifiable colors are chiefly due to the absence of chemical knowledge. The distingushed chemists who have written on this subject are not, and indeed do not require to be, enamel-painters; but it is quite necessary that the enamel-painters should be chemists, or at any rate be ready to receive with respect the observations of such men as I have quoted. This is not always the case. The practical man, as he delights to call himself, often assumes an antagonistic position with respect to the scientific man. He regards him as a mere theorist, and fancies that he himself must know his own art better than a man who has never been apprenticed to it. There is, however, this great distinction between the methods of Art and those of science. Art (that is the technological, in contradistinction of the æsthetical portion) consists of certain processes or facts, together with rules for their application; science consists of principles whose peculiar function it is to gather up and generalise facts, to explain processes, and to substitute laws for rules. Art is human and subject to error; science belongs to nature, and is precise and unerring because divine. The light of science cannot shine upon Art without improving it; and the practical man who refuses the aid of science or theory, as he is pleased to call it, voluntarily accepts a disadvantageous position by placing himself behind knowledge of his age. He may by his own skill and natural abilities attain a large share of success in his art; but so long as he wraps himself up in his secrets, and carries on investigations alone—*i.e.*, unaded by science—he will be subject to repeated and mortifying failures.

* Continued from page 263, vol. x. no. ix.

† London and Edinburgh Philosophical Magazine, vol. x. 1837.

‡ Labarte *Description des objets d'Art* &c. (Paris, 1847) or as it is called in the excellent English translation of the work, *Hand-Book of the Arts* (London, 1855), p. 405.

§ *Notice des Emaux exposes dans les galeries du Museedu Louvre.* Paris, 1852.

‖ Traité de Chimie, &c.

¶ *Traite de Chimie appliquee aux Arts*, tome. ii- p. 702.

** *Nouveau Manual complet de peinture sur verre, sur Porcelaine, et sur Email*, Paris 1844.

In order, therefore, that the results of Art may be harmonious and consistent, and their identity at different times remain undoubted, we must avail ourselves, so far as we are able, of the stability of nature as revealed to us by science. In no other branch of technology is there more need of the aid which is furnished by fixed chemical laws, than in the preparation and application of vitrifiable colors. In this art we can only be certain of our results by having the materials in a state of chemical purity, and compounding them according to the laws of definite proportions. For example, in order that the yellow color furnished by chromate of lead shall be identical at all times, it is obviously a first condition that this compound consist of nothing but equivalents of oxide of lead and chromic acid. If this condition be complied with, the pigment will be the same at all times, and in all places; and if operated on under the same circumstances, will produce precisely the same results; and if either of the proximate elements of this salt be impure, the compound is no longer to be relied on. Different specimens will produce different results, according as they differ in the nature and amount of the impurity, although the identity of the circumstances under which they are applied may be carefully observed at different times. But it is not always enough that the chemical purity of the pigment be assured. In certain cases the physical condition of one of the ingredients may have considerable influence on the resulting color; such is the case with oxide of zinc, which enters into the composition of some of the enamel greens, yellows, yellow-browns, and blues. If the oxide be lumpy, granular, dense, and friable, it will produce by its admixture with the coloring oxides a dull and unsatisfactory pigment, although it may be perfectly pure; whereas a light, flocculent, impalpable oxide of zinc, identical in chemical composition with the former, will produce satisfactory results. It is further necessary to identity at different times that the solution of a particular metal, or its oxide, &c., be always made at the same temperature; that the acids, &c., which dissolve it be of the same specific gravity; that the solution be always of the same strength; that the precipitate be neither more nor less rapid on one occasion than on another. All these, and many other conditions necessary to the production of a definite color, require the careful consideration of a scientific chemist, which conditions having been well understood, committed to writing and published in some work of repute, an important step is made in advance; the artist as well as the chemist may proceed with certainty; the one to practice certain processes which have been made intelligible, the other to adopt such processes as a starting point for new investigations. Thus may mortifying failures and the repetition of scientific researches be avoided. During a long series of years such a course has been adopted at the porcelain manufactory at Sèvres, and a large amount of valuable information respecting the preparation and application of vitrifiable colors has been digested and published, under the competent authority of M. Brongniart.* Most of the prescriptions for the preparations of the colors are the result of experience at Sèvres, either made under M. Brongniart's direction, or copied from the archives of the factory, which contains minute descriptions of the processes adopted for compounding these colors. M. Brongniart remarks that the chemist, M. Salvétat, who for many years has been entrusted with the preparation of the colors, has dignified the art by imparting to it that scientific perfection in which it was formerly deficient, "that is to say, he has given to these prescriptions the method, the exactitude, and all those precise conditions which belong to science, and which have been introduced with so much success and utility into industry." (Tome ii. p. 506.) Such a service as this was fairly to be expected of an institution which from the time of Louis XIV. has been maintained at the public expense, and has numbered among its directors such distinguished men as Macquer, Brongniart, Ebelmann, and Regnault.

Enamel colors are formed by the combination of certain metallic oxides and salts with certain fluxes, which enable them to fuse into colored glasses. The metallic oxides are usually those of chromium, of iron, of uranium, of manganese, of zinc, of cobalt, of antimony, of copper, of tin, and of iridium. The salts and other bodies used to impart color are chromates of iron, of baryta, and of lead; the chloride of silver, the purple precipitate of Cassius, burnt umber, and burnt sienna, red and yellow ochres, &c. Some of these colors develop themselves at the highest temperature of the porcelain furnace, and they form the *couleurs de grand feu*, as the French call them; others, and by far the larger number, are called *muffle colors*, since they require only the more moderate heat of the muffle, in which the painted articles are enclosed, to protect them from the products of combustion of the fuel.

The *couleurs de grand feu* are limited to the *blue* produced by oxide of cobalt, the *green* of oxide of chromium, the *brown* produced by iron, the *yellows* from oxide of titanium, and the uranium *blacks* These colors furnish the grounds of hard porcelain; and as the temperature employed in baking this substance is capable of fusing felspar, that substance is used as the flux. For an indigo blue, the proportions are 4 parts oxide of cobalt and 7 parts felspar; for a pale blue, 1 part oxide of cobalt and 30 parts felspar. The materials in each case are to be well pounded and mixed by sifting them together at least four times, after which they are to be fused in a crucible in the porcelain furnace. The color thus formed is reduced to powder, and is ground up with oil of turpentine, oil of lavender, or some other convenient vehicle, and is applied to the surface of the biscuit in the usual manner, when being again raised to the high temperature of the porcelain furnace, the color fuses and incorporates itself with the substance of the ware. The other colors are afterwards applied in the usual manner, and these are fused and incorporated with the ware at the more moderate temperature of the muffle; but although the *couleurs de grand feu* require so high a temperature for their fusion, this temperature is accompanied with certain inconveniences in the case of cobalt,—it is liable to volatilise, so as to affect the objects near it; thus, if a white vase be placed near one that is being colored blue, the cobalt of the latter will rise in vapor, and give a decided blue tint to that part of the white vase which is nearest to it. Moreover, cobalt is uncertain in its results; it occasionally leaves white uncolored patches, or it may present a dull granular surface, or display metallic grains. Oxide of chromium is sometimes employed without a flux to impart a *green* color to hard porcelain, but as this color does not penetrate the ware, it is liable to scale off. A *bluish-green* is produced from a mixture of 3 parts oxide of cobalt, 1 part oxide of chromium, and one-tenth of felspar; this mixture is not previously fritted, but is applied in a minutely comminuted state to the ware as usual. A fine *black* is produced from mixtures of the oxides of iron, manganese, and cobalt; and by omitting the cobalt various browns are formed.

With respect to the muffle colors, which are too numerous to be particularized here, it may be remarked that they are fired at a temperature equal to about the fusing point of silver. A higher temperature would be of advantage to many of them, in increasing their solidity and brilliancy; but it would be injurious to those colors which are obtained from the purple precipitate of Cassius, on which the artist relies for some of his finest effects. Muffle colors do not penetrate the glaze of porcelain, as may be proved by boiling in nitric acid a piece of painted porcelain after it has been fired, when the colors will disappear; hence the glaze of hard porcelain has but little reaction on the color, and if this be not acted on by the high temperature, it ought to preserve its proper tint. The principle of painting on hard porcelain is, according to Dumas, the art of soldering by heat, to a layer of the glaze, a layer of fusible color, the dilation of which shall be the same as that of the glaze, and of the body of the ware. The function of the flux is to envelop the color and attach it to the glaze. In most cases it has no action on the color, but is simply mechanically mixed with it: it is, however, necessary that the flux should combine with the glaze Dumas gives a caution against the common notion with respect to vitrifiable colors, that the

* Traité des Arts Céramiques. Paris, 1844.

color and its flux are capable of chemically uniting by heat, and forming a homogeneous compound. In the case of muffle colors the contrary is usually the case, the flux being only a mechanical vehicle for the color. Hence the flux must vary with the color; but, as all the colors ought to be capable of being mixed, the range of fluxes is but limited. A common flux is the silicate of lead, or a mixture of this with borax. The borax cannot be replaced either by soda or potash, on account of the facility with which those alkalies become displaced in order to form other compounds: moreover, it is found that the presence of these alkalies causes the colors to scale off. The mode of exploying the fluxes varies with the color: in certain cases the flux is ground up in proper proportions with the color, and is so employed, in other cases, it is previously fritted with the color. When the color is easily alterable by heat, the first mode is adopted; but when the oxide requires a high temperature for the development of its tint, the second mode is employed.

The application of enamel-colors to metal is beset with greater difficulties than in the case of porcelain and glass, on account of the facility with which the metal becomes oxidised, and it would probably be found that in all cases the metal has acted injuriously on the colors. The peculiar merit which Mr. Essex claims for his branch of the art—in being able to pass his work through the fire as many times as required—must be considered a doubtful advantage, for the oftener this is done the more likely is the oxide formed on the surface of the metal to become dissolved by the enamel, which thus displays defects which are beyond the control of the artist. Another inconvenience resulting from this frequent firing is, that if the enamel contain oxide of lead,—which it nearly always does, except in the case of the best Venetian variety,—the enamel reacts on the metal, metallic lead is formed, and the color of the enamel is destroyed. The early enamellers sought to get rid of this inconvenience by employing gold as the excipient; but as gold is usually alloyed with copper for the sake of imparting hardness, the difficulties were thus only partially evaded. If the excipient be copper or silver, the enamels are almost certain to be injured in color by contact with these metals, and the artist may think himself fortunate if this change be confined to the layer which is in immediate contact with the metal, although even this circumstance would be fatal to the effect of transparent enamels. Hence opaque enamels are preferred, but with them the edges of the work often show the mischievous influence of contact with the metal excipient.

In concluding these few remarks on the chemistry of enamel-painting, we will give a very short account of the method adopted at Sèvres for preparing the purple precipitate of Cassius The number of rich and varied tints produced by this pigment have caused it to be highly esteemed by the enamel-painter, especially by the flower-painter. This pigment is formed by adding a solution of gold to one of chloride of tin, for which purpose fine gold is dissolved in *aqua regia;* the solution is diluted with water, filtered, and again largely diluted, when the color should be of a light citron yellow. During these operations a solution of tin is to be prepared with the greatest care, for on this depends the success of the operation. The tin is also to be dissolved in *aqua regia*, in small fragments at a time, and these must be allowed to disappear before a fresh quantity is added. Pure laminated Malacca tin is to be preferred, and the operation must be conducted in a cool place, it being important to keep down the temperature of the solution. In this way a proto-chloride, and a deutochloride of tin are formed, the mixture of the two chlorides being necessary to ultimate success. A scanty black sediment will also be formed, but this may be separated by decantation, after which the solution of tin is to be poured drop by drop into the solution of gold, with constant stirring; but as soon as the precipitate is of a purple color, the operation is to be arrested. When the purple is deposited the liquor is to be decanted off, and the precipitate collected on a filter; it should assume a gelatinous consistence. In this state it is fit for use, but must be kept under water. The quantities used at Sèvres are as follows:—15 grammes of tin are dissolved in *aqua regia* consisting of 4 parts nitric acid, 1 part hydrochloric acid, and 10 parts water; the solution is then diluted with 5 litres of water. The quantity of gold dissolved in the *aqua regia* is 5 grammes; but excess of acid is to be avoided; this is diluted with 5 litres of water, and the solution of tin is added as already described. It is usual to wash the precipitate with boiling water, when it should remain of the fine color of old wine; and when mixed with proper flukes, be capable of producing fine purple, violet, and carmine tints.

THE METHODS OF ENLARGING PHOTOGRAPHS, OR OTHER PICTURES.

BY JOSEPH DIXON, OF JERSEY CITY.

[Read before the Mechanics' Club of the American Institute, Feb. 10, 1858.]

Ever since the great discovery by M. Daguerre, the inventive genius of the world has labored unremittingly, and with varied success, in subduing the difficulties, simplifying the processes, of working and extending this wonderful art to the various useful purposes of life.

The mathematician and mechanic, have united their efforts in the production of optical and mechanical apparatus; while the magic hand of the chemist, has furnished the means of rendering the light drawn pictures of nature, real and substantial things of life, "as tangible to feeling as to sight."

Do we read a description of cities of far distant countries; of the ruins of Balbec; of Palmyra; of the Pyramids of Egypt, of the ruins of Pompeii; almost instantaneously the wand of the photographer waves over the scenes, and we behold, not a mere picture, a sketch by the hand of the most skillful draughtsman, but we have before us the very impress of the *thing itself*; every rock, and stone, and grain of sand, each crumbling ruin with all the markings of time; even the very individual leaves of the creeping ivy, are placed on exhibition. The living inhabitants of every clime and place, with all their peculiarities and domestic habits, once summoned by this powerful talisman must appear, not disguised, but in verity. Here, the Laplander, drawn by his dogs in a rude sledge on the frozen snow, takes his seat beside the dark-skinned African who is surrounded by the ever verdant and luxuriant foliage of the torrid zone; each animal, from every part of the earth, sea, and sky, and the products of every clime and country, may pass, at pleasure, in review before the astonished admirer, as no artist can delineate. History, geography, architecture, mineralogy, and agriculture, are not alone benefitted by it; but the embellishments of manufactures in the various arts, have received a new impetus which carries them forward with an *increasing* force; each different branch is being enlarged and at the same time lending its aid to the perfection of the whole. Painting, engraving, lithography, poetry, glass staining, calico printing, and other branches, indicate the progress they have made in a manner not to be mistaken.

One cannot pass along Broadway without being attracted by the beautiful photographs, colored and plain; pastel, colored and painted in oil, which are placed in the doors of artists to proclaim the excellence of the work within.

I might have mentioned before, that *astronomy* has not been passed by without benefit. Whipple, of Boston, has given to the world a map of the moon, executed by herself, while others have partially succeeded in taking impressions from the fixed stars.

I do not intend to give the *modus operandi* of the various processes, nor to describe the photographic apparatus most in use, but it seems only *justice* to call your attention to the astonising successful labors of our fellow citizen, C. C. Harrison, in the manufacture of that most difficult of all work, the *Camera;* these are not behind the best optical instruments made in the world, although Mr. Harrison has not the mathemetical assistance of a Petzval, nor the early training of a working optician. His success will be best appreciated by the man of science, who well knows the difficulty of working achromatic lenses of such enormous diameter as 3, 4, and 6 inches, to less than one foot focus; yet in these he has contrived to reduce the spherical aberration to a mere fraction, and the chromatic almost to a perfect nonentity. Some of Mr. Harrison's instruments are even much larger, being not less than 9 inches in clear aperture—the largest ever made. The demand for such very large lenses, has arisen from the desire for life-size photographs, several of which graced our Exhibition at the Crystal Palace last autumn. The cost of such large instruments must necessarily debar many artists of small means from their use; and this having been felt, has awakened the enquiry, "how shall we execute these larger pictures without the means to purchase the larger apparatus?" But even with the *largest* apparatus, we cannot produce pictures the size of life; and the special object of this paper is to explain the best means of attaining that end.

The *Magic Lantern*, once the plaything of our youthful days, was brought out, but the light was found insufficient, and it was returned to its resting-place. The *Solar Microscope* was then taken up, it supplied the deficiency, and seemed the very thing for the purpose A negative collodion picture was put in the place of the common slider, and a picture at once was impressed upon the sensitive medium: it required a longer time of course, to make a picture of such magnified dimensions, but as the object could be kept still for any length of time, that was of little consequence. But the lenses of the common solar microscope being too small, larger ones were substituted, and thus full life-size pictures were produced from the common size negative on glass; these were put into the hands of the painter, who, now having something to work on besides a blank canvas, was enabled to bring out a more correct likeness, and with greater rapidity, than ever before: still the outline, even on this was not perfect, although it answered the ends of the painter better than nothing; and it is in this way the large full length portraits are made. Having fitted up an apparatus for exhibiting these large pictures to my friends, I was not a little mortified to find that my friend Mr. A. B. Moore, a celebrated portrait-painter in this city, has had a much better arrangement in use for a long time. We all know that the magnified picture was never well defined. This arose from one of those stubborn laws, well known to the optician, the *inflection* of light, by which a pencil of rays, passing near an opaque body, is deflected and dispersed.

As an illustration (for there are some here who, probably, have not paid much attention to the science of optics), I will suppose that a room be dark, and a small opening in the shutter through which a very fine pencil of light enters; at a distance from this is placed a white screen, which receives the light and exhibits a bright spot, but upon close examination, it will be observed than the spot is not like a piece of white paper cut out and fixed upon a black ground, but exhibits an indistinct outline, with colored fringes on each side; and should a wire or thread be now drawn through this beam of light close to the opening, the shadow from it will be far from sharp, but will exhibit a blurred image colored on each side by fringes in the same manner, and these mixing with the fringes of the circle, give rise to that indistinctness which may be seen on all images thrown on a screen by the solar microscope. Every device that mathematics could suggest in the configuration of the lenses, have proved ineffectual in correcting this species of imperfection;—but to return to the apparatus of Mr. Moore, in which this difficulty is not encountered, and which I will now describe. The light is not passed through the negative, and consequently near to innumerable opaque bodies, but is *reflected* from the surface, thereby avoiding any interference with the rays in their passage to the tablet or canvas This apparatus is so arranged that the sun-light falling on a mirror, is reflected, and condensed,upon a small daguerreotype or other picture, by which means it is strongly illuminated; directly in front of this is fixed a common small size camera tube, so situated that its axis is at right angles to the plane of the picture, and being adjustable, a very sharp image is thrown upon the tablet, free from colored fringes and overlappings.

The difference between the two methods will at once be seen to consist in the fact that Mr. Moore receives upon his canvas a *reflected* image, retaining all the perfection and sharpness of the original, while by the method now used, a *transmitted* image is received, with all its attendant imperfections. As a familiar illustration, it is well known to the practical photographic printer, that should the glass negative be placed in the printers frame with the collodion up, and the paper placed upon the opposite side, that the rays of light passing by the opaque lines are dispersed, and a blurred and indistinct impression would be received, instead of the clear, sharp one he desired, and that he always aims to press the paper as closely against the collodion as possible in order to produce the proper effect. I say, therefore, that it is vain to expect a sharp enlarged picture from a negative by *transmitted* light, however perfect the lenses may be figured; while by *reflection*, an ordinary lens will, with the exception of spherical aberration, produce a clear, well defined picture. By the method Mr. Moore employs, positive collodion pictures, daguerreotypes, engravings, and all pictures, are alike eligible, whether opaque or transparent; while by the usual method a *very dense* negative on glass is the only kind that can be enlarged, and even then, much light will pass through the silver film and assist in destroying the distinctness of the resulting picture.

The form of apparatus which was invented by Mr. Moore over eleven years ago, has been constantly used by him ever since, and also by several of his personal friends in the same profession, to whom Mr. Moore, with a liberality worthy of imitation, gave the plans; and by his permission the door is now thrown open to the public, with the hope that he has contributed one *Moore* stone to the building of this magnificent structure.

I am aware that the evening is devoted to the discussion of another subject, and will not, therefore, longer consume time nor tax your patience. I feel an interest in this art, for the degree of perfection and usefulness it has already attained are truly wonderful; but I assure you that the various developments that have followed each other in such rapid succession, and that have excited in the world so much astonishment and admiration, are but as the tinted leaves that surround the opening bud, whose *higher colors* and *greater perfections* the warm sunlight of man's genius shall in time unfold.

At some future time I may present to you, in detail, the various, methods, and processes, by which it is applied to the arts.

From Photographic Notes.

PHOTOGRAPHIC TRANSPARENCIES.

Sir.—I have frequently seen in the Journals enquiries as to the best mode of printing transparencies for the magic lantern and stereoscope. Whilst searching for such a process, I saw in one of the Journals a formula by Mr. Ross, for sun-printing on salted albumen on glass. This I tried, but found it so very insensitive that in the present dull weather I could not, after many day's exposure, obtain a print of sufficient strength.

It then occurred to me to spread the layer of albumen on a film of plain collodion, in order to quicken it. This succeeds quite well, and I can now get in a few hours the same result which before it took as many days to obtain. I imagine the collodion should be ot the character suited to dry processes.

The albumen I have used contains 14 drops of saturated solution of chloride of sodium to each egg. Another advantage is, that instead of requiring a bath of 70 grains of nitrate of silver, one of 40 grains will answer the purpose.

I may mention, that in the first experiment, having no simple collodion at hand, I tried some old iodized collodion, not knowing what the result might be; it darkened gradually, like the one on plain collodion, but I thought not quite so quickly.

The experiment was interesting to me, as shewing that the outer layer of albumen only was sensitive. I mean to try if your process for paper, of developing with gallic acid, will answer with this process.

G. S. Penny.

OUR PHOTOGRAPHIC ILLUSTRATIONS.

I.—JEREMIAH GURNEY, ESQ.

This gentleman, whose portrait forms one of our illustrations this month, has long been known in the photographic Art, and has always stood in the front rank, both in skill and success. Mr. Gurney commenced daguerreotyping in 1840, when the appliances for manipulating were in the rudest state. The camera was poor in construction and in its operations; coating boxes were unknown, a saucer containing the dry iodine (bromine then being unknown), and placed in a cigar box having to answer the purpose; the plate being held over the vapor, in the fingers. Medium daguerreotypes taken in this way sold for five dollars. Since the first introduction of the daguerreotype in the United States, Mr. Gurney has been assiduous in the prosecution of the photographic art—growing with its growth, and adopting every improvement suggested by his own experience, or that of others. At the present time, his photographs are unexcelled.

II.—HUMBERFORD, C. W.

The property of H. J. Boulton, Esq.

This very excellent view was negatived by William Armstrong, Esq., of Toronto, C. W. Although our prints are as good as the paper and the process we have adopted in printing will permit, they are not as good as the positive sent us for examination, which was taken on albumenized paper. The heavy masses of foliage are much clearer in the albumenized print than in these. Our prints, however, are equal to it in other respects, and may be considered very fair specimens of photographic printing. This negative, together with the positives from others sent by Mr. Armstrong, evince taste and skill sufficient to master all the difficulties of the photographic art, and enables us to place him among the first landscape photographers of America.

The formulas for printing these pictures are as follows:

SALTING SOLUTION.

Chloride of Ammonium	180 grs.
Filtered Water	1 gal.

NITRATE SOLUTION.

The ammonio-nitrate of silver made as before directed in our January number.

TONING AND FIXING BATH.

Chloride of Silver	480 grs.
Acetate of Lead	560 "
Chloride of Sodium	600 "
Filtered Walter	½ gal.
Hypo. Soda to saturation.	

First dissolve the acetate and add the sodium: next the hyposulphite of soda until the precipitate, which forms on the addition of the sodium, is dissolved and the solution is clear; then add the chloride of silver, and after its solution, put in hypo. as long as taken up by the liquid, and filter. No precipitate should be suffered to remain in the bath; but should be filtered out daily, as it otherwise spots the picture in the washing-trough. After filtering for the first time, if the immersion of the first print turns the solution milky, it is because there is not sufficient hypo. and more must be added. The picture must be printed quite strong.

From Photographic Notes.

PHOTOGRAPHY ON WOOD

Mr. G. Robbin, of Huntingdon, has communicated the following process:—

" Hold the polished block of wood before a brisk fire till it is quite hot; then rub over it a piece of bee's-wax till there is a smooth even coat. Hold it again before the fire till the wax runs; then put it in a cool place to dry.

" Coat the waxed block with collodion in the usual way.

" Excite in the nitrate bath by floatation; using a flat dish.

" Print from a negative by interposing between the negative and the wood, thin strips of paper or card, to prevent actual contact; or take a negative on the wood in the camera.

" Develope in the usual way.

" Wash off the developer, but do not fix the picture with hypo or cyanide, as it is not necessary to remove the iodide of silver.

" The picture, whether positive or negative, will be produced in black, on a yellow ground, and is ready for the engraver.

From Photographic Notes.

DRY vs. WET COLLODION.

We insert the following extract from a letter from one of our most valued correspondents. This gentleman has at different times during the last two years sent us magnificent specimens of his work by nearly every process;—Albumen, Wax-paper, and Collodion, and his prints on albumenized paper are (or were) particularly fine. We trust our readers will consider well the remarks made by him on the subject of printing and toning by the ordinary method:—

" I am disgusted with the prevailing mania, for 'Dry Collodion.' Every month there is some new absurdity. The collodion film is not adapted for Photographic purposes, after it has *once got dry*. It loses completely all its beautiful elasticity and translucency and becomes powdery and opaque. Then I quite agree with you about the free nitrate. There must be large excess on the film at the *time of exposure*, or you cannot get a soft and artistic picture. I have long given up trying the dry processes that come out, and have made up my mind to work *nothing* but wet collodion. If a dry process were absolutely necessary I should go *to paper*. Don't you feel every time you go out with the wet collodion that there is nothing that can touch it—not even albumen? I have never now any fear whatever about taking negatives. If the light is only good I am quite sure of pictures. I had hardly any failures on the continent—worked away as sweetly and *good-temperedly* (which *is* something!) as could be desired. A Friend of mine has a light basket, mounted on wheels, which pack inside when travelling by rail or carriage. It holds tent, camera, chemicals, and everything, and is just as convenient as the portable apparatus which the calotypist or wax-paper man carries, with the satisfaction of knowing what you've got, and of working the best known process. I think you are wrong about using pure ether and alcohol for your collodion. My collodion costs about 1¼d. per ounce, from methylated ether and "finish" spirit, re-distilled, and I will guarantee it as fine as can be got anywhere. There is most in the *cotton*, and the spirit must be strong. I think there ought to be some bromide in it; 4 to 1 is what I use. I can't satisfy myself yet with plain paper printing. I don't see the matter in the same light as you, but I agree with you that all prints toned in sulphur and gold baths, must fade. I have a portfolio full of what were once exquisitely beautiful prints, rich, and vigorous in tone, and they are fast going to ruin, the filthy yellow veil is gathering over them, and they will soon be consigned to the fire. Fortunately I have the negatives. I have now adopted a new style of printing which is scientifically correct (which the old plan is not), and gives most brilliant proofs, with pure whites, on albumen paper; the color being nearly black The picture is nearly all metallic gold, and there can be no sulphur. It it much more effective than your sel d'or process, though founded on the same principles, but you will I hope see some good specimens.

"Before I conclude I must have a fling at another prevailing mania—that for the small lenticular stereoscopes. I detest the sight of them, and am sorry you advocate them. Little fiddling affairs—they are only fit for toys! There is something grand about the reflecting stereoscope, and if the duplicates were about 12x10 to 16x12 they would be worth looking at."

With respect to methylated ether, if a uniformly good article were made there is no doubt it would do well enough, but at present we do not either recommend it or trust it in our own work. We have great doubts about the use of bromide in collodion, unless it be to remedy, to some extent, the effects of a bad sample of ether. As for the reflecting stereoscope, we have a great partiality for it, and nearly always take duplicate pictures to be viewed by reflection. The instrument we use cost only four shillings, and is suitable for pictures 12x10 and under, possessing the necessary adjustments. We do not agree with what Sir David Brewster says about the loss of light by reflection constituting an objection to this form of stereoscope. We find, as a rule, that the effects are more agreeable when the instrument is placed in a subdued light, in the middle or back part of the room, than when taken near the window. And then again, when developed prints are waxed and viewed by transparency, the effects are very beautiful. Besides, the model picture is, with this instrument, entirely free from distortion. Large portraits on the whole plate are really superb when viewed in this. It is surprising that the reflecting stereoscope should not long since have become as much a necessity with the amateur photographer, as the camera itself. We have serious thoughts of publishing a pamphlet on the use of it, and of thereby endeavoring to call attention to this simple and admirable instrument. We have almost conceived a contempt for single flat pictures.

With respect to Dry Collodion, we entirely differ with our correspondent. Perhaps an extract from a letter received from Mr. Long may be amusing, as affording an enthusiastic view of the question:

"I'm half mad with Dry Collodion, it is such a perfect success. Everyone who uses the process succeeds. Magnificent results—*no failures!* Every picture comes out as a matter of course, clean, bright and truthful. Half-tones superb; high lights opaque; shadows clean and transparent. In fact the process is all that could be desired."

From the London Art Journal.

THE DUSSELDORF SCHOOL OF ART.

To the Editor of the Art-Journal:

Sir,—At the present time the School of Düsseldorf consists of about six hundred artists, and two hundred students. The artists are divided into two schools; the academicians, and those who are independent, who follow no conventionality, but paint their own ideas. The two schools are separated by their different ideas of finish; the academicians holding in principle and in practice that minuteness of finish—an absolute and rigid imitation of nature, even to the surface of things—constitutes the great perfection of Art; the other party contending that this servility, or rather perfection of execution, is not necessary: that if a work has the effect intended on the mind at a proper distance, it is a waste of time to add details that could please only the ignorant. Among the academicians Carl Müller and Herman Becker stand conspicuous. These gentlemen, like the majority of their adherents, paint Scripture pieces. Why it is that they have fallen on these used-up subjects is hard to guess, except, perhaps, it is that the continual strain on their patience, caused by their mode of study, naturally throws the mind into a religious mood. Another class of them paints *genre* and still-life. Their paintings of still-life, to which their mode of execution is more peculiarly adapted, are really wonderful; they are not paint and canvas, but a reality that requires the touch to convince one it is only a shade.

Taken as a whole, the academicians seem not to comprehend the object of Art; they paint blindly, without thought, without feeling. It is their ambition to produce deception, to imitate nature as it is; they never ask when this is done, what then? It does not concern them. Hence, after years of study they accomplish in months what a photographic instrument would do in a moment. Their pictures have, however, one great merit, that of mechanical execution; in this necessary branch of Art they can, possibly, instruct the world. Their drawing, color, light, and shade, are perfect; but as pictures, as works of Art, they excite no feeling, appeal to no prejudice, are barren of all traces of mind: they amuse only the eye of the curious, or astonish the simple by their minuteness.

The other school comprehends nearly all the artists residing here who have celebrity; among them we find the names of Lessing, Sohn, Hildebrant, Köeler, the Achenbachs, &c. Of such men as these the "School of Düsseldorf" is properly composed; but because they have no marked peculiarity of style common to them all, and no academy for the instruction of students, it is currently believed that this school is one of academicians—of men whose only artistic power is mechanical. This a mistake, and should be corrected, for it not only wrongs the artists who are the subjects of it, but also the artistic world. We have seen in criticisms on pictures by these artists some minute trifle, existing only in the critic's imagination, praised as an excellence, because the supposed finish to the characteristic of the school. These artists, however, do not mistake the representation of threads for the finish of a painting, nor the imitation of surface for the highest perfection of Art: their pictures are not painted to astonish the vulgar, but are addresses to the minds of enlightened men.

There are at present three exhibitions of paintings open to the public; two of these are annual, the other permanent. The first two contain upwards of five hundred pictures, sent from all parts of the continent; the permanent exhibition consists of works by the Düsseldorf artists, and are for sale. The great majority of these pictures are *genre*, still-life, and landscape: in all three of the exhibitions together there are only five paintings that pertain to what is conventionally termed high Art. One of these is the "Hiding of Moses," by Röeler. This picture has the same beauties and defects as all the rest of Röeler's pictures. It has been engraved. In the engraving the faces af the two are much lighter than in the original: and several other parts have been altered, which give it a finer general effect than its original. A picture by Leutze, of "Columbus departing for America," is also in the permanent exhibition; this painting seems to have been left imperfect; the tale is well enough told, but a disagreeable red color, and a want of shade which pervades the canvas, take much from its effect. However, the dignified figure of Columbus, standing out against the sky, and pointing over the waters, as he receives the blessings of priests and friends, is well worthy of Leutze. M. Leutze has painted another work of the same subject, which is said to be much better both in design and execution, than the one here mentioned. A "Syren," by Sohn, appears to be perfect of its kind: it represents a beautiful woman, with her harp hung on the top of a projecting crag; she has finished playing, and, leaning on one arm, bends over to witness the effect. An eagle is seen at the level of her feet flying downwards; this gives the spectator an immense idea of height. The figure is life-size, and fully draped, but in such a manner as to show the form throughout: it is relieved by a dark ground of clouds, through which a single star is shining. A painting, by W. Sohn, of "Christ on the Water:" Christ and the apostles are represented in a boat during a storm. The face of our Saviour, who has fallen asleep, suggests the idea that his mind is active and conscious of what is going on around him. Several other faces are equally excellent, but the imperfect light, coming apparently from several directions, and omitting to illuminate certain things, together with the difficulty of conceiving how several of the figures could maintain their balance, makes the picture, as a whole, very unsatisfactory. The largest painting on exhibition is that of "Christ restoring Jairus's daughter to life;" it is painted by Gustavus Richter, of Berlin. This painting has called forth universal admiration, despite several portions of it that might be called faults. The attitude, for instance, of Christ has the appearance of being studied; and the whole figure of the apostle on the left expresses mere vulgar astonishment. The head of the girl is slightly raised off her pillow, with the intention of showing that life is just reviving in her frame, but it seems difficult to fix in one's mind that this is the case. The figures are all clad in thick stuff, and, owing to the handling, the steps, floor, and background, have the appearance of so many blankets of their several colors tightly stretched. It may be said of it, that, as a wo-k of Art, it does not appeal to our sympathies, and, as a painting, its execution is far from perfect. It would appear, however, that its size, and the fact of it belonging to the king, are redeeming qualities even in this country.

Among the other compositions on exhibition, those of domestic scenes, by Heddermann and Tidemand, are remarkable, both for the excellence of their designs and their masterly execution. Some of these pictures may be compared to Wilkie's. The paintings of animals, on exhibition, are rather attempts than anything else. Two by Lachenwitz are noticeable for their intense fierceness of expression and great beauty of execution. The assemblage of Virgin, Saints, and infant Saviours, are not easily enumerated; for the most part, they appear to be attempts of students, nearly every one of which is a failure. These paintings are respected even by the collectors of auction pictures, and left alone in all their glory of vermillion and blue. A picture of the "Annunciation," by Carl Müller, is considered as a successful attempt, in the style of the academicians, to illustrate Scripture. In this painting a book lies open before the Virgin at a page on which her name is printed; the book is neatly gilded, and of modern construction. She kneels on a planed floor. The angel has on a pink muslin dress, very finely decorated with pearls, &c. Such is the painting by a man who is considered one of the heads of a school. He being a master in his way, some estimate may be formed of his followers.

The great bulk of the landscapes, like the subject pictures, exhibit a knowledge of Nature as it is, accompanied with mechanical power of execution, but unaided by reflection. Hence, their landscapes look like studies from Nature—hard, barren Nature, unelevated by ideality, destitute of beauty. One by Lessing, and two by the brothers Achenback, are magnificent, both for their arrangement, their effect and execution.

Portraits are rare. One by Maria Weigman, of a boy, full-length, and one of an officer, by Hildebrant, are really artistic works; they are simple, expressive, and natural—nothing is overdone, and nothing is left to be desired. P.

Dusseldorf November 11, 1857.

From the Liverpool Photographic Journal.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The monthly meeting of this Society was held on the 6th instant, as usual, J. Compton, Jun , Esq., in the Chair.

Mr. E. Mann read the following paper

"ON THE OXYMEL PROCESS:"

In introducing the oxymel preservative process to your notice this evening, I may remark that I have really no new or original method to lay before you; and I almost fear that I have some small amount of prejudice to contend with, as some parties have objected to the process, because it is, as they term it, a "sticky process." There is no doubt that a satisfactory dry process is the one we all require, and that great progress has been made in that direction latterly, various excellent ones having been discovered; but, I think, it is still generally admitted that none of them have yet produced pictures equal to those obtained by wet collodion.

The oxymel process may be termed a preserved wet collodion process, so as to distinguish it from the dry methods. The application of honey was the first means of all others discovered, by which the sensitiveness of collodion could be retained for a lengthened period, and there are three persons, I believe, who claim to be its originators, namely, Mr. Shadbolt, Mr. Maxwell Lyte, and M. de Poilly, about June, 1854; but the credit seems principally due to Mr. Shadbolt, his plan being the then best for retaining sensitiveness; and Mr. J. D. Llewelyn has since modified and brought it to its present state, by adding acetic acid to the honey, and entirely washing away the silver. The pictures which Mr. J. D. Llewelyn has obtained are very beautiful, several were to be seen in the late Art Treasurers' Exhibition, and perhaps are remembered by most of you.

All the various recognized processes have some peculiar advantages and disadvantages, and I consider that the process now under consideration is capable of producing such beautiful results, that I feel I shall hardly be trespassing upon your time this evening by calling your attention to it, particularly as I have not heard that any one in this town has yet given it much attention.

I commenced the oxymel process at the time collodio-albumen was coming into notice, and have practised the latter during last winter and summer, and have also tried most of the dry processes, but have again returned to the oxymel, having been seldom able to obtain such satisfactory pictures by the other methods. Before entering into the details of manipulation, I will state what I consider to be the advantages and also (I regret I should have to add) the disadvantages of the process. There is more certainty in this than in any of the other processes I have tried. The method of preparing the plates is very simple, and easily and quickly managed. I have not yet tried the limit of their keeping qualities, but have exposed some more than six weeks after preparation, and not developing until a week afterwards, making a period of seven weeks, without finding any signs of deterioration. The development is easy, occupying about five minutes, or more or less, according to the quantity of silver used in the pyrogallic solution: but the greatest advantages of all; and the most important are, that the negatives are very intense, always free from fogginess, brilliant in the shadows, and posssess the peculiar softness and half-tone of wet collodion. In fact I consider that it possesses all the advantages of wet collodion (except sensitiveness), without many of its difficulties; for instance, all photographers know the liability of wet collodion to fog or solarise, and the difficulty of getting intensity. In taking still objects I always prefer to use an oxymel plate, however near my operating room.

Perhaps you may think I have been a little too enthusiastic in expatiating upon the merits of this process; but I must now state its chief and only serious defect, namely, want of sensitiveness —taking from ten to twenty minutes' exposure under favorable circumstances, with a landscape lens of fifteen inches focal length, two and a half inches diameter, and half an inch stop. However, if the plate is not required to be kept much more than a week, the sensitiveness of collodio-albumen may be obtained by leaving a trace of silver on the film, as I will hereafter mention Mr. Llewelyn and some others estimate the exposure required as only about five times longer than fresh unwashed collodion. I have, however, found it rather more, though no doubt much depends on the age of the collodion, and I usually prefer old collodion, which may account for the difference.

I will now describe my method of preparing the plates. For convenience, I have four dipping baths, the first containing the nitrate of silver bath, the second and third rain water, and the fourth the oxymel.

I cover a plate with negative collodion in the ordinary way, and render it sensitive in the usual negative bath solution; afterwards I pass it through the two water baths, so as to remove the nitrate of silver; I then dip it, after draining a little, in the fourth bath containing the oxymel, draw it up once or twice, so that the oxymel may mix evenly on the surface of the film, then place the plate upright on blotting-paper against the wall to drain for about half an hour; afterwards it is as well to stand it on one of the lower corners only on the blotting-paper, so as to remove any of the oxymel which may remain at the lower part of the plate; it will then be ready for the slide or dark-box, which must be well varnished to prevent staining the plates.

After exposure, dip the plate in water, which will cause the developing solution to flow evenly; or, if you like, pour on the pyrogallic solution without first dipping in water, as there is no difficulty in getting it to cover the film; pour on and off two or three times, and then add about one or two drops of silver (of the same strength as the bath,) to the drachm of developing solution, or more if you wish to develope quickly, taking care, of course, that no deposit of silver is thrown down in the solution, or it might injure the film; keep continually pouring on and off carefully, so as to prevent any deposit which may form in the developing solution from settling on the plate; after sufficient intensity is obtained, wash with water by pouring from a jug, and fix with cyanide of potassium or hyposulphite of soda. I much prefer the cyanide, as the negative then requires less washing afterwards than when the hyposulphite is used, and consequently there is less danger of injuring the film. Prepare the oxymel as follows: To one pound of honey add sufficient water to reduce it to about the consistency of oil, heat in a jar in the oven; or in a pan of hot water; then add two ounces of glacial acetic acid, and carefully filter until quite clear and bright.

Instead of using a dipping bath for the oxymel, it may be poured on the surface; this I used to do for some time, but was then frequently troubled by bubbles of air. If, as I before mentioned, the plates are not intended to be kept very long, and greater sensitiveness is desired, the only difference in the preparation is, that the plates instead of being washed in plain water are dipped in a weak silver bath, containing about one ounce of nitrate to twenty ounces of water, previous to the immersion in the oxymel.

The negatives some of which I will show, are generally of a rich dark brown color, which I believe is attributable to the honey supplying the organic element so necessary to an intense development. I often add a little honey to the developer, which always produces an orange brown tone to the negative, and which color, of course, is the most effectual one for obstructing the light in the after process of printing.

I will now mention a circumstance which rather surprised me when I first discovered it, namely that the same bath, though producing excellent pictures with oxymel, would neither give a good positive or negative with a fresh and unwashed collodion plate. This shows that no very great nicety is required in the bath.

I consider a little acetate of silver in the bath is very advantageous, giving greater intensity and ensuring the absence of free nitric acid, which is apt to accumulate by using old collodion containing free iodine. I have sometimes produced negatives in an old bath of a greenish color; but upon forming acetate of silver in the bath, have obtained the usual dark brown tone again. My plan is to add a few grains of carbonate of soda to the bath, until faintly alkaline, and then render the bath slightly acid with glacial acetic acid, and so forming acetate of silver. The developing solution I prepare with a larger portion of acid than is usual, namely, the same weight of citric acid as pyrogallic. As it is necessary to add a considerable quantity of silver to the developing solution, a large amount of acid is required to prevent the silver being at once depcsited; and the solution becoming muddy. The developing solution may be used until it becomes as dark as port wine, and until it begins to deposit the silver.

In conclusion, I beg to refer you to the *London Photographic Journal*, for 1856, where you will find several interesting communications by J. D. Llewelyn, the discoverer of this much neglected though valuable process.

After reading the above, Mr. Mann developed a negative taken some days previously, and exhibited a number of negatives and positives, which were much admired for a peculiar softness and delicacy, and the absence of those violent contrasts of white and black which characterize so many of our photographic productions.

There was a considerable discussion, after the paper, amongst the members, as to the value of this process; the results were considered very satisfactory, but the length of time required for exposure appeared to be a great objection to it. Mr. Mann stated that he generally used that process even when he had a dark room at hand, being so certain of the results, and having no difficulty in producing the requisite intensity.

Mr. Sidebotham exhibited a positive photograph on glass, taken with the revolving lens cap exhibited at a former meeting. The exposure might be said to be instantaneous; the entire time of revolution of the cap only occupying one-twentieth part of a second. He stated that by this means you might get more natural expression in photographic portraits, such as is impossible when a person has to sit even three or four seconds; this was exemplified by the specimen produced.

Mr. Mabley exhibited some prints by Mr. Sutton's development process; some had been exposed in the pressure frame till the image was faintly visible, and others till almost dark enough for sun prints, and yet the finished prints exhibited little difference; those exposed a long time required toning after the development, the others did not. Mr. Mabley also stated that he used paper dishes for development, but they were simply ordinary porcelain dishes with sheets of paper to line them, a fresh sheet being used every time.

A Member called attention to the fact, that albumen prepared for the collodio-albumen process with ammonia, would not deteriorate by keeping. Some prepared nearly two years yielded as good results as ever, and does not throw down any deposit, as that prepared with acetic acid or fermented does.

Attention was called to a curious appearance in certain specimens of photographs that were exhibited, in which the edges of the trees or buildings were bordered by a narrow streak of light whiter than the sky, and in some cases very brilliant. A conversation took place relative to the peculiar phenomenon, but it was not satisfactorily explained.

The thanks of the Society having been presented to Mr. Mann for his interesting paper, and also to the Chairman, the meeting adjourned.

SPECIFICATION

Of Mr. McCraw's process for taking positives direct in the camera, on a white ground. by the reversed action of light.

No. 1843.—William McCraw of Edinburgh, Artist, for "*Improvements in the Production of Photographic Pictures.*" 2nd July, 1857.—Not completed.

This invention relates to certain improved processes for producing positive photographic images, or pictures, on white, or light-tinted substances, either vitreous, animal, or vegetable. A slab of porcelain, by preference unglazed, is coated with collodion or other suitable medium. It is excited in the nitrate of silver bath, and exposed in the ordinary manner. It is taken into the dark room, and the prepared surface is saturated with weak proto-sulphate of iron, or pyrogallic acid, or other developer, which is immediately washed off before any appreciable effect is produced. It is then momentarily exposed to subdued daylight, or to an artificial light, and immediately treated secondarily with a developing fluid, when the latent image appears as a positive, with the lights and shadows correct. It is however left-handed. To obviate this defect, a negative photograph on glass is taken and placed in front of the camera, at a suitable distance off, with a mirror or reflector placed behind the image at an angle of about 45°, to act upon the principle of the microscopic reflector. The effect of this is, that in focussing in the camera, a clear and well-defined image of the kind required is obtained. The porcelain, or other prepared tablet, is placed in the camera, and the image developed as usual, and fixed with cyenide, or hypo. and washed. Its effect may be heightened by a solution of one grain of chloride of gold to the ounce of water. Various colors and effects may be produced by varying the strength of the solution of gold. The plate is then dried at a fire, at a considerable but gradual heat. When cool it is varnished, and colored if required.

The photographic portraits may thus be produced on porcelain, china and earthenware, and on white or opal glass, ivory, bone, prepared wood, or white or colored enamels. Stereoscopic pictures may thus be produced on opal, or white, or ordinary glass.

The chief essential features of the invention are, the production of direct positive pictures on *white* surfaces in the camera; the mode of employing the mirror; and the production of positives by both, or either modes, on hard surfaces, such as porcelain, ivory, mother-of-pearl, &c., which are not adapted for receiving impressions in the ordinary printing-frame.

ON THE PERMANENCE OF PHOTOGRAPHIC PRINTS.

I.

We promised some time back to give our readers our experience and views on the subject of fixing and toning photographic prints. We shall now endeavor to do so in as plain a way as possible.

The various theories on this subject advanced by numerous writers on, and practisers in photography, do not seem to have helped the matter along much. With the theory of the process we shall have little to do. The principles laid down are generally sound; but photographers are sometimes misled by a few who delve more into theory than practice. We all know that in order to fix a proof, it must be submitted to a chemical solution which shall have the power to deprive the paper of every particle of silver that remains unchanged after its submission to light under the negative; and also that it is equally necessary to afterwards remove every trace of the chemical employed in the solution of this unchanged silver from the picture; now asserted to have become sulphuret or sulphide of silver.

For this removal of the unchanged silver, various methods have been adopted; but it now seems to be conceded by all, that hyposulphite of soda is the best and safest solvent; and of this, in our opinion, there can be no doubt. The length of time to which the print should be submitted to the bath of hyposulphite, is also a mooted point. Many photographers advise, that the print be submitted to one or more baths of pure water, before putting them into the fixing bath; others place them first into a fixing bath and afterwards into the toning bath, and lastly into plain water. A simpler way we think the better way.

First soaking in pure water, it is claimed, gives the print a clearer and more brilliant effect. This we doubt. The washing out of the unchanged silver in plain water, is not sufficiently expeditious to prevent a slight darkening in the lights, even in a dark room—the water itself—in our opinion, derived from our practice—inducing a change in this respect.

Submitting the proof first to a hypo. and then to a toning bath is also objectionable, particularly when it is desired to produce fine blacks. By this method the print imbibes an excess of hyposulphite of soda, that no amount of subsequent washing will eradicate, without destroying also its delicacy and strength of color. Mr. Evrard says in his Treatise on Photography, that " water has no action on the salt of silver which the light has reduced," &c. In a manner this is correct, *i.e.* so far as the salt itself is concerned; but long soaking in water—sufficiently long to deprive the paper of all the hypo. imbibed by this process—loosens the texture of the paper to such a degree, that portions of the changed silver are detached and washed away, leaving the proof exceedingly weak In following this method, it is usual to leave the print in the hypo. solution until it becomes of a reddish-brown color; it is then submitted to the toning bath until the desired color is obtained. Such pictures, so treated, will most assuredly fade. In fact, the destructive principle commences in the toning bath, and no amount of washing will prevent its progress towards the entire obliteration of the picture. Both baths also soon become acid from hypo-sulphurous acid, a most powerful destructive agent. This is hastened in hot weather, and but a few seconds immersion will so effectually impregnate the print with this acid, that nothing can save it. We are speaking now of the use of two baths; the first a fixing bath of hypo. only; the second, a toning bath composed of hypo. chloride of silver, and chloride, or salt of gold. The first bath is useless. When the second only is used, it should be of a strength sufficient to produce the deepest purple tint—in from ten to twenty minutes—not over twenty. To assure permanence by this bath, the deep purple tint never should be passed. To stop a little short would be more advisable. Sulphuration commences the moment the picture passes to the black. Allow the picture to remain in the bath, after it has passed the purple, a minute longer, and a slight fringe of yellow will circle its edges; take it out, wash it twenty-four hours in running water, and submit it to the light under any circumstances you please, it will fade in a short time. The most successful bath of this kind we have used was that, the formula of which was given in our June (1857) number. In publishing this formula, we should have stated that we kept the baths in a perfectly neutral state, by the occasional addition of aqua-ammonia. We, however, lost a great number of prints subsequently by our printer neglecting this precaution. All our troubles in printing—where the negatives have been good—have been caused by our printer neglecting to conform strictly to our instructions. There are so many more contingencies against producing good proofs than in favor, that sometimes the *slightest* deviation is disastrous. We shall pursue the subject in our next. H. H. SNELLING.

From the Liverpool Photographic Journal.

LONDON PHOTOGRAPHIC SOCIETY.

The usual monthly meeting of this Society was held on the evening of Tuesday, the 5th instant. The only subject of importance brought before the members was the following paper by T. F. HARDWICH, Esq.,

"ON THE PRINTING OF STEREOSCOPIC TRANSPARENCIES."

Some apology is perhaps needed for my appearance before the Society this evening, inasmuch as I have nothing very novel to communicate. The subject of my paper is, however, one which possesses a general interest, and it has occurred to me that I might, by bringing forward a few notes of some experiments I have lately made, open up a discussion, and elicit useful information.

Very fine transparencies have been taken by Dr. Norris's dry collodion process, but the plan which I intend now to advocate is the collodio-albumen of Taupenot. To work on dry collodion with uniform success the chemicals must all be in prime order, and although plates prepared by Dr. Norris himself have, as far as my experience has gone, turned out well, yet in the hands of the amateur, not quite sure as to the state of his solutions, the collodio-albumen is, I think, the more certain process of the two.

The remarks which I wish to make may be arranged under the following heads. 1. The collodion for the process. 2. The albumen solution. 3. The aceto-nitrate exciting bath. 4. The water for washing the plates. 5. Exposure and development. 6. Fixing and toning.

1. *The Collodion.*—The evils which might be anticipated from the employment of an unsuitable collodion are—blistering and a want of proper density in the image. In Norris's process it is particularly directed that the film should be in the condition termed rotten or powdery, in order to ensure a rapid and intense development. In the collodio-albumen process, however, I find that ample density is obtainable even upon a collodion which is more or less of the contractile kind. No difficulty will therefore probably be experienced in this respect; but as regards the other source of annoyance alluded to, viz., blistering of the film, the employment of a rather tenacious collodion is likely to favor its occurrence, and I was at first quite unable to use it from this cause. Since I have adopted, however, the plan presently to be noticed, of adding *acetic acid* to the albumen, the difficulty has in great measure ceased, acetic acid having the property of liquefying albumen, and modifying it chemically.

In the course of numerous trials, I think I have noticed that

Cutting & Bradford's Photolithography.

Jas. A. Cutting

PHOTOGRAPHER,

[CUTTING & TURNER]

No. 10 Tremont Row, Boston.

collodion iodized with the alkaline iodides acquires, by keeping, a property of sticking tightly to the glass, independent to some extent of any change in physical structure. This idea may be incorrect, but it is worth attention. A collodion can be prepared at once in the powdery condition, but a film of this kind will sometimes rise in blisters when the albumen has been laid on especially thick. Old and brown collodion which has become rotten by keeping, however, rarely or never blisters if common care be taken in cleaning and drying the glasses.

The sensitiveness of the collodion for ordinary camera work need not be taken into account in Taupenot's process. To prove this I selected two samples, one of which had only a straw-yellow tint, and gave a negative in five second, whilst the other was red and insensitive, requiring two minutes in the camera. When coated with albumen they took a nearly equal length of exposure.

2. *The Albumen Solution.*—Take of

Albumen..................	1 fluid ounce.
Water....................	$\frac{1}{2}$ " "
Beaufoy's acetic acid........	$\frac{1}{2}$ " drachm.
Iodide of potassium.........	3 grains.
Chloride of ammonium.......	5 "

First mix the acetic acid and the water; then add the other ingredients and shake together in a bottle for two or three minutes. The solution may be made to run through paper, but as it sometimes deposits a sediment on standing, it is better to set it aside for twenty-four hours, when the upper part may be drawn off clear with a siphon.

In the formulæ at first given by Dr. Taupenot, it was advised to add yeast to the albumen and to encourage fermentation, but this plan proved unsatisfactory. Ammonia was afterwards used, which certainly has an effect in preserving the albumen from decomposition. Acetic acid, however, is, I think, better than ammonia when transparencies are to be made. It prevents, in the first place, the formation of those mucous threads which often increase in the liquid almost as fast as they are filtered out, and it is also, as before mentioned, a partial remedy for blistering, by its action in rendering the albumen limpid.

. But of more importance still is the facility which this mode of preparing the albumen affords for the employment of a strong and quickly acting developer in bringing out the image. Gallic acid is usually recommended in the albumen process as being the most certain, and when the layer of albumen is dense and horny, this is undoubtedly true. In such a case I have seen pyrogallic acid fail, and yet the very same plate, when washed and immersed in a solution of gallo-nitrate, in the course of an hour yielded a good picture. Gallic acid does not react upon nitrate of silver so quickly as pyrogallic acid, and hence more time is allowed for a proper penetration of the albumen film. When, however, albumen properly liquefied by acetic acid is employed, pyrogallic acid may be used with certainty. Indeed it is superior in such a case to gallic acid, being a stronger reducing agent, and more likely to bring out the half tones.

With regard to the exact quantity of acetic acid which is admissible, I have tried various proportions, from twenty minims up to one fluid drachm to each ounce of albumen. The maximum quantity diminishes the sensitiveness, but good prints may be obtained by allowing a longer exposure.

In addition to albumen water, and acetic acid the formulæ includes iodide and chloride. Experiments have been tried to ascertain the function of each of these salts, and I find that neither of them can be dispensed with. In the case of one sample of collodion which was quite powdery in structure and had become brown from spontaneous decomposition after iodizing, omission of the iodides from the albumen appeared to make no difference. Some of my best prints were taken on albumen containing chloride only, and with an equally short exposure; thus, showing that, in this particular instance, the iodide in the collodion beneath receives the invisible impression, although the development is in the albumen, and the image can be partly rubbed off with cotton wool. A repetition of the experiment, however, with other samples of collodion gave different results. The picture came out red and indistinct when the iodide was left out, but developed with great intensity when it was added. I think it probable, therefore, that the presence of iodide of silver in the layer of albumen may compensate for a defect in the collodion basis, and if so, it will give greater certainty to the process.

The chloride, which is used with the iodide, can scarcely be supposed to take any part in the formation of the latent image, but it has a colorific action in the development, imparting a brown tone, and lessening the tendency to that greenish-yellow often seen when iodides only are employed. Bromide acts in a similar way, but perhaps less decidedly.

3. *The exciting bath of aceto-nitrate.*—An old negative bath which has been laid aside as giving streaky collodion films, may be used for the albuminized plates, thirty minims of glacial acetic acid being added to each ounce. It soon becomes discolored, but I do not find it necessary to use kaolin; all my pictures have been taken with a solution as dark as port wine. The plates may be immersed in the aceto-nitrate for two minutes.

Opinions differ as to the propriety of using one bath for the collodion and albumen. I have preferred to keep the two baths separate, thinking that the pictures develop more clearly, and that the chance of blisters is diminished by so doing.

4. *The water for washing the plates.*—Ordinary filtered water will often succeed, but it is best to test it with nitrate of silver for chlorides and carbonates. In the course of the late summer, whilst spending a few days at the sea-side, I found that all the water contained lime-salts, the effect of which, in Taupenot's process used for negatives, was to produce over-action of light in the most exposed parts of the film. The skies developed grey and feebly, and were encircled by a dark line.

I see in the last number of the *Journal* an interesting paper by the Secretary of the Scotch Photographic Society, in which the same thing is noticed. Hard water will, no doubt, produce such an effect both on waxed paper and on albumen. On my return to town, I brought with me a bottle of the water and examined it. There was a trace of sulphate and a small proportion of chloride, but the principal impurity consisted of a carbonate of lime. It required exactly one fluid drachm of a thirty-grain solution of nitrate of silver to precipitate the whole of the saline matter from a wine-pint of the water; and in twenty-four hours the deposit settled down clear without any filtering. This ready mode of purifying hard water might be adopted in case of necessity, but if carbonate of lime only be present, half-an-hour's boiling, or the addition of a little acetic acid, ought to be sufficient to remove it. The use of nitrate of silver, however, has the advantage of precipitating the chloride at the same time with the carbonate.

5. *Exposure and development.*—The plates are exposed in an ordinary printing frame, either to a strong gaslight for five or six minutes, or in the open air for a few seconds. There will be no difficulty in hitting the right time, because, if the plates are under-exposed, it will be impossible to develope the dark shades, and the pictures will appear black and white, without any middle tint.

The solution of pyrogallic acid is prepared as follows:—

Pyrogallic acid..................	3 grains.
Citric acid......................	$1\frac{1}{2}$ grains.
Water........................	1 ounce.

This formula was given to me by Mr. Shadbolt. It may be used also for Norris's prepared plates, but as these develop more quickly than collodio-albumen, it will be advisable to dilute it with an equal bulk of water.

Having soaked the stereoscopic plate in water for a minute or two, take two fluid drachms of the solution of pyrogallic acid and add ten minims of a twenty-grain neutral solution of nitrate of silver. Then pour the liquid repeatedly on and off from a measure. The image begins to appear in about one minute, and is fully brought out in from five to eight minutes. Towards the latter end of the development the pyrogallic acid discolors, and may then be thrown away. I find it quite possible to complete the process with one portion of the developer, but usually prefer to employ two, as a security against fogging, of which there is theoretically a danger when the plate is treated with a discolored developer.

If any failure occurs in this part of the process, it will probably arise from spots or marbled stains, but I do not experience any annoyance from this source when the surface of the albumen-bath solution has been carefully cleansed from scum, and the albumen itself cleared by subsidence.

6. *Fixing and toning.*—The pictures are fixed with plain hyposulphite of soda, and afterwards toned in the ordinary bath of hyposulphite of soda and gold. The fixing solution clears away the iodide and prevents it from getting into the toning bath and interfering with the deposition of the gold. If the toning bath is newly made, one hour's immersion will be sufficient to produce a dark color, but in an old bath the plates may be left for twenty-four hours, or longer.

New hyposulphite, free from sulphuretting compounds, leaves the image of a reddish brown, the tone, however, varying much with the time of exposure and the length of development. Hydrosulphate of ammonia, which Mr. Crookes has lately used, darkens the picture considerably, and may be employed without fear of causing fading, since the image contains more real silver than any albumen sun-print.

In conclusion, I may observe that my object has been to find a simple process, and one sufficiently certain to be recommended. In preferring Taupenot's process to that on dry collodion, I have been guided principally by the difficulty of always obtaining a collodion exactly in the right state. I ought also to mention that the negatives which I used in my experiments were rather intense. The film, in consequence, was liable to *solarize* in certain parts, and this I could not on Norris's plates altogether avoid. With a more feeble negative there would have been no danger of solarization, and the results on dry collodion might in that case, have borne comparison with those yielded by collodio-albumen.

From Photographic Notes.

RESTORATION

Of Prints that have been Destroyed by Sea-Water.

Sir,—Can anything be done to intensify prints which have suffered as follows:—In a voyage from Australia, the sea water got to them, and has almost entirely washed out the shadows, thus nearly obliterating the picture. I do not know by what process they were printed, or the negatives taken. If you could suggest a cure you will much oblige, G. H. C.

It is possible that the prints may have simply faded in the ordinary way, but supposing them to have been destroyed by sea water, the external part of the image would probably have become converted into chloride of silver. In this case, the image might be darkened by immersing the print either in ammonia, or a fresh hypo bath, because that would remove the superficial white chloride of silver and expose the dark image beneath. Another way would be, to expose the print for some time to strong sunshine, and then treat it with gallo-nitrate of silver. If G. H. C. would allow us to see, and experiment with, one or two of the prints, we might perhaps hit upon some plan of improving them. If, however, they have simply faded to the yellow tint, in the ordinary way, and are totally insensitive to light, we know at present of no plan of reviving them; but it is probable that some process *may* be discovered for restoring faded prints. Should the yellow substance prove to be, as we suspect, a per-sulphide of silver, it might be possible, (as Mr. Moultrie has suggested), by treating it with a salt of some metal which would combine with the excess of sulphur and form a stable black sulphide to reproduce a black print. Faded prints should not be destroyed. The time may come when some simple mode of rendering them more presentable, may be discovered.—[Ed. P. N.]

From the Liverpool Photographic Journal.

ON THE FORMATION OF PHOTOGRAPHIC IMAGES.

BY M. MÖSER.

M. Regnault presented a paper by M. Möser, on the above subject, to the Academy of Sciences of Paris, on the 29th of August last, in which the author arrives at the following conclusions:—

1st. Light acts upon all bodies, and upon all in the same manner: the effects hitherto observed, are only particular instances of this general law.

2. The action of light consists in modifying bodies in such a manner, that after this action they absorb certain vapors which they could not otherwise; the process of M. Daguerre depends on this, and offers a particular instance of this general action.

3. The vapors are condensed, more or less strongly, by the bodies thus modified, according to their elasticity, and the intensity of the action of the light.

4. Iodide of silver, as is known, becomes blackened under the influence of light.

5. If the action of the light be continued, the iodide is transformed and becomes colored.

6. The differently refrangible rays have one and the same action, and differ only in the time they require to produce a given effect.

7. The blue and violet rays, and the obscure rays discovered by Ritter, commence the action very speedily on the iodide of silver; the other rays require, to produce the same effect, as much more time, as their refrangibility is less.

8. Yet the action (5) is more quickly commenced and effected by the red and yellow rays; the others requiring more time, as they have a greater refrangibility.

9. All bodies radiate light, even in perfect darkness.

10. This light does not appear to belong to phosphorescence for no difference can be discovered, whether the bodies be placed for a long time in the dark, or whether they be exposed to the light of day, or even to the direct rays of the sun.

11. The rays emanating from different bodies operate in the same manner as sensible light, and produce the effects indicated at (2) and (4).

12. These rays, insensible to the retina, have a greater refrangibility than those of the sun, whether direct or diffused.

13. Two bodies constantly imprint their images on each other, even when placed in perfect darkness (1), (9), and (11.)

14. Yet for these images to be appreciable, it is necessary, in consequence of the divergence of the rays, that the bodies shall not be very distant.

15. To render the representation of a body visible, some vapor should be used, such as the vapor of water, of mercury, iodine, chlorine, bromide, or chloride of iodine, &c &c.

16. As the rays which bodies spontaneously emit have a greater refrangibility than those which were previously known, they generally commence the action on other bodies with the greatest intensity. (7).

17. There exists latent light as well as latent heat.

18. When a liquid is vaporized, light, corresponding to a certain degree of oscillation, becomes latent, and is again set at liberty, when the vapor condenses into liquid drops.

19. It is on this account that the condensation of vapor produces to a certain extent the same effects as light; thus is explained the action of vapor as noticed (2) and (15).

20. The condensation of vapors on the plates acts in the same manner as light, whether the excess of vapor simply adheres, as is the case with the vapor of water on most substances; whether it adheres permanently as in the case of mercury; or lastly, whether it chemically combines with the substance, as does the vapor of iodine with silver.

21. The latent light of the vapor of mercury is yellow; all the effects produced by the yellow rays may be obtained by the condensation of the vapor of mercury.

22. The latent light of the vapor of iodine is blue or violet; the action of the blue or violet rays may in like manner, as in the former instance, be produced by the vapor of iodine.

23. The latent light of chlorine, bromine, chloride and bromide of iodine, appear to differ but little in refrangibility from that of iodine.

24. With regard to the color of the latent light of the vapor of water, I can only say that it is neither green, or yellow, nor orange, nor red.

25. Iodide of silver owes its sensibility, in contact with the visible rays, to the latent light of the vapor of iodine.

26. Iodide of silver is not more sensible to the invisible rays than is the silver itself.

Remark.—With the exception of the principles contained in 9, 17, 18, and 25, all the preceding are deduced from numerous researches, which are described in the following papers in the "*Annales de Physique de Poggendorff*," &c.

(*a*) *De la marche de la vue, et de l'action de la lumiere sur tous les corps.*

(*b*) Sur l'etat latent de la lumière.

(*c*) Sur la lumière invisible.

All theoretical views will be discarded, if we reject the principles contained in 9, 17, 18, 25; but there will then be a deficiency in the explanation of the phenomena.

M. Arago communicated to the Academy the following letter from M. Brequet, relative to a phenomenon which tends to confirm the experiments of M. Möser.

"The remarkable facts discovered by Professor Möser, and which have been communicated to the Academy by M. Regnault, have brought to my recollection something analogous, which I have observed at different times in the interior of gold watch-cases, and even in the interior of the works, which are made altogether of yellow copper.

"Every one knows that on opening the case of a watch, there is a second case below it on which is engraved the name of the maker. This second case comes very close to the first, and I have frequently seen on the outer case the image, reversed and very distinct, of the name of the maker, which is engraved on the inner case.

"In the works of watches where the parts are placed very near to each other, I have sometimes seen certain images, more or less remarkable.

"I have observed these curious facts, and have even mentioned them to some individuals, but not having had the time to observe all the peculiarities of the phenomenon, I have not until now made them public."

From the Liverpool Photographic Journal.

TINTED GLASS FOR ROOFS.

Liverpool, 7th Jan., 1858.

To the Editor of the Liverpool Photographic Journal:

Sir,—I thank you for the opportunity your observations have afforded me for bringing forward further particulars respecting the important subject of the changes that take place in glass, and their probable effect upon the efforts of the photographer. As these changes are the results of time, it consequently follows, that the experience of many years' standing, is of some value, and the following is a record of what has come under my own notice.

Fifteen years ago I was consulted by a company established in Liverpool for the purpose of taking Daguerreotype portraits, as to the best medium for their operating room. I recommended "white" glass. In the course of twelve months they complained that the time of exposure in the camera had greatly increased, and that they could not account for it. I discovered that the glass had changed from a "white" to a purple, and hence the obstruction to the chemical rays. I likewise discovered by actual experiment, that of all the makes of plate glass none were so stable in color as the Ravenhead, which every one knows is of a *blue tint.*

On examination of the stained glass in York Minster, I invariably found, on turning up the lead, that the part exposed to 200 summers was the same in *tint* as the part under the lead, and of all the colors the *blue* was most completely unchanged.

Cobalt being the coloring medium, I came to the conclusion it was the best material to tinge the glass with, especially as it favored the transmission of the actinic rays only. I hold these statements to assume the position of undoubted facts, and they clearly go to prove that "thoroughly *practical* men" hold erroneous views on this subject. I therefore court discussion upon the matter, not because I am connected with the glass trade, but because I am a photographer.

I cannot accept the doctrine that because color in glass is a "tint," it must necessarily "deepen," so far from this being the case, I can show by specimens I have just described, at least 200 years old, that this is an utter fallacy, especially with respect to *blue tinted* glass. I have placed in the roofs of the operating rooms of the London School of Photograph, as well as Mr. Keith's, and they inform me that not only is it *quicker* than "white' glass, but that the sitter is not constrained in his features during the operation. I make no claim to originality in this matter, for Mr. Hunt, *as usual*, is before me, and I refer you to his excellent work on photography, pages 148 and 302, for an account of his experiments.

I am, Sir,
Yours very truly,
Jas. Alex. Forrest.

From Photographic Notes.

PHOTOGRAPHIC SUMMARY OF NEW INVENTIONS, FOR JANUARY 1858.

BY THOMAS SUTTON.

We have some interesting novelties in photographic processes to describe in the present number.

Mr. Quinet has exhibited the manipulation of a new dry negative process on glass, in which the sensitive film is perfectly transparent, and the mode of development rather peculiar.

M. Leborgne has discovered some advantages which appear to result from the addition of a salt of lead to the nitrate bath.

M. Alexis Gaudin has described a process by means of which collodion negatives may be taken instantaneously, and developed to a sufficient intensity, either by means of a proto-salt of iron, or a solution of gallic acid. Like M. Laborgne, he obtains his results by the addition of a salt of lead to the nitrate bath.

Mr. Berry, of Liverpool, obtained some curious and promising results by the use of casein as a medium for supporting the sensitive iodide of silver on a glass plate.

M. Davanne has described some advantages which appear to arise from the addition of ammonia to the albumen used in positive printing. (See page 79).

Mr. T. Bullock, of Macclesfield, has favored us with an account of his process of taking collodion positives direct on card; and Mr. Beattie, of Leicester, has kindly shewn us how to solve a difficulty, proposed for solution a few weeks back by Sir Denham Norreys, which consists in transferring collodion positives from glass to glazed leather.

Lastly;—Our correspondent, the Patent Agent, has sent us a copy of the Specification of a Process, by Mr. McCraw, of Edinburgh, for taking positives direct in the Camera, on *a white* ground, by means of *reversing the action of light.* (See p. 87.)

A few words then on each of these interesting topics, taken in the order in which we have announced them.

The new dry negative process of M. Quinet is unfortunately a secret, for that gentleman intends to try and turn his process to account by offering prepared plates and developing solutions for sale. This he has of course a perfect right to do, if he chooses. M. Quinet is the inventor and patentee of a modified form of stereoscope, or stereoscopic camera, to which he has given the name of "Quinetoscope," (an instrument which Sir David Brewster has funnily observed would seem to be intended for offering some peculiar facilities for viewing M. Quinet). A few days ago, M. Quinet, who appears very anxious to exhibit the manipulation of his process, called on the editor of "La Lumiére," (M. Lacan), with his Quinetoscope and a box of dry sensitive plates, some of which had been excited eight days, and others two days previously. The plates were exposed, in a garden, at about two o'clock in the afternoon, the weather being very cold and foggy. The time of exposure was from 30 to 35 seconds. The sensitive plates were transparent, there was no opaque film of iodide of silver upon them. The plates were first moistened, and the pictures developed by means of three different fluids poured alternately on the plate. The results were successful, and the negatives very sharp and vigorous. The process is stated by M. Lacan to possess two peculiarities. One is, that the older the plate the more sensitive it becomes, and the more rapid the development;—the other—that the development may be stopped at any moment, and continued even after an interval of many days.

It appears therefore, that the process of M. Quinet possesses some marked peculiarities, and we confess we are curious to understand the chemical mysteries of the transparent film, and the peculiar mode of development, which is said to be wonderfully simple, and under the complete control of the operator. With respect to the capabilities of the process, they appear to have been sufficiently demonstrated, both at the last Meeting of the French Photogrpahic Society, and in the presence of M. Lacan: but we are amused at observing, that since a secret was made of the chemistry of the process, the French Society was not to be made a cat's-paw of by M. Quinet, and no mention is made of his experiment in the Report of the Meeting, which appeared in the last No. of the Bulletin of the Society. The liberal conduct of Dr. Hill Norris with respect to his process, (with which we are becoming more delighted every day), certainly contrasts favorably with the policy of M. Quinet.

The process of M. Leborgne consists in increasing the sensitiveness of a collodionized plate by adding a salt of lead to the nitrate bath. The particulars are as follows:—

Dissolve, in one vessel, 20 grammes of acetate of silver in 100 grammes of distilled water; and in another vessel, 16 grammes of nitrate of lead in 100 grammes of distilled water *

Mix the two solutions, and use the bath in the ordinary way. Any of the salts of lead may be employed, but the nitrate gives the best results.

The picture is to be developed by a solution composed of gallic acid 1 part, water 1000 parts; and fixed in the ordinary way.

The advantages of the process are stated to be,—1st, increased sensitiveness;—2nd, the bath may be charged to saturation without giving any precipitate;—3rd, the bath never becomes acid;—4th, the sensitive plates may be preserved a long time without losing their properties, and may be used in the dry state;—5th, it is not necessary to develop the image immediately on removal from the camera.

M. Laborgne states that this bath may be used with equal success in positive printing.

We now come to the process of M. Gaudin for obtaining instantaneous negatives, which may be developed to a sufficient intensity by a proto-salt of iron, or a solution of gallic acid. We may observe, *en passant*, that the finest stereoscopic subjects we have seen are those by Mr. Wilson, of Aberdeen, who, we are informed, generally employs an iron salt as a developer, and has lately succeeded in obtaining instantaneous negatives of large size, developed in this way. We should be very glad to learn the particulars of his process, for certainly his works exhibit extraordinary beauty of half-tone. But to return to M. Gaudin.

His process consists in first making a nitrate bath according to the following formula:—

Add to a solution, containing 10 per cent. of nitrate of silver, a small quantity of reduced metallic lead, in a finely divided state, and also a small quantity of nitrate of lead; the proportions are not stated, being perhaps, at present, somewhat uncertain. Boil the solution. The heat will precipitate a portion of the silver, and the liquid will become black. Subsalts of lead and silver will be produced, and after a quarter of an hour's boiling, the bath may be filtered, and is then ready for use.

When gallic acid is to be used as a developer, a few drops of acetic acid must be added to the plombiferous silver bath; but when the iron salts are to be used, a much larger quantity of acetic acid must be added.

The solution of gallic acid must be saturated and carefully filtered, and a few drops of nitrate of silver must be added to it in the measure, immediately before use. The negatives come out quickly, and are of a brownish tint, yielding very good prints.

With the proto-sulphate of iron, the bath is said to give very intense and perfect negatives, after an extremely short exposure. We imagine this to be the chief merit of the process. It is a well-known fact, that the addition of a small quantity of acetate of lead to a solution of gallic acid increases the density of the negative. The action of the salts of lead in assisting development deserves to be carefully studied. We must not forget also that iodide of lead is sensitive to light.

Mr. Berry's process consists in employing casein instead of collodion, or albumen, as a means of supporting the sensitive film of iodide of silver on a glass plate. He has kindly sent us the account of his experiments through the medium of the Secretary of the Liverpool Photographic Society, who informs us that the Paper was read by Mr. Berry at the last meeting of that Society.

Casein is a substance closely resembling albumen in its properties. It is held in solution by the alkali contained in milk, and is coagulated by the addition of certain acids. Mr. Berry has taken advantage of the solubility of casein in an alkali to spread it on a glass plate; it is afterwards coagulated by heat, and the nitrate bath, and in this way a film is obtained which adheres to the glass and contains the photogenic materials. The process is at present one of those curiosities in photography which we are always happy to hear of, and insert, for they not only prove the ingenuity of experimenters, but affords hints which may be successfully followed up in some way or other.

M. Davanne read a paper at the last meeting of the French Photographic Society, in which he stated that he had discovered some advantages by adding ammonia to the albumen salting-bath, used for positive printing. Albumen, like casein, is soluble in an alkali, and coagulated by the addition of certain acids. It appears therefore, that by adding ammonia to the albumen bath, it is rendered more fluid, and the albumenized paper less liable to dry in streaks; while the ammonia, being volatile, escapes from the paper when drying. We are inclined to think this suggestion of M. Davanne's a very good one; but at the same time it seems quite possible that *some* ammonia might be retained by the albumen, and that this might occasion the discoloration of the paper after being excited on the nitrate bath. Should anything of this kind occur, a good remedy would probably be, to add some lemon juice or citric acid to the nitrate bath, particularly as lemon juice always appears to increase the surface vigor of a print.

We mentioned in our last number that Mr. Bullock, of Macclesfield, had kindly sent us a very pretty positive collodion portrait, taken on the back of his address card. He has since furnished us with the particulars of his process. We are not at liberty, however, to publish them, as they may be learnt on the terms stated in his advertisement, but he has left it to our discretion to say just so much as may whet the curiosity of our readers with respect to an ingenious and simple process, which it is well worth any one's while to know. The facts stated in

* We are inclined to think that there are mistakes in this formula, acetate of silver is nearly insoluble in cold water. Perhaps "acetate d'argent" is a misprint for "azotate d'argent," nitrate of silver. And again, 16 grammes of nitrate of lead could scarcely be dissolved in 100 grammes of cold distilled water; while hot water would be likely to decompose this salt.—Ed. P. N.

his advertisement are strictly correct. The picture is actually taken in the camera on the card, which is from first to last the vehicle for supporting the photogenic surface. No transferring is required. The card is actually coated with black varnish and collodion, dipped in the nitrate bath, &c.; the face of it being of course protected during the operations in a very ingenious way.

In No. 34 of this Journal we solicited information on the subject of taking collodion positives on glazed leather. We are now able to inform our readers how this may be done in two different ways. For the first method we are indebted to the kindness of Mr. Beattie, of Leicester. He describes it as follows:—

"Take the portrait on glass as usual; then cut the collodion film to the required shape. Choose a piece of smooth leather. Moisten with spirits of wine both the leather and portrait. Press the one on the other very carefully. Let dry. Then the portrait will come off the glass beautifully. I send you one, made for amusement only. You cannot scratch the film."

This specimen is quite satisfactory. No one could possibly discover any edge to the collodion film. The portrait is oval, and there is a margin of glazed leather all round it, giving the transfer a mat-like appearance. This specimen exactly resembles that forwarded to us by Sir Denham Norreys, and alluded to in No. 34. Mr. Beattie's mode of transferring, is infinitely better than that which we suggested.

The other method of taking positives on glazed leather, cloth, &c., requires no transferring. The collodion is poured at once on the glazed material, and the film may be either excited by floatation on a nitrate bath, or by immersion, the glazed leather or cloth being in that case stuck to a piece of glass in such a way that the nitrate bath cannot get to the back of it. This is one part of Mr. Bullock's ingenious process. Glazed canvas may be obtained from Messrs. Ellington & Ridley, 89 Watling Street, London, at about three shillings per square yard.

With respect to Mr. McCraw's process, (see p. 87):—The patent, applied for in July last, has not been completed, so the particulars mentioned in his Specification are now, we believe, public property. But his process is not new, since attention has been called to the fact of a positive having been produced by the reversed action of light, both in this Journal some months since, and also at a recent meeting of the Photographic Society. Nevertheless, we had no idea that this process was capable of yielding results sufficiently good to make it worth any one's while to take out a patent for it. It seems likely that Mr. McCraw's process may be turned to useful account by professional portraitists. We advise our readers by all means to experiment with them.

PHOTO-LITHOGRAPHY OF MESSRS. L. H. BRADFORD & CO.

We have the pleasure of furnishing our subscribers this month with prints by the Photo-lithographic process, from the establishment of Messrs. L. H. Bradford & Co., in Boston, in addition to our usual photographic illustrations. The portraits are those of Messrs. J. A. Cutting and L. H. Bradford. They are exceedingly interesting, as exhibiting another successful advance in Photographic Art. This particular process for transferring the photograph to stone is the joint invention of Messrs. Cutting and Bradford. The impressions here given are taken direct from the stone, without any retouching, the transfer to the stone being made from a glass negative in the same way as other positive prints. The impression so obtained is afterwards prepared so as to take the lithographic ink, and the prints are taken off in the press in the same manner as any other lithograph. The advantages, both to art and business, of this method of executing pictures, are very numerous, and have been long dwelt upon by many of the first photographers of Europe, who have devoted much of their time in endeavoring to overcome the difficulties that have stood in the way of its accomplishment. Specimens of photo-lithography have been occasionally shown, which were very fair; but the processes were not sufficiently developed to produce the perfection required by art. This process of Messrs. Cutting and Bradford may be considered a decided step forward in this branch of art. These gentlemen claim that they can reproduce any picture by the photographic with greater ease than by the ordinary lithographic process, and the specimens of their work before us certainly will confirm this opinion, although, as Mr. Bradford himself says, the process leaves room for improvement, of which it is perfectly capable. H. H. S.

From the Liverpool Photographic Journal.

ON THE VARIATION OF THE FOCI OF LENSES.

BY. M. CLAUDET.

The question of the actinic focus is involved in another kind of mystery, which requires some attention. I have found that with the same lenses there exists a constant variation in the distance between the two foci. They are never in the same relation to each other; they are sometimes more or less separate; in some lights they are very distant, and in some others they are very near, and even coincide. For this reason I constantly try their position before I operate. I have not been able to discover the cause of that singular phenomenon, but I can state positively that it exists. At first, I thought that some variations in the density or dispersive power of the atmosphere might produce the alteration in the distance between the two foci; or that when the yellow rays were more or less abundant, the visual rays were refracted on different points on the axis of the foci, according to the mean refrangibility of the rays composing white light at the moment. But a new experiment has proved to me that these could not be the real causes of the variation. I generally employ two object-glasses; one of shorter focus for small pictures, and the other of longer focus for larger images. In both the actinic focus is longer than the visual focus; but when they are much separated in one they are less so in the other; sometimes, when they coincide in one, they are very far apart in the other, and sometimes they both coincide. This I have tried every day during the last twelve months, and I have always found the same variations. The density of the atmosphere, or the color of light, seems to have nothing to do with the phenomenon, otherwise the same cause would produce the same effect in both lenses. I must observe, that my daily experiments on my two object-glasses are made at the same moment and at the same distance for each, otherwise any alteration in the focal distance would disperse, more or less, the actinic rays, which is the case, as it is easy to prove. The lengthening or shortening the focus, according to the distance of the object to be represented, has for effect to modify the achromatism of the lenses. An optician, according to M. Lerebours' calculation, can at will, in the combination of the two glasses composing an achromatic lens, adapt such curvatures or angles in both that the visual focus shall coincide with the actinic focus; but he can obtain this result only for one length of focus. The moment the distance is altered, the two foci separate, because the visual and actinic rays must be refracted at different angles in coming out of the lens, in order to meet at the focus given for one distance of the object. If the distance is altered, the focus becomes longer or shorter; and as the angle at which different rays are refracted remains nearly the same, they cannot meet at the new focus, and they form two images. If the visual and actinic rays were refracted parallel to each other, in coming out of the lens they would always coincide for every focus; but this is not the case. It seems, therefore, impossible that lenses can be constructed in which the two foci will agree for all the various distances, until we have discovered two kinds of glasses in which the densities or the refractive power will be in the same ratio as the dispersive power.

From the Liverpool Photographic Journal.

THE "PENCIL OF NATURE" PROCESS OF MR. FOX TALBOT.*

We have seen how the prints for the "Pencil of Nature" were obtained. It only remains that I should make two or three remarks for the purpose of pointing out distinctly that all was done that our knowledge, at that time, could suggest. On looking back, the only flaw that can be seen is, in that part which relates to the washing of the prints. To us it seems doubtful if three changes of water for each batch of pictures could suffice. Let it, however, be remembered, that the water used was *as hot as the hand could bear*, and that the hyposulphite of soda was from a freshly-made solution. The difficulty was to obtain a proper test of the absence of hyposulphites. The evil of over-washing, too, had to be avoided. I do not think blame attaches to the process, and indeed, one can only admire the comparative degree of perfection to which it was brought under so many circumstances of doubt and difficulty. With me, a very strong proof of the three changes of water being justifiable, is the fact that some of the pictures of the "Pencil of Nature" are, to this day, as good as ever. What has become of the hyposulphites which we should now say must have been left in the paper? What other circumstances are needed to render hyposulphite fatal? Mr. Hardwich will reply, damp for one. True; but all the pictures are bound up in one book, and kept in a good library. Let us not loose sight of this fact when discussing the influence of hyposulphite on the fading.

There is a point relating to the history of toning processes that may very properly be related here. Originally, all ammonio-nitrate prints were of a warm sepia color, more or less modified. This color was by many disliked, although scarcely two persons agreed as to what color would be most desirable. Advocates for the warm colors were then, as now, to be found. It happened, on one occasion, that some prints of a marble bust, by Mr. Henneman (*the first established photographic printer*), were executed for the late Mr. Walter, of *The Times*. These, being wanted in a hurry, were, *after* pasting, rapidly mounted and ironed with a hot iron to smooth and dry them. It was at once observed that a remarkable change of color ensued, such as is *never* produced by ordinary drying or exposure to sun and pure air. It was at once hastily concluded that the paste was the cause of the phenomenon. Mr. Talbot communicated the facts to M. Claudet (then a licensee under the calotype patent), and to the writer of this, who, on being requested to procure some paste for the experiment, took the liberty of omitting the farina, and succeeded quite as well with water only! A certain amount of moisture, and it is believed, a trace of the hyposulphites being necessary, with the heat, to effect the required darkening of the print. *From that time* it was a common thing to iron prints, or heat them strongly by a fire whilst still damp. So simple a matter was not in use till 1844. Soon after this I discovered that nitric acid, added to hyposulphite of soda, enabled us to obtain black tones in ammonio-nitrate prints. Sulphurous acid and free sulphur were liberated, and the print too much lowered, unless over-printed. These facts were not published at the time, but they were verbally communicated to those who took an interest in the art. The fashion of going into print on every occasion had not then set in. Several early experimenters have had their labors overlooked through being content with communicating their experience verbally. I am not disposed to find fault with this, for, undoubtedly, the publication of small matters aids materially the progress of the art. Still, let it not be forgotten, that the facts remain the same: *real priority* will still belong to the first proposers of any method, although they lose the credit which rightly belongs to full publication. This is a point upon which much misconception prevails. It is too much the custom to suppose that non-publication arises from a selfish motive, whereas it may spring simply from a reluctance to push forward, or from want of skill in arranging such matters for the printer. Moreover, there was no journal specially devoted to the subject of photography. Taking a great interest in tracing the history of photography, I have sought some rule to guide us in fixing the dates of discoveries, and enable us to apportion critically, the degree of merit due to each inventor. An impossible task! some will say. It is a difficult one, and after much consideration and enquiry, I have come to regard Sir John Herschel's view of such matters as the best one. He says, treat the public as a jury; lay ALL the facts before them, and let them judge of the character and demeanor of the witnesses. Sir John strongly opposed M. Arago's method of fixing the date of a discovery by published documents only. The lustre of the discoveries of some of our greatest men would be much dimmed, were we to admit the validity of such a canon.

It remains further to add, that the plates of the "Pencil of Nature" were printed at Reading, in Berkshire, where the first photographic printing establishment was set up, under Mr. Talbot's directions by Mr. Henneman, who had long assisted Mr. Talbot in his experiments. Some of our early photographers will, doubtless, recal with pleasure the marvels of those first days, and bear testimony with me to the liberal manner in which Mr. Henneman communicated information to all earnest lovers of the art. It was there that the writer had the gratification of watching the steps of the process as detailed in these pages, and from that time he dates his full knowledge of the art, and also his first acquaintance with Mr. Talbot, M. Claudet, and M. Fizeau, his first qualified preceptors in all its chief branches. Now that the struggles respecting patent rights have terminated, he may, perhaps be allowed to add, with some chance of being heard, that no charge of want of liberality could ever be honestly maintained against the early patentees by those who were bent only upon a scientific and personal use of the respective patents of that time. He would be ungrateful if he attempted to conceal his experience in this respect; and he regrets that in this matter, the full truth is not universally recognized. Time and events will set all right. M.

* Continued from p. 55, vol. xi., no. ii.

STEREOSCOPIC VIEWS—CASE OF POISONING.

Buffalo, N. Y., February 15, 1858.

To the Editor of the Photographic and Fine Art Journal:

SIR,—In the last very interesting number of your Journal, I notice, in the reported proceedings of our Trans-Atlantic neighbors, a claim for a "Novel Method of taking Stereoscopic Views;" "just originated by Mr. J. Gill of Liverpool, and patented by him." In this method "two mirrors were so placed together, at a slight angle, that each receive an image of the object proposed to be taken. The camera was then directed towards the mirrors, the images reflected in which were taken on a single plate."

Allow me to inform our friends over the water, that this process is an old American invention—the discovery of Prof. F. A. P. Barnard, of Alabama.

A full description of this process by Prof. Barnard, with mathematical demonstration, and notice of accompanying pictures may be found in Silliman's Journal of Science for 1853, page 348. I myself made stereoscopic pictures from this description, as many as three years ago, and found the results quite satisfactory.

But the objection raised by a member of the Liverpool Society, in reference to the formation of a double image by reflection, from the anterior surface of the glass as well as from the silvered surface, is well founded when glass mirrors are used—at least so my experience teaches. I believe mirrors of polished metal only, can be successfully used.

Another article from the Journal of the Photographic Society, by W. H. Rankin, M.D., on the poisonous effects of cyanide of potassium, is, I believe, erroneous and dangerous. Mr. Rankin loftily pronounces recent articles on the supposed danger from the use of this poison as an external detergent, "twaddle," and declares that he "has never heard of any authenticated case of dangerous effects from such use."

Allow me to state one:—A young man in my employment, after washing a slightly scratched hand with this article, found the hand on the next day quite painful and swollen. The second day it was so badly swollen that he could not use it, and a physician was called on, who pronounced it a dangerous case of poisoning from the use of the cyanide. Happily, the antidote (from a photographic Journal) of 10 grains carbonate of potassa in 1 ounce of water, followed in a few minutes by $\frac{1}{2}$ a drachm of tincture muriate of iron, with 5 grains sulph. iron, prevented any serious consequences.

But a medical man should know that poison may be introduced into the system both by inhalation and absorbtion, as well as through the mouth. Though no immediate injurious results may be observed from the application of this poison externally, who can say that its continued use is not sapping the vitality of the system?

A saturated solution of hyposulphite of soda for removing fresh nitrate of silver stains, is much safer and nearly as effectual.

J. H. Tompkins.

Personal & Art Intelligence.

— Each succeeding month brings to the Photographic Art some new idea, some new process, and some decided advances in its progress towards perfection. Photography is thus gradually extending its usefulness into almost every branch of industry, and is reaching, with slow, but steady and sure steps, into the bosom of the "*higher Arts.*" One of the most recent published improvements, or rather inventions, is that of "*Burnt-in Photography,*" an article on which subject will be found in the present number. This idea is not new to us. Its practicability was presented to our mind two or three years ago by the discovery of a portion of a collodion negative which had passed through the seething fire that destroyed Mr. Harrison's manufactory. The image of this piece of negative was not only completely vitrified, preserving all the characteristics of the photograph, but it was engraved into the glass, so perfectly, that, had the surface remained flat—the action of the fire had rendered it concave on the collodion side—an impression might have been taken from it with printer's ink. The effect on those portions remaining perfect, was very beautiful. We longed for an opportunity to pursue the experiments which this incident suggested; but with the multiplicity of our duties, the thing was impossible; we therefore suggested these experiments to others; but there are few in this country who seem willing to grapple with and solve the mysteries of a new idea, and therefore the experiments were never made, and foreign photographers have in this, as in all other decidedly original photographic designs, been permitted to carry off the prize credit of its invention. Mr. Burnett's article on the subject will well repay perusal, and should not be passed over lightly. The most important as well as some of the most useful results are to be produced hereafter by this process. Its application to every species of glass ornamentation will, in a few years, become highly popular, and we shall see vases, lamp-shades, windows, and crockery of every description beautified in this manner.

The new theories lately put forth in regard to photographic lens, seems to be gaining ground rapidly, and Professor Petzval is obtaining additional honors by his labors in this branch of optics. But is not our own countryman, Mr. C. C. Harrison, entitled to a very large share of the honors bestowed upon Prof. Petzval. Did he not quietly solve this problem two years or more ago, and introduce to our photographic public, lenses on the same principles? Those who have used his cameras, made during the last two years, must certainly know that they *work* on the same principle. Mr. Harrison, in working for and producing this result, may not have been aware of the *theory* upon which his labors were predicated, for he is eminently a *practical* man, and in knowing the requirements of photography, in his particular line of business, sought to effect it *practically* without troubling his head about the *theory.* His aversion to making his rules of action public through our Journals will undoubtedly induce such a belief; but those who know him personally, and know how laborious a student he is, and how wedded he is to his art, will form no such opinion. Two years ago he produced lenses which practically effect what Professor Petzval now asserts theoretically.

Casein, as a substitute for collodion, has been successfully tried in England. The article on this subject, in our present number, is interesting so far as the suggestions it makes towards future improvement. "Converting Positives into negatives by heat" is another new idea, successfully tried, but which can be of little use to the art as it complicates what is otherwise simple, and complications are to be avoided as much as possible.

Some improvements have been made in photography on wood in Europe. In this country we are considerably in advance of the Europeans, but the usual policy of all our photographers in matters of invention is such that they must necessarily lose all prestige as originators.

The process for Collodion on Paper has some advantages; but not sufficient, we apprehend, to bring it into general use.

Mr. Sutton lays down the law to Mr. Malone in an article on the "Fading of Positives" quite effectually. He has decidedly the advantage. Mr. Malone, it seems, is like the boy who declared he never would go into the water until he learned how to swim. We have quite a number like him on this side of the Atlantic.

A process given for the use of ammoniacal albumen in positive printing. We shall endeavor to give it a trial before long. We shall have something *new* of our own for the May number, probably for June also, which we have strong hopes will add great advantages to the printing process. What few experimants we have made, satisfy us completely.

We have an interesting paper from Joseph Dixon, Esq., of Jersey City, on "The Methods of Enlarging Photographs, or Other Pictures." Many of the ideas advanced are worth preserving. Mr. Dixon is not, however, very well posted up in the history of the subject, and is rather obscure in relating the present methods of enlarging photographs. We do not agree with him that perfect pictures cannot be enlarged by transmitted light—our experience teaches us that they can. We have tried the experiment of enlarging a "*half size*" collodion negative portait to life-size—the measurements were in the image as in the model. The practice of the enlarging process is very little understood yet, and prejudice has found opinions that cannot be sustained in practice. We shall enlarge on this subject hereafter.

All concede the importance of a perfectly successful dry collodion, and yet many are disposed, notwithstanding the results that have been obtained, to give up the attempt of producing it. All the formulas, heretofore given, are more or less condemned by the majority, although the originators profess to sustain no failures in their particular cases. Several very excellent results have been accomplished in this city, and we may have considerable to say in regard to them in a few weeks.

The oxymel process of Mr. Mann deserves consideration.

A method of producing positive pictures on white grounds is given, which will interest experimental more than practical photographers.

A valuable paper on "Printing Stereoscopic Transparencies," by Mr. Hardwich, will be found interesting to stereoscopic photographers. The stereoscope picture business is rapidly increasing in importance, and will eventually be very lucrative. During these dull times it would be well for those who cannot find sufficient to do in portraiture, to devote their leisure moments to taking stereoscopic pictures. If we could gather a respectable assortment of good stereoscopic views of American scenery, we could soon find a market for them.

Mr. Forrest in his article on "Tinted Glass," confirms the assertions we have so often made in regard to the advantages of using *blue* glass in sky-lights.

— We have the pleasure of presenting to our readers this month, a decidedly new and valuable improvement in photography, and it gives us the greater pleasure inasmuch as it is the result of the labors of a friend with whom we have been obliged, in times past, to be at variance, on another photographic subject. We allude to the new photo-litographic process of Mr. J. A. Cutting and his associate, L. H. Bradford. The announcement of these gentlemen of their intention to send us the illustration that we issue with this number, was too late to give us an opportunity of saying all we can say about it; we shall, therefore, again refer to it in our next. For the same reason we are obliged to omit one of the portraits (that of Mr. Bradford) mentioned in our article on this process, on page 93, until our next issue.

— Frank Ford.—The positive prints you sent us are very good. You have an artist's eye and appreciation. The tone is precisely of the right kind for permanence. It is soft, clear, and agreeable. The positives are excellent. We shall advise you, however, to use a side-screen or reflector; and in toning, do not tone quite so long as to destroy the middle tints. This is the only fault we have to find with the specimens before us. We hardly think you need this advice, as the qualities of the pictures show that you understand all the points of a good picture.

— E. S. Wykes.—The characteristics of the specimens sent by this gentleman, are the same as those by Mr. Ford, with the exception of the faults we mention. The tone, clearness, and middle-tints are exquisite, and the details are very fine. You require no instructions from others to place you at the head of your art. We would here repeat our request to gentlemen sending us pictures, to do so unmounted, as we have a fine album in which to preserve such as give us satisfaction.

— We cut the following from the *Indianapolis* Journal:

"All admirers of the beautiful will find at the Metropolitan Gallery, the finest photographs and Hallotypes made in the West. Mr. Bailey showed us, the other day, several new Hallotypes which he had made, which certainly cannot be excelled by any artist anywhere. He has a number of pictures of this kind at the Metropolitan, and a larger number of photographs—likenesses of ladies and gentlemen of this city, and views of several of our public buildings. For a good photograph or superb Hallotype, go to Bailey at the Metropolitan, and if a superior daguerreotype is wanted, Mr. Ohr, at the same gallery, can supply it. Messrs. Ohr and Bailey are chief among the picture-makers of the country."

— This comes to us all the way from California, in the *Fireman's* Journal. Mr. Selleck—we will premise—is perhaps the oldest devotee to the Art in San Francisco, although he may be the youngest man. He has been identified with daguerreotyping and photographing, ever since he was a shaver in leading strings, and he can truly say that he has grown with its growth, and strengthened with its strength. We are, therefore, happy to hear that he is so prosperous in the business:

"Photographs.—Mr. Silas W. Selleck, whose proficiency as a daguerreau is so well known, is now engaged in taking photographs of the members of the Pioneer Association. The list of members numbers about nine hundred, between five and six hundred of which have signified their assent to the undertaking, and it is probable that the entire body will do so. It is designed to make books of fifty each, handsomely bound with the autograph of each individual represented. Such an undertaking speaks well for the arts and sciences in California for we doubt if in any other State, a work of such magnitude has been carried out, and in its accomplishment it could not devolve upon a more worthy man than Mr. Selleck. His rooms are in Rabe's building, 163 Clay street, South-side, near Montgomery."

— Friend M. J. Gurney, of Natchez, Miss., at last, comes under our notice, and while remembering his pleasant countenance and smile, and the peculiar eloquence with which he dwelt upon the merits of the ——, we won't mention it friend Gurney, for fear modesty will make you——, we shan't say what—a jovial soul like yours can never *look* sad, whatever the tongue may say; it therefore gives us great pleasure to hear such things as the following said about you. We know it must be true, for many others have said the very same thing:

"Natchez Gallery of Art.—We had the pleasure of visiting the room of M. J. Gurney, in Main street, a few days since by his polite invitation, and passed an hour very pleasantly in the examination of his superb collection of Daguerreotypes, Photographs, Diaphaneotypes, Heliographs, Ambrotypes, Melainotypes, etc., taken from the smallest conceivable size, to the size of life. His cabinet pictures are perfect gems, and eminently worthy the examination of those who are capable of appreciating an elegant picture. As we have visited the principal galleries of art, in London, Paris, New York and elsewhere, ample opportunity has been given us to notice the gradual improvements which have taken place since the invention of Daguerre was brought before the public, and we believe few artists, either in Europe or this country possess a more thorough knowledge of their profession than Mr. Gurney of Natchez. He is indefatigable in the search of every new chemical improvement which may beautify and adorn his art; possesses all the requisite facilities for producing the most superb pictures; understands thoroughly every branch of his profession, and by his untiring energy has attained a position as an artist which reflects honor upon the city in which he resides. Those who wish a magnificent picture will do well to call upon him at their earliest leisure."

— An Antwerp paper mentions that Queen Victoria, who has of late devoted much time and displayed great talent in the art of photography, has lately sent the Empress Eugenie, as a New Year's present, a charming album full of photographs taken by herself. On the leaves of this very unique work are to be found portraits of the royal children in the costumes of various Shakespearean characters, the portrait of Prince Albert, together with views of Windsor Castle, Balmoral, and Osborne house.

— We have the promise of something *very* interesting from Baltimore for our April number. We shall continue our article on toning prints, and shall also give the first of our series on the American Photographic patents.

— Mr. Burgess has published his fourth edition of the Ambrotype Manual, and has made large and valuable additions, on various subjects connected with Photography. The price is still the same, $1, cloth 12mo.

— Mr. W. Notman.—We thank you for the offer, and gladly accept it. We shall always be pleased to hear from you on any subject that may strike you as original and good.

— We notice that mention is made of a process by Mr Bullock of England, for taking photographic pictures, portraits, &c, on the back of visiting and other cards. This is spoken of as new. Mr. Richards of Philadelphia, has possessed a process of this kind, and practised it for more than a year. This is another one of those photographic cases, where the originator of a process has deprived himself of the honor of its introduction.

— We regret to learn that Mr. Terril, of Belvidere, Ill., has been burned out, losing everything; but, judging from the good spirits in which he writes, we do not think he means to succumb to the disaster.

— J. R. Rose. The Cameotype process is claimed by Mr. J. Atkin, of Brooklyn, L. I., and to him you should write for the desired information.

— R. Shriver. There has not yet been a dry process published that is not subjected to objectional remarks, and that has given general satisfaction. The inventors generally claim all the photographic virtues for them, while others confess their inability to work them. A trial of each process is the only means of ascertaining which will give the most satisfaction.

— The contents of our present number indicates an increasing interest in photography on the part of our subscribers. We not only have more valuable matter from foreign writers, but the increase in original communications is decidedly more satisfactory—of a higher order. We shall commence next month with our articles on photographic patents, and should feel much obliged to those possessing facts relating to the matter, if they will communicate them to us.

J. B. Heywood, Neg. H. H. Snelling, Print.

MRS. GLADSTANE,

Of the Boston Theatres.

From the Liverpool Photographic Journal

LIVERPOOL PHOTOGRAPHIC SOCIETY.

THE monthly meeting of the members of this Society was held at the Royal Institution, Colquitt Street, on Tuesday evening, January 26th, for the purpose of receiving the Annual Report of the Council, and the Report of the Deputation appointed to confer with a deputation of the Historic Society of Lancashire and Cheshire, as to the terms under which it was proposed to merge the existence of the Photographic in that of the Historic Society, and of deciding thereupon.

C. Corey, Esq., who presided, stated that it would be desirable to leave the consideration of these reports to the last, in order that every chance should be afforded to absent members, who might still be in attendance before the meeting closed, of taking part in the discussion. In the absence of more interesting matter, he (the Chairman) laid before the meeting a beautiful specimen of American photography, on the peculiar description of highly polished black cloth, or leather used by ladies in crochet work. The image was perfectly sharp, and apparently as indelible as it was distinct and clear.

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Mr. Foard observed, with reference to the process of transferring described by Mr. Ross, that about three or four months ago he was awaited upon by a gentleman, who, from certain indications, he thought must surely be a photographer; and so it appeared. The visitor said he had something very particular to discover to him, and after much beating about the bush he said "he had one mode of transver, vhich vos ver beautiful and ver simple," and asked him (Mr. Foard) to purchase it Now he had so many wonderful secrets, which were no secrets brought to him every week, that he was inclined to give the foreign gentleman something like hearty thanks, and wish him good day, but, after some further conversation, the secret was unfolded. It described a mode of transferring by using sulphuric acid a method which he (Mr. Foard) found to be very simple and very successful. He gave the man a testimonial, promised to keep the secret, which he had done until he found that it had been known and practised in France for some months, and now it appeared that it had been known some time before that in America; but he greatly preferred washing both the oil cloth and the film while just damp from partial draining, with spirits of wine, pressing the two very closely together, and leaving them to dry spontaneously, when the film will be found to have quitted the glass entirely, adhering solely to the oil-cloth or leather.

Mr. J. A. Forrest then addressed some remarks upon certain animadversions which he said had been cast upon him in the *Liverpool and Manchester Photographic Journal*, and proceeded to say:—"I deem it a duty I owe to the Society, to put the matter in question in a practical channel of settlement. As it is useless to prolong a discussion where theory and speculation only are opposed to known and tried results, I decline further controversy, but am content to set the matter at rest by a practical experiment of the most stringent kind; I therefore propose that a committee be appointed for the purpose of investigating the subject; and to afford them the fullest facilities for so doing, let them call upon sundry parties who may be most interested in the subject, to furnish specimens of the different varieties of white or tinted glass. Mr. Keith has kindly offered a portion of his operating-roof, for the purpose of glazing with different specimens of white and tinted glass. I propose that pieces of various tints and colors of glass, as well as white, be inserted in this roof, exposed to the full effect of the sun's rays, and that corresponding portions of each specimen be placed with the committee in sealed envelopes. At the end of the summer the experiment will be complete. The pieces, from the roof, can be compared with the portions in the hands of the committee; the difference in the results will substantiate the position taken by the Editor of the *Journal*, or the statements of mine, which have been called in question.

The Chairman thought Mr. Forrest's proposition was just the one that was wanted.

Mr. Foard, in seconding the proposition, expressed some surprise that the Editor of the *Journal* had not entered into the discussion in a more fair and liberal spirit. The remarks made in the leading article in the last *Journal*, as to the failure of blue glass, referred to the blue glass formerly in the Polytechnic, the tinted glass in which certainly retarded rather than assisted the process, and it was changed for white. But that did not settle the question, because that glass was of a different tint to the glass advocated by Mr. Forrest. The glass in the Polytechnic was a dark blue, that referred to by Mr. Forrest being a light blue; the former did deeped in tint, and might have afforded some ground for the Editor's statements.

Mr. Berry suggested that, in the event of the amalgamation with the Historic Society, the specimens of glass to be experimented upon should be put in a frame, and placed on the top of St. George's-hall. This would remove all ground for any supposed collusion which might be charged upon them, were a private establishment selected for the experiments.

It was resolved that this suggested should be acted upon, and Dr. Ayrton, Mr. Glover, and Mr. Berry were appointed a committee to conduct the experiments.

Mr. Forrest wished to observe with reference to the remark in the *Journal* on his reference to glass in the York Cathedral being 200 years old, that there was one striking feature in ancient glass which was absent from modern glass. In olden times the salt was not skimmed from the surface of the glass after it was melted, but it was allowed to float on the surface, and the result was the formation, by lapse of time, of a number of minute holes, caused by the separation of the salt.

After some further conversation the subject was allowed to drop.

THE ANNUAL REPORT.

The Chairman read the following report and statement of accounts:—

The Council of the Photographic Society, in presenting their fourth Annual Report to the members of the Society, would request them to bear in mind that last year has been in some measure probationary, for it was entered upon with the appointment of another Treasurer in lieu of the gentleman who had so ably filled that office heretofore, and with an increased subscription, chiefly to establish the fact, if possible, that the Society could be able to preserve an independent existence, and not need the fostering aid of an elder brother by accepting the friendly advances made by certain members of a learned and long established Society. The result of this experiment is not such as would justify the members of the Council in recommending to the main body of the Society to continue their present phase of existence. The science of photography was so rapidly increasing in its wondrous effects, that ere we had time fully to consider and to comprehend each new discovery, another light eclipsed the rays of the last new marvel, so that its admirers were glad to meet and increase the store of knowledge by the interchange of their several ideas; but either the science has nearly reached its culminating point, or there is some other cause not within the province of your Council to divine, but the meetings have been fewer, and the proceeds, as will be shown by the balance sheet, are insufficient for the further progress of the Society as at present constituted In this exigency the question was again mooted at the last meeting of a coalition with the Historic Society, and a committee of this body was selected to confer with the Council of the Historic Society; they met on the 14th of this month, and certain conditions were then agreed upon subject to the approval of the respective bodies. These will be laid before you in the course of the evening. It appears that there was an Act of Parliament passed, in 1854, that has reference to our present position; by this enactment it is ordained that before a perfect fusion of two learned or literary societies can take place, there shall be two separate meetings of either or both of the several Societies, so that the condition of such junction shall be well and duly considered and deliberated upon. The members will therefore have ample time to mature their opinions upon these conditions, as another meeting will be necessary before their fiat will be called for.

The statement of accounts was then read, and, together with the report, adopted, *nem. dis.*

PROPOSED AMALGAMATION WITH THE HISTORIC SOCIETY.

The CHAIRMAN read the following minutes of the conference between the deputations of the Historic and Photographic Societies:—

Committee of Conference on the subject of union.

HISTORIC SOCIETY—Dr. Hume, and Messrs. Sansom and Buxton.

PHOTOGRAPHIC SOCIETY—Messrs. Corey, Keith, Foard, and Forrest.

Meeting in St. George's Hall, 14th January, 1858, at six P.M.; present, Thomas Sansom, Esq., in the chair, also Messrs. Keith, Foard, Forrest, and Corey. The following draft was unanimously agreed to:—

1. That the Photographic Society become part of the Historic Society, *i.e.*, that it accept the name and laws of the latter.
2. That the number of SECTIONS, as fixed by the present laws, be not increased, but that communications on photography be admissable at all the ordinary meetings.
3. That a Photographic Committee be appointed annually, at the commencement of the session, like the committees for printing, finance, the library, &c.
4. That it be allowable to print papers on photography in anticipation of the annual volume of "Transactions," at the discretion of this committee.
5. That the property of the Photographic Society become the property of the Historic Society, and that the members of the Photographic Society be enrolled without entrance fee.
6. That the union date from the 31st March, 1858, if the preliminary arrangements be complete by that time.

[The number of members of the Photographic Society is forty-five; and it was suggested that the Historic Society *Council* should resolve to fill up the first three vacancies in their own body by members of the Photographic Society, or to recommend them for that purpose.]

In reply to members, the CHAIRMAN stated that every disposition was shown by the deputation from the Historic to meet any reasonable desire on the part of the Photographic Society; that it was intimated that photographic intelligence would be acceptable on every occasion, and whenever sufficient matter could be provided, so as to exhaust an entire evening, the council would have great pleasure in setting an evening apart for that purpose.

On the proposition of Mr. BELL, seconded by Mr. LEITHEAD, it was then unanimously resolved, "That the terms which had been agreed upon by the delegates be accepted by the society."

It being necessary that this resolution should be submitted at another general meeting, for the purpose of a second time receiving the sanction of three-fifths of the members then present, it was resolved that another meeting should be held on Tuesday, 8th February.

A vote of thanks to the Chairman terminated the proceedings.

IVORY BLACK—ANIMAL CHARCOAL.—Animal charcoal is found abundantly in commerce, and is procured by calcining bones. It is used in photography for bleaching the aceto-nitrate of silver when discolored by use or otherwise. It is used by pouring 10 parts of the aceto-nitrate upon 1 part ivory black, in a porcelain cup, boiling them for about 16 minutes and filtering. The liquid thus obtained is very clear, and constitutes a very complex salt of silver, which gives very fine negative results on iodized paper.

PHOTOGRAPHY IN WASHINGTON.

DEAR SNELLING:—I paid a short visit to the capitol of the Nation—Washington. I found not only politics in full tide, but the artistic world was alive. Another new gallery opened. Mr. BRADY, of New York, has opened the rooms formerly occupied by Plumbe, and known as that gallery. He makes a fine display, but shows nothing but what he has exhibited in his specimen gallery in New York. He has many beautiful retouched pictures. I saw nothing plain that attracted my attention. But his retouched pictures are the most exquisite productions exhibited in Washington. But all the credit is due the artist for his skill in India ink touching. Mr. Brady has many distinguished personages, and from his untiring industry and energy, he is deserving of the highest praise for having done so much in the photographic world. Many think that the portrait painter will be thrown in the shade by the invention and discovery of photography, and its application to life-size portraits. 'Tis a great mistake; they improve the taste by making good drawings. The mechanical labor is taken off, for certainly the drawing is the mechanical part; for any one who can learn to write can learn to draw; and to paint a photograph good, it is necessary to have a good artist.

Mr. PAIGE has the gallery familiarly known as Root's old place. I found him not only gentlemanly, but a very good operator. He appears to do a good business without making much noise. In this case modest merit does not go unrewarded.

Mr. MCCLEES' gallery has a fine start; and well it might, for such a host of noted men in his employ are bound to succeed. Their pictures rank with the best in the country. Mr. Samuel Croner is the operator Of him I have spoken before, but his pictures have improved so much of late, that I may add a kind word for him again. Some pictures that he has taken of a tribe of Indians would do credit to the first photographers in the country, and so exquisite are they in richness of tone, that they would be spoiled to even touch them with India ink. Mr. Brainard is the solicitor for this gallery, and his name alone will bring into any place a good share of business in Washington, as well as that of Mr. Vannerson.

T. J. NIMMO, the agent for the gallery, known as the WHITEHURST Gallery, has probably the largest share of business. They had their large double whole plate lens stolen, for which he offers twenty-five dollars reward, and no questions asked. The person who stole it is strangely suspected, and he had better return it for the sake of the profession. There are many bubbles on the glass, and it is easily told from other instruments. Mr. Nimmo, by his manly deportment, and by being a first-class operator in photography, has made many friends. Nearly all the members of Congress and Senators know him, and all familiarly address him as Sam. It is at this gallery where all experiments are tried by the vaaious operators of the country, who *go to Washington to get patents on their inventions.*

In photographic chemistry Mr. HENRY O'NEIL stands without a rival in Washington, and all the operators concede him to be the best in the South, and I most cheerfully say I think him the best in the country. His pictures, as a general thing, need no retouching. They have a very fine workman in India ink in their establishment, but every picture he touches he ruins the likeness; so that a picture without a likeness is worth nothing. *You may as well go and buy a pretty picture.*

Nothing is done to any extent in the way of oil photogaaphs in Washington, except by Mr. WALKER. He has a good share of what is going on in that way. I think Mr. O'Neil does the principal business here.

I saw him using a varnish which may be good to some of your readers to varnish photographs. It makes them not only smooth, but it gives a richness of tone to the photograph not produced in any other way. Take white bee's-wax and turpentine, and dissolve it by a slow heat. Have the largest portion of the mixture wax; so when it is cold it will be like butter. To destroy the smell put in a little oil of burgamot. To apply it, use a piece of canton flannel, and rub the picture hard, and a richness will be produced surpassingly beautiful.

Mr. O'Neil uses Woodward's *solar camera*, but they do not have any business of that kind to do worthy of note.

Mr. Vannerson has invented something of a similar nature to Woodward's instrument, which, he says, does the business. But I have not seen, and cannot speak of it. Nothing could be better than Woodward's, I think myself at present; but this is the age of improvement, and we shall see what we shall see soon. Our ingenius natures do not like to be outdone. As these new galleries progress I shall drop you a line, and keep you thoroughly posted.

From the London Art Journal.

TINTORETTO AT VENICE, AND MR. RUSKIN.*

Most silvery of mornings! and where could its light find a more interesting mirror than this open Langune of Venice, whither an unusual stretch of activity has brought us from beneath those lazy mosquito curtains thus early, to see the market boats flocking from Mestre and its neighboring shores towards the island city? The lake-like expanse of water, now at its utmost height and calmness, reflects little less than the full brightness and void serenity of the heavens, where it lies around us, with its own far-off ring of peaked mountains, the Julian and Friuli Alps, and its inlaying gems of islets, shining here and there with domes and campanili, between which the craft we came especially to admire yet again, seem now racing with each other, convergent towards the Cana'reggio, as directly and as fast as little ducks who see the feeder's hand held out to them. So pure and keen is the light that, notwithstanding a considerable distance, we can see well their various landings—heaped joints of meat (copious veal and beef), the piles of garden produce, and the other "gifts divine" which they are bearing to the markets about the Rialto; amongst them the scarlet gourds, and some masses of flowers shining with pre-eminent brilliancy. Further off, there lies a group of becalmed fishing-boats, which almost look suspended in a vacancy of silver air; and in this woudrously clear atmosphere, we can discern the religious emblems with which their green and amber sails are variegated. Nay, more remote than these by many a long league, we can see, kindling with fair golden touches, what is but rarely beheld so brightly—the minutely jagged outlines, the broken peaks or needles of Titian's Cadore mountains, near which he was born, and whose forms (the influence of which may be traced in some of his backgrounds) seem rapidly changing from the pure aerial grey clouds to that of glowing rock and turfy steep.

Where shall we go? It were a glorious morning for some of the remoter parts of the Lagune; but then, how perfectly adapted is this light for displaying to the utmost those pictures by Tintoretto in the dusky halls of San Rocco, which we have still to notice, in order to complete that investigation of the painter's works, and of Mr. Ruskin's remarks on them, which we entered into on our former opportunity. Still, in that building, the two or three most striking instances of Tintoretto's powers, and of Mr. Ruskin's errors, remain untouched; and afterwards we must to the Ducal Palace, and there close our inquiries, appending to them, as we before said, a few brief observations on certain other subjects, which naturally branch out from them. Yes; the work half finished before freer pleasures! Therefore will we fall in with these market-boats, and accompany them so far as our course mingles itself with theirs, on the way to the Scuola di San Rocco.

And now let us mount the stairs, and, passing as we ascend that exquisite Annunciation by Titian, in which the Madonna is a *lady* of a refined sweetness and grace, unrivalled, perhaps, in any picture in Venice, let us enter the Upper Hall, also covered, walls and ceiling, with large pictures by Tintoretto. In some of them the figures, conceived and painted in a large and bold style, have a grand and imposing air; but the usual coarseness and a pompous coldness greatly prevail, and the coloring is for the most part weak and cold; nor are any of the other characteristic attractions of the Venetian pencil to be met with in them. Incomparably the finest production in this hall is the "Plague of Serpents" on the ceiling, assuredly a striking and terrific conception, and in that respect one of Tintoretto's masterpieces. Numbers of figures are lying scattered on the ground, at different distances, in various attitudes of agony, despair, and exhaustion, invaded and bitten by certain mysterious winged reptiles, not serpents, by-the-by, and of no great size, yet full of horror—numerous, inevitable, incessant, pitiless—terribly they bite their tortured and writhing victims, each of whom has been fastened on by one of the busy swarm, from which there is no flight or defence. It is a fearful picture of helpless agony.

On the ceiling of the third hall, a smaller apartment beyond, is the painting referred to by Vasari as the subject of his well known anecdote illustrative of Tintoretto's deplorably off-hand habits of working. The brotherhood of the Scuola being delighted with his Crucifixion, newly set up in this room, determined to decorate their ceilings also with pictures, and accordingly invited competition for the purpose, when Paul Veronese, Zucchero, and Salviati, forthwith diligently set themselves to work in preparing designs and studies. But Tintoretto, meanwhile, having secretly obtained the admeasurement of one of the spaces to be filled, completed a picture at once, outright, and managed so as to have it already set up in the alloted place on the day appointed for settling the business, to the no small surprise of the meeting. He protested, however, that this was *his* way of preparing designs; the only way, he most likely added, of securely guarding against a picture unworthy of the sketch, or unsuited to the light and position, and offered to present them with the work, provided they objected to it on other terms; so, after some opposition, it was suffered to remain in its place. Hitherto the "San Rocco in Heaven" in the ceiling has been supposed to be the work in question, but we cannot believe it. Mr. Ruskin, without disputing the usual tradition to that effect, observes that this picture is quite different from Tintoretto's common works. It is indeed so entirely in its hard, bright coloring its dry flatness, and, above all, in its touch (in which especially an artist's genuine work is so prompt to declare itself), that we feel confident that it is not by Tintoretto at all. Mr. Ruskin adds that it resembles Correggio more than any Venetian painter, to which it may be replied that nothing can be more unlike the work of Correggio.

On the wall beneath it is the "Christ before Pilate," one of Mr. Ruskin's prime favorites. The tall figure of Christ wrapped in long white drapery, such as reminds you something of a winding-sheet, is an impressive figure on a cursory view, but it has nothing whatever of the moral beauty and interest one chiefly looks for, and we fear resembles too much an ordinary man doing penance in a white sheet. In allusion to this figure, Mr. Ruskin says it is "pale like a pillar of moonlight, half bathed in the glory of the Godhead, half wrapt in the whiteness of the shroud." But there are not, according to the best of our powers of perception, any traces of such glory or divineness in Tintoretto's figure; and surely very properly in that hour of trial and humiliation, when our Saviour having, if ever, "freely put off," that glory, submitted himself to the most degraded and dreadful lot of poor, simple, unaided humanity. To represent him as "half bathed in the glory of the Godhead" at such a moment is surely no proof of that insensity or truthfulness of imagination which Mr. Ruskin claims for this painter in his high-sounding, authoritative, theological style; and Tintoretto has, assuredly, fallen into no error of that kind here. What we should first look for, on Mr. Ruskin's own alleged principle of essential and undeviating accuracy is, of course, some touching expression of that real, actual, substantial humanity—some moving picture of as much resignation, loving patience, and dignity as may truly become a man so tried. But of this we get nothing in the present picture, and instead of it (according to the principles which Mr. Ruskin is never tired of enforcing on other occasions, and especially when depreciating Raphael)

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* Continued from p. 355, vol. x., no. xii.

we are not content to be put off with phantom similitudes, or evasive effects of "pillars of moonlight," and of mingled glories and grave-clothes, not proper to the immediate matter or moment, however much so they might be as accessories in a representation of other events in our Savior's history. In taking leave of this picture, we cannot help borrowing its eulogist's inappropriate image, and applying it to his own description—it is altogether a pillar, a *tall* pillar of moonshine itself.

In the same room is Tintoretto's famous "Crucifixion," in point of invention his master-piece: a picture of which Mr. Ruskin says that "it is beyond all analysis, and above all praise." "I will not insult this marvellous picture," he says, "by an effort at a verbal account of it. I would not whitewash it with praise." If to describe pictures is to insult them, alas! how grievously has Mr. Ruskin insulted those other pictures of Tintoretto's on which he expatiates with such fulness! And if praise be whitewash, how cruelly has he whitewashed Angelico, Turner, Michael Angelo, and the arcades of the Ducal Palace and St. Mark's Church, and a multitude of other things, which are quite hidden and confused by the glare of his thickly applied eulogies. But after all, these expressions of his are perhaps a mere thoughtless rhetorical flourish; at least, one thinks so after carefully studying the picture, and discovering that decidedly moderate term of admiration suffice for its merits. It is a large work, in which the subject is not treated in the usual way, but altogether originally, with novel incidents boldly conceived, and expressed with so much life and energy that much of the effect of an actual living scene is attained, especially on the first impressions, which are wonderfully striking. The Saviour's cross, in the middle of this very wide picture, rises from its foot, and those to whom he was dearest are assembled beneath, some of them lying huddled together in an exhaustion or trance of grief—somewhat coarse figures, but vigorously expressive. Elsewhere the evil powers of the world are represented as in vehement action. On our left they are drawing up the cross on which one of the thieves is already stretched; it is half up, pulled by a long cord with all the muscular energy of a powerful ruffian. On the other side, the third cross lies on the ground with the other thief seated on it; and one stands over with a long auger, boring a hole for one of the nails, and another is pulling hard and cruelly at a cord which binds his limbs. Just before them, crouched low on the ground, are two throwing dice for the seamless garment—hideous, reptile-like figures, coarsely and darkly daubed in, as if by the artist's thorough scorn for them. There are numbers of other figures encircling all these—faithful men regarding Christ aloof with tender sorrow, and one nearer, by himself, is leaning forward and gazing on him with a calm but most intense earnestness, which expresses, if we mistake not, the tranquil but full enjoyment of triumphant malignity. Then there are pompous dignitaries carelessly looking on, as in some arena, at that event, which, *as they may imagine*, rids the world of a singular character, who was beginning to make himself a little *too* troublesome. A wan, lurid light shines on the ground, and a very atmosphere of horror seems to prevail around the cross, and there are a fiendish animation and activity in some of the groups which strike the imagination powerfully. A sombre, brownish tone prevails in the coloring, with heavy shades, and vehement, but coarse painting. It is an admirable scenic general conception of the event; but the *event* is almost everything, the *persons* are not much; they will scarcely pass for the persons of Scripture. The St. John looking up at the Saviour, for instance, is a very ordinary Italian, and some of the other saintly mourners are rude and almost grotesque figures. On looking further for pathetic and sublime traits of individual character and feeling you are disappointed.

The figure of Christ himself strikes us as being one of the feeblest parts of the picture, and Mr. Ruskin has strangely exaggerated its effect. In ascribing to Tintoretto an unrivalled depth of imaginative insight into this subject, he praises him for despising vulgar expressions of bodily pain, and for "seeking rather to express the fainting of the deserted Son of God before his Eloi cry, by the repose of the figure and by casting the countenance altogether in shade" The passage is likely to be warmly admired everywhere but in front of the picture, in which, unfortunately, all idea of fainting is excluded by the appearance of life and animated composure in the figure. It seems as if speaking to the St. John who looks up from beneath. Mr. Ruskin goes on to say that "the agony is told by this, that though there yet remains a chasm of light on the mountain horizon where the earthquake darkness closes on the day, the broad and sunlight glory about the head of the Redeemer has become wan, and of the color of ashes!" Here, again, the words fade lamentably before the picture, for the light is by no means awfully concentrated anywhere, and the pale grey, watery-looking halo round the Saviour's head is so like the tone of the sky around it, and that of many other objects which assist in giving its general complexion to the work, that it becomes exceedingly doubtful whether Tintoretto had any such imagination as that here attributed to him. We think that if he had, he would at least have expressed it with some little emphasis, so as to render it in some slight degree effective; at any rate, this may be said confidently, as an expression of agony it is rendered valueless—quite nutralized by the perfect composure and serenity of the figure itself.

But there is another "thought" in this picture which Mr. Ruskin places at the very apex of his fanciful pile of eloquence, his huge mountain of admiration reared in honor of Tintoretto. In the shade behind the cross you can just make out the man seated on an ass, who is pointing out to the multitude the crucified Saviour with malignant triumph, whilst, as Mr. Ruskin has shown us, the ass on which he is seated is eating the very palm leaves which that giddy multitude but a few days before strewed in his path with Hosannas and shouts of loving welcome. "A happy idea enough!" one exclaims; "an ingenious, shrewd, satirical, Hogarthish touch, happily significant, certainly, of the fickleness of the multitude, though one can hardly help wishing this fickleness had been illustrated by some circumstance less bordering on the vulgar and grotesque, some incident more in accordance with the sublimest terror and sadness of the event, than this one of the donkey feasting on the remnants of the triumphal branches." Nevertheless, we accept the "thought" graciously, with mild approbation of its ingenuity and cleverness; but when we find it cited in Mr. Ruskin's most solemn, puissant, and authoritative diction, as the master-stroke which must terminate at once all doubts as to the unequalled depth of Tintoretto's imagination, we cannot help seeing at once, very clearly, that the power of mind required to produce this thought, and its value when produced, have been singularly, wonderfully exaggerated. Most of the works of Hogarth, it may be confidently stated, abound in touches at least as significant and ingenious; and if such conceptions, indeed, place Tintoretto as a man of mind on the very summit of the painter's Parnassus, as Mr. Ruskin evidently thinks, surely our own Fielding of the pencil ought to be raised there too, very little or not at all beneath him—an exultation very gratifying to our feelings as Englishmen, certainly. And it should be added, with regard to this vaunted incident of Tintoretto's that there is absolutely nothing but the bare conception of it, for the pictorial embodying is altogether coarse, slovenly, and uninteresting.

But surely such fancies as these discovered in Tintoretto (none of them, after all, proofs of any remarkable genius or inventive power) are not the foremost things we ought to expect from great painters. Rather what we first look for from them is the direct expression of thought, passion, and character, beauty and dignity, *as shown in the bodily form and countenance of men and things*. This is the pre-eminent and exclusive office of Painting, to which History and Poetry, having said their best, and laying aside their exhausted pens, lovingly and reverentially invite her, as the sole means of rendering the record livingly complete, or the poetical vision perfectly bright and clear, and enriched especially with those mute looks whose eloquence begins to move us when words fail, and of which words yield no account. Were all these conceits of Tintoretto's, so much lauded by Mr. Ruskin, as ingenious as his favorite asinine fancy in the Crucifixion,—the only one amongst them which seems to us to have some slight value,—we would delightedly exchange them all for one direct touch of the more pathetic or sublime emotions of the persons portrayed, such as a higher order of painters had proved to be within the fitting aim of Art, and wanting which, Tintoretto's merely scenic notion of the crucifixion (however powerful and striking of its kind) must take rank with an altogether lower order of conceptions.

But apart from the particular attempts in his chapter on "Imagination Penetrative" to prove that Tintoretto's imagination and general power were of the very highest order, it is continually striking us that the very limited praise to which Mr. Ruskin seems obliged to confine himself whilst describing the picture in detail, corresponds but ill with the admiration he ever bestows on the master when speaking of him generally. He admits over and over again that the conception of the more exalted subjects is often utterly unworthy, and the merits in these and other pictures are acknowledged to be in the conception or execution of some subordinate part or other: as one seems painted entirely for the glorious downy wings of the angel, another is chiefly to be admired for the painting of a fig, or olive-tree, or a cloud, or a stone, or " the sublime head of an ass," or for the mystical significance of a color, or of some other allusion at least as trivial as any we have been mentioning. Sometimes defects in this painter are indulgently ascribed to ill-health, or to a mechanical manner occasioned by too little reference to nature; but sometimes he is conceived to have wilfully daubed vilely from an aristocratic feeling of contempt for the humbler classes of his fellow creatures.

The passage in which this last peculiarity is noticed is remarkable. In the Adoration of the Shepherds—" it seems as if Tintoret determined to make the shepherds as uninteresting as possible. I believe that this is one of the painter's fixed principles ; he does not, with German sentimentality, make shepherds and peasants graceful or sublime, but he purposely vulgarises them,—not by making their actions or their faces boorish or disagreeable, but rather by painting them ill, and composing their draperies tamely. As far as I recollect at present, the principle is universal with him: exactly in proportion to the dignity of character is the beauty of the painting. He will not put out his strength upon any man belonging to the lower classes, and in order to know what the painter is, one must see him at work upon a king, a senator, or a saint. The curious connection of this with the aristocratic tendencies of the Venetian nation, when we remember that Tintoretto was the greatest man whom that nation produced, may become very interesting if followed out."

Without admiring "German sentimentality," we really must be permitted to say that we prefer it to the aristocratic deadness of feeling supposed to be manifested in this very foolish and fantastical way, and which, though passed so lightly over, is surely as fitting a subject for sarcasm. If these remarks are just, the human sympathies of this painter (so paradoxically but so quietly assumed to be the greatest man whom his nation produced) must have been narrow, and ignorant, and dull indeed, and we can the more readily account for his manifest want of power over the tender feelings of the heart, and his treating the most pathetic events of Scripture with little else than wild and dreamy fantasies.

We now see how wild and coarse a latitude Mr. Ruskin allows him in them, from fish-shaped clouds and palm leaves removed to Mount Cavalry on purpose to be eaten by the ass at the crucifixion, up to the presence of the devil at Christ's baptism at a moment when surely he would have been neither so bold nor so foolish as to intrude himself. But when Raphael, in one of the noblest and most beautiful pictures in the world, the " Charge to Peter," takes an imaginative license in *his* way—that is to say, reverently offers up to the sacred theme all the tenderness and beauty of expression, and dignity, and majesty, he can bestow on it, and, treating his subject in a poetic or ideal manner, which Mr. Ruskin would have applauded in Tintoretto, departs from the close matter-of-fact rendering of the Scripture narrative, in order to represent with due dignity the establishment of the Petric supremacy, or of the Roman Church, *according to his own creed* (actually placing the keys in Peter's hands, to indicate that object unmistakeably),—this impartial and exceedingly temperate critic stigmatises the work as "infinite montrosity and hypocrisy," and Raphael's allusion to that erroneous though (we may assume) sincere article of his faith, as "a lie."*

However, we must not pursue this subject at present, but confine ourselves to Tintoretto, and finally follow him to the Ducal Palace, where from want of space, our sojourn must be briefer than it otherwise would have been. There, in the Sala del Maggior Consiglio, is his "Paradise," which Mr. Ruskin inexplicably considers to be, on the whole, his *chef-d'œuvre*, and "the most precious thing that Venice Possesses." It is said to be the largest picture ever painted on canvas, being a little more than 84 feet in width. At the very top sits the Redeemer, bending with a most royal majesty towards the Madonna, who kneels reverently before him: they are both highly dignified and beautiful figures. All the vast space beneath them is crowded—literally crowded—with numbers of the blessed of different ranks and classes; it is estimated that there are not less than 500 of them, supported on clouds and in masses confused and intricate in themselves, yet divided into several stages of concave groups, wreathing under the two supreme figures above, like horizontal vapors curling and traveling along beneath the beams of the uprisen sun; the bright spaces between them in the distance being also filled with crowds of beatified spirits, half merged or lost in light. So far all is nobly imagined; and the whole picture displays a command of artistic resources and an energy in labor, which are certainly highly commendable; but the filling up is far less satisfactory: and these crowds and crowds of figures, sitting and bending and rolling together in the heavens, with but few ex-

* The Coronation of the Virgin, by Mr. Ruskin's saintly pet, Fra Angelico, are equally " lies"—lies of precisely the same class and character. Mr. Ruskin falls cruelly foul of the " handsome curled hair," " fringes," and " long robes" of Raphael figures in this picture, which plain things he stigmatised by the sufficiently inapplicable words, " vapid fineries;" yet when Angelico and the other earlier men array the Redeemer and the Virgin like a king and queen of the fourteenth century, in all the really vapid finery of madiæval times, covering them with gold spriggings and Gothic diapers till you are quite nauseated with the barbaric glitter and frivolity, his complacency is extreme. and the censer of his transcendental fancy swings apace till you can hardly help smiling at the wreaths of fantastical vapor which keep issuing from it. For instance, the gaudily gilt curtains of Angelico's Madonna, in the Florentine Uffizii, which are stiff with the most definite Byzantine patterns, are said " to flow with a visionary grace," and a few touches of gold leaf on angel's wings are most preposterously assimilated " to the glittering of many suns upon a sounding sea." To hide his palpable inconsistency in this matter, Mr. Ruskin says that these earlier pictures " had been received as pleasant visions, but the Cartoons of Raphael were received as representations of historical fact." Now this is begging the question altogether. Who that knows anything of Raphael will say that his works were intended to be received as mere accurate representations of historical facts? Why, is it not perfectly clear that he was an idealist as much as any of his predecessors ?—one whose poetic imagination was ever adorning his subjects with beauty, majesty, and grace, according to his special and pre eminent gift. Mr. Ruskin's fundamental error is to delude himself with the notion that Raphael worked from " pride," and without feeling, and in obedience to cold " academical formula." Such an opinion only shows a partial dulness in the writer's perception, or the heat of his prejudices and temper, or both. And with regard, by the bye, to these obnoxious curly heads and Athenian draperies, in what respect are they different from those of the ever supremely lauded Leonardo, or from the draperies and hair of Tintoretto's sacred figures, excepting that Raphael's draperies are beautiful, and Tintoretto's bad—Raphael's hair healthy and vigorous, and Tintoretto's a good deal shabbier, and in less creditable order? But Raphael was the prime corrupter of Art! Did his grace and beauty corrupt Art more than the magnificent ostentation and anatomical power of Michael Angelo, the object of Mr. Ruskin's boundless veneration? Was not Art corrupted rather because those who followed could not comprehend the divine spirit of either of these great men, and contented themselves with imitating their more superficial characteristics or mere effects. It is lamentable that this ingenious man should thus throw discreditable matter at the serene meridian sun of Art, inevitably to recoil on himself. His charicatured d scription of Raphael's Madonna is altogether false, ascribing to the painter motives and aims which every one acquainted with his works knows to be quite uncharacteristic of him *in every respect*, and all this spleen, and want of candor, and unjust, uncharitable attributions of baseness, are put forth on high grounds of religion and morality!

ceptions, are devoid of expression, character, grace, beauty, or any kind of interest. In Paradise one would naturally look for something of repose, order, and expansive serenity; but here it must be confessed that the blessed are a little in each other's way—they have not even elbow room. Neither are blissful contemplation, nor adoring rapture, nor any of the other infinitely varied kinds of happiness which one may suppose to prevail in Paradise, expressed in any interesting or touching degree amongst these complicated hosts of Tintoretto-creatures; and you soon retire from the further contemplation of the picture disappointed, little interested, and indeed almost bewildered.

Why it should be considered "the most precious thing that Venice possesses," it is entirely out of our power even to guess. In another passage Mr. Ruskin calls it "the most wonderful piece of pure, manly, and masterly oil-painting in the world." We were unable, after several impartial attempts, totally unable, to discover the grounds of this last opinion either. The picture does not appear to us by any means a specimen of either first or second rate painting. The blotches of heavy black shadow, the abrupt scattered lights, and the disagreeable ashy paleness of much of the flesh tints, all frequently to be found in Tintoretto's pictures, may be partly attributable to the injuries of time, and partly to the painter's known use of colors as fugitive as what we are apt to mistake for friendship; but the touch, as is also commonly the case with Tintoretto, is coarse and heavy. As a piece of painting, it cannot for one moment be compared with the roundness and living freshness of Rubens, or the exquisite lightness and graceful precision of Paul Veronese, or the crystalline purity of Bellini, or the tender and rich perfection of Titian; not to mention many other painters much inferior to any of these. Mr. Ruskin is acquainted with a vast number of objects and effects in nature (especially landscape nature), and no doubt can accurately decide whether the forms and hues have been accurately copied or not, up to a certain point; but his boundless admiration of such workmanship as this, and of much thick, heavy, bad execution of the Pre-Raphaelites, and we will add, his preposterous raptures at the hard, stiff, painfully minute laboring of Lewis's last year's drawing, producing with such over lavish means, so thin and poor an effect, may well awaken a doubt whether he yet really knows what good *painting* is. He tells us somewhere, that since he first discoursed to us on Art, he has devoted ten years of his life unremittingly to the acquisition of a knowledge of the subject. Perhaps in another ten years a still further accumulation of knowledge may modify his views considerably, and induce him loudly to condemn much that he now authoritatively admires—with regard to such matters as we have now been discussing, as well as many others.

Titian's magnificent pictures in the Ducal Palace, were, all but one, destroyed by fire the year after his death; but his impetuous rival, Tintoretto, is abundantly represented there. With regard to *him*, as usual our admiration for frequent manifestations of extraordinary power, is but too commonly checked and chilled by coarse, heavy painting, and the unexpressive wholly uninteresting character of many of his allegorical or celestial groups, which seem introduced merely as exercises or exhibitions of technical skill, rather than as appeals to our imagination or finer feelings. His frescos, however, in the Sala delle Quattro Portu, on that Sansovinian ceiling of bossy gold and azure, and pale statuary, above Titian's great Grimani picture, and the four splendid marble portals of Palladio—his frescos there still affords glimpses of a magnificent spirit, but, alas! they are falling to pieces and spotted all over by the appearance of the plaster behind them. And of a touching loveliness scarcely in its kind rivalled in Venice, are those four sweet and innocent children reclining amongst the rushes or on the grass, in the corners of the ceiling of the adjoining Antrio Quadrato. They are, we believe, ascribed to Tintoretto, but we have never seen anything else by him like them, or showing so tender an appreciation of infantine beauty and gentleness. Of his most daring productions, perhaps, the finest here is that large oval, of Venice personified by an enthusiastic lady in brocade seated amid the clouds with many deities, in the ceiling of the Senate Hall, whose massy garlands of gilded fruits and flowers, and huge bands, entwine and grasp the picture like the convolutions of some enormous sea-serpent. Some of Tintoretto's figures here exhibit limbs disproportionate and distorted in their most difficult fore-shortened postures. But vigorous conceptions full of genius abound, and especially to be admired, is that long group of figures of genii rising from the sea, like one huge wavy column, with the various treasures of the deep, to present them to Venus, enthroned aloft. This is full of animation and fine aerial movement. Something too much, however, is there in other works by Tintoretto here, of old doges kneeling before unintelligible aerial personages, who express little or nothing but the artist's skill in difficult postures, action, or foreshortenings. It is noticeable, by the way, that most of these same doges (who appear, on the whole, very little moved by all these displays of sacred patronage) are disagreeable, and some of them even mean-looking old men, with shabbily-wrinkled, huckstering, or even maudlin faces. You could easily fancy that some of them had been worried out of all heart and spirit by the ever dogging civilities of the Ten, the Forty, and the Avvogadori: nay, in more than one instance, they look somewhat heavy-eyed and muddled, as if, hopeless of political excitement and pleasures, and thoroughly teased and worn out by all these various yet one-sided antagonistic councils, they had endeavored too much to console themselves with the wine of Clary and Cyprus, with the deeper satisfactions of the table—turbot from Malamocco yonder, and more sanguiferous dainties from the pastures of the Brenta or Isonzo. Or were they in other instances, in which a hard, sordid eye seems still to glimmer under the ducal beretta, merchants, or bankers, taken from their counting-houses in part repayment of loans made to those who influenced the election, and also became of a mean spirit which was not likely to give much trouble to the all-prevalent oligarchy? Tintoretto, no doubt, has here introduced their portraits with a valuable and highly commendable fidelity; but those aerial beings above them are most tautologically tiresome; and with regard to more superficial matters, the shadows are often so black and blotchy, the flesh tints so yellow or ashy, and the execution, we must say, sometimes so coarse and scene-painterly, that, on the whole, you are again tempted to be somewhat out of conceit with Tintoretto, till you pause in the Ante Collegio, or guard-room, before a picture of his so poetically conceived and admirably wrought, indeed so pleasing in all respects, that you wonder still more at the dull and uninteresting character of so many of the others. Yes, here, *Il Furioso Tintoretto*, leaving ostentatious, barren displays of technical power, has once again had the gentleness and patience to make himself thoroughly agreeable. Adriadne, a beautiful and noble figure, is seated undraped on a rock, and Bacchus, profusely crowned with ivy, advances from the sea and offers her the nuptial ring; whilst above, Venus, her back towards you, lying horizontally in the pale blue air, as if the blue air were her natural couch, spreads, or rather kindles, a chaplet or circlet of stars round Adriadne's head. Here, those who luxuriate in what is typical, may tell us, and probably not without truth, that Tintoretto wished to convey a graceful hint of Venice crowned by beauty and blessed with joy and abundance. Bacchus arising from the sea well signifies these latter gifts, and the watery path by which they came to her; and the lonely island nymph to whom he presents the wedding ring, may be intended to refer to the situation and original forlornness of Venice herself, when she sat in solitude amidst the sandy isles of the lagune, aloof from her parental shores, ravaged by the Hun or the Lombard. The pale yellow sunshine on these nude figures, and their light transparent shadows, and the mild temperate blue of the calm sea and air, almost completing the most simple arrangement of the coloring of the picture, are still beautiful, and no doubt were far more so before its lamentable fading, occasioned, it seems, by too much exposure to light; you feel quite out of doors, all on the airy cliffs, as you look on it, and almost taste the very freshness of the sea-breeze.

With this picture of "Adriadne," painted with Tintoretto's most delicate, golden pencil, we would willingly have closed these researches, had not our Ruskinian notes urged us, almost perforce, after two works in the Ante Chiesetta—"St, George and the Dragon," and "St. Andrew and St. Jerome," "painted," says the eulogist, "in Tintoret's most quiet and noble manner, and pre-eminently to be admired for their grave yet delicious color." This we found out to be one more of those wonderful stretches of admiration which, a week ago, would have surprised us greatly, but by this time, of course, surprise on such grounds was altogether over with us. Oh, what an ungainly, uninteresting picture is that of the ugly and ungraceful princess seated on the dragon by St. George; and in the other what ordinary saints are those! Nor is the grave color in either, in our opinion, worthy of the enthusiastic praise bestowed on it. Indeed, we should not have thought it worth while to take the reader into this same Ante Chiesetta at all, but that these pictures afford a somewhat amusing instance of Mr. Ruskin's inconsistent and extravagant way of writing. It will be remembered how copiously he inveighs against the color brown, which is so much his capital aversion, as a prevalent hue with the obnoxious later schools, that when he finds his favorite Dante applying it to twilight shades and dark water, apparently so pleased with it as even to lay on a couple of layers in the words *bruna bruna*, Mr. Ruskin very coolly and quietly assumes that the poet (although the most intensely accurate of bards in his expressions) did not know the meaning of the word he was using, and meant dark grey instead! And then, having jumped at this conclusion, and becoming puzzled immediately that Dante should not have acknowledged the existence of brown at all—his browns being in fact all grey (oh, admirably solid yet modest foundation for the inquiry!) Mr. Ruskin proceeds to relate complacency how "one of our best living colorists" accounted in some measure for the poet's comfortably assumed omission, by telling him that he "had found there was no brown in nature, what we call brown being always a variety either of orange or purple."* But here in the Ducal Palace, in exquisite harmony with all this most sensitive, and, indeed, almost anxious anti-brownishness, Mr. Ruskin tells us that the productions of his favorite colorist—which he admires supremely for their color—"are nearly all brown *and* grey," and that "he would rather have these two small *brown* pictures" (we use his identical words) "than all the other small pictures in Venice put together which Tintoret painted with bright colors for altar-pieces."

Now, independently of much admirable and indeed very superb brown in Titian, Rembrandt, Reynolds, and others, we have, no doubt, had too much brown in Art—bad brown especially; and to guard us against a repetition of the excess might have been well enough, but to endeavor, in pages of abundantly self-satisfying, janty writing, to seduce us into the notion that there is in reality no such thing as brown in nature, in the face of numberless objects, in spite of the autumnal pomp of solemn groves, and especially of those deep, rich evening glowings, which Dante has, after all, justly denoted by his *bruna*, and which we ourselves will remember to have enjoyed "at evening on the top of Fiesole," under the scarlet clouds of sunset dispersed above the Carrara peaks—this, all this, is simply ridiculous, the mere humorsome partiality of one who himself is but too apt to substitute his prejudices and the exaggerations of his seldom resting fancy for the plainest and most obvious facts, strict as he is against that fault in others;—a lamentable habit in a critic, surely, whose prime office it is to make distinctions clear, sober-mindedly, instead of confusing, and sometimes burlesquing, the objects under consideration, with the aid of an indifferent style of humor, the mystification and misleading especially of that weaker herd of followers, unfortunately so numerous amongst us, who are utterly in the thraldom of eloquence, and so much more easily convinced through their ears by copious and confident words than through their own proper eyes. How whimsical is his assumed denial of brown by his favorite poet, contrasted with his admiration of his favorite colorist's use of it: how unjust and one-sided his voluminous abhorrence of the gloom and "feelingless mannerism" of the later men, and his toleration or ignoring of so much of similar qualities in his idol Tintoretto, whose frequent blackness, heaviness, and coarseness, are the less excusable, inasmuch as he was, so far as they are concerned, a recreant Venetian, sinning in opposition to his original gift, and with the very finest influence of color and brightness beaming about him.

Candidly, we cannot help suspecting that Mr. Ruskin, notwithstanding all his ingenuity and extraordinary activity of thought, all his powers of description and analysis, has not quite hit upon his proper vocation. His foremost and prevailing gift we take to be a brilliant but excitable and eminently *fugacious* fancy, such as is ever prone and precipitate to give its own high colorings, from vehement likings or dislikings, and to start away from the object professed to be contemplated, into its own airy regions; a quality, when predominant, fatal to just criticism, whose office is, of course to present things as they are in themselves, apart from these subjective or modifying influences. Yes, "Memoirs of my Fancy," we venture respectfully to submit once more, would have been better, or perhaps "Fra Giovanni's Pilgrimage," in which these free sallies and soarings of the mind would, in their more successful instances, have possessed a pure and unalloyed value, being modestly submitted as such, and not as descriptive criticism authoritatively promulgated as from a judgment-seat, to exalt one man and condemn another. An awful act, this last, not to be ventured on so lightly; and if done coarsely or wildly, as offensive, no doubt, to the illustrious spirits of those bepraised as to those censured, as Tintoretto's ghost may hereafter in the other world prove to his eulogist, by asking him why he doomed his unfortunate works to disappoint everybody. That chapter on "Imagination Penetrative," in all that regards this painter, we certainly take to be the master-piece, so far as we know, of imagination predilective, fugacious, combustible, explosive. It is indeed weightily valuable as a psychological lesson, showing how far an excitable, headstrong fancy has the power of ignoring the actual, and substituting the airy offspring of its own likings and wishes. On the whole, we believe that Mr. Ruskin leaves Tintoretto precisely where he found him, having failed utterly in the attempt to put him forward as an imaginative genius of the highest order; since the thoughts he adduces as entitling him to that eminence are, in fact, either not in existence in his works, or else poor, trivial, or erroneous without exception. Tintoretto will, we suppose, continue to rank just as formerly, as a very energetic, but not delicately or sublimely imaginative painter of the second class—one strong in scenic conceptions, and in the more superficial and decorative resources of his art, but poor, very poor, in the higher requisites of expression and character—a kind Venetian Rubens in short; not so fleshily coarse as the Fleming, but far inferior to him in poetic fire and exuberance of invention (such as rolls forth as from the very cornucopia of Plenty herself), and also much beneath him, as every other painter is, in rendering in a magnificent manner the very health, bloom, and active pulses of physical life. Indeed, we cannot help wishing that Mr Ruskin had chosen Rubens for his second stalking-horse instead of Tintoretto. Without being, so far as we are able to discover, in any considerable degree "typical" in his modes of treatment, we believe him to be far more legitimate subject for the purposes of fine encomiastic writing; besides, he is as little generally understood and appreciated as Turner himself was formerly. A far more fruitful tree than Tintoretto would have been shaken; he would have filled out the splendid robes of eulogy with a portlier grace. How much unapprehended *grace*, infantine loveliness, and sweet naive human expression, how much magnificence and true poetic fire have been unhappily concealed from us by his too Belgian delight in lusty health, and bloom, and animal vigor. But should we turn away for ever from all those excellent former things we have just mentioned, and hosts

* Is there no *medium* between this orange and purple? What does the orange become when it begins to deepen in the shadows of a warm toned atmosphere? ?

of others, simply because they have become, in a great number of instances somewhat too lusty and fat?

A principal object in this essay has been to put the reader on his guard against inordinate habits of praise on the part of a writer whose confident eloquence gives him for the present a far too absolute influence over large numbers of captivated hearers. We will close our observations with a brief protest against that equally ill-founded censure and depreciation of some of our greatest literary men, in which he indulges in his recent volumes, singling out, especially for opprobrium and contempt, as we shall show, one whom most just and generous men, really acquainted with his works, would be warmly desirous of defending. In these criticisms of Ruskin, cynicism has assumed its most insidious and mischievous form,—the theological Having, according to his own admission, passed most of his days in the intense contemplations and abstractions of solitude, he has, by an almost inevitable consequence, weakened in his breast most of the ordinary social sympathies. In the tender passion (to take one large instance) he seems to feel no interest, and very little indeed in those domestic virtues and enjoyments which spring from and surround it; and he has got himself far too much into the way of estimating things in the sour and austere spirit of some mortified anchorite; insomuch that he is dissatisfied even with men whose gracious gift and first object it was to afford pleasant relaxation, restorative amusement, remission from mental care, to their fellow creatures,—such as our great novelist and dramatist,—simply because they did not utterly spoil their work with brain-fussing, intellect-oppressing, monomaniacal considerations of theology and ascetic morality, such as appear to have grievously narrowed and weakened his own mind. His morbid analysis of Scott, on this ascetic principle, in which he says that he "knows no poetry so sorrowful as his," and "that all his thoughts were in their outcome and end less than nothing and vanity," is one of the most mistakenly dismal and nauseating passages in literature, always excepting his half-patronising estimate of Shakspeare, in which our bard of bards is looked down upon from the supremacy of that "specular mount," Denmark Hill, as an imperfect mind, decidedly of a secondary order, also because not sufficiently accompanied by theology in its flights, in Mr. Ruskin's favorite fashion. "It was necessary," we are told, "that he should deprive himself even of his conscience, in order to be able to sympathise so completely with all creatures." In this respect we always thought Shakspeare the most conscientious of writers, inasmuch as he reports of every one with the most perfect impartiality, fulness, and fairness, nothing extenuating, and setting down nought in malice, and giving his worst of villains their due. Had Shakspeare possessed a conscience, it would, we are profoundly told, have made him unjust to these latter: as if injustice were a natural consequence of conscientiousness! Then we are informed that it was necessary for Shakspeare to be "utterly without purpose; that he was forbidden of heaven to have any *plans*. To *do* any good, or *get* any good in the common sense of good, was not to be within his permitted range of work; not for him the founding of institutions, the preaching of doctrines, or the repression of abuses. Neither he nor the sun did on any morning that they rose together receive charge from their Maker concerning such things." To which it may be answered, that to teach us the human heart and character in their varieties, to show by what insidious sophisms our passions attain the mastery over us, to instruct us so that we may know ourselves and others, and enlarge our sympathies to the world's width, and regard our fellow-creatures with such palliations as justice and truth require, was purpose and plan enough, and "good in the common sense of good," such as no other man uninspired ever accomplished. And as he effected this, we need not be disappointed that he, a literary man, did not likewise found institutions, preach doctrines, or practically attempt the repression of abuses. The passage last quoted, in which Mr. Ruskin with quiet decision alludes to the Creator as having views with regard to the poet in harmony with his own purblind paradoxes, is for modesty, propriety, and what is commonly called good taste, exquisite, and altogether richly characteristic. We think it may be pretty safely assumed, and stated, without presumption, that on the morning when he penned these paragraphs Mr. Ruskin had not "received charge" to criticise Shakspeare.

So far, however, all this ambitious and restless plunging after profundity, which, diving past the pearls and golden sands of the clear deep, does nothing but stir up and fetch aloft gravel and mud from beneath, speaks sufficiently for itself; but perhaps, not so his harsher and more unqualified attacks on others. If there is anything in his writings to us more painful than the rest, it is the ruthless, cold, and summary way in which he will drag forward and sacrifice the fame and character of certain other departed great men, for the very small purpose of giving point to some austere ascetic sentiment, or of heightening the vivacity of a paragraph. If there is a writer whom we should in former days have conceived to be respected by him it is Shelley, since himself in some of his best passages resembles him even remarkably. The most poetical of his descriptions, in which the fine landscape imagery is heightened by the colorings of a brilliant fancy, are like faint echoes of the soaring skylark amongst the poets, the wondrous laureate of the clouds. And yet Shelley is the very poet now most frequently introduced by Mr. Ruskin in his writings to perform the mean office of foil to what he admires, to set off as a dark and impure shadow his own exceeding radiancy, and to be morally and intellectually misrepresented in unfeeling and insulting language.

Thus we have, without explanation or further comment, "passionate, unprincipled men like Shelley," though Shelley's *moral* principles are certainly conspicuous enough throughout his works, and at least as gentle, disinterested, loving, pure, and near the true Christian *morality* in several of the most essential points as those of any of the other poets of his day; whilst amongst them none equalled him in the courage, and few in the perfect sincerity, with which they were put forth. Secondly, we read with no small access of illumination that "Keats has no more real sympathy with Nature than he has with a bottle of claret; and Shelley is nearly the same, but with even more troublesome selfishness." The ardent philanthropist (whether or not mistaken in some points, does not affect the question of selfishness), and cordial, helpful, generous friend, is not very sagaciously or temperately denoted by these words, "troublesome selfishness." And, by-and-bye, we have Shelley shown up on Mr. Ruskin's oratorical platform again, to be as briefly stigmatised as impious, though few men have ever felt a more habitual love and tender reverence for most good and noble things, except (as we take leave to lament no whit less than Mr. Ruskin) the doctrinal part of that religion which his unhappy scepticism—something palliated, surely, by the circumstances of his early life—estranged him from. Surely it does not evince much delicacy of moral perception, much justice or charity, to apply to so noble and gentle a sufferer the hard, unmitigated, untender term "impious." Finally—but this is amusing—we find him exhibited in the decretals sent forth from our temporary Vatican of criticism, as an example of a morbid temperament, looked down upon as from a serene superior height, as a mind of the weaker class. Truly, he was so, in some sort, and very pitiable. But the author of the "Ode to the Skylark," and the "Prometheus Unbound," and the "Cenci," should have been designated as such, not frigidly or haughtily, but with the gentleness and tenderness of a deep fellow-feeling by one far more so—by one of so morbid a temperament as to give forth all this thoroughly unhealthy inflammation about Tintoretto—by one so weak that he rarely has the power of describing anything without almost spoiling his description by some touch of exaggeration proceeding from the excitability of his fancy, or nauseating his readers with some hard and austere assumption of a religious tone, in which the elements indispensable to religious writing of any value, such as modesty, truth, justice, and candor, are habitually wanting. It is a religion this with which the fancy seems to be incessantly on fire, but the heart the while appears to remain cold and untouched; indeed, the main tendency of his writings in this respect (like so much of the other religious writing with which our press teems now-a-days)

J. B. Heywood, Neg. H. H. Snelling, Print.

J. B. HOWE, ESQ.,

As Richard III.

seems to us to be rather to weaken religion in our human hearts, its healthy, active, and happy seat, and to make it restlessly, painfully, and consummingly burn in the mere dreaming faculty—the intellect and imagination. Mr. Ruskin is indignant with *Blackwood* for having recommended Keats to return to his gallipots. But is it not better to depreciate even to that extent the literary productions of living men, than thus to cast rude and coarse opprobrium, as he has done, on the moral as well as intellectual character of the voiceless, unreplying dead?

THE SOLAR CAMERA—PRINTING PROCESS—GLASS CLEANING.

Mr. Snelling,—I use the Solar Camera which some of your contemporaries stigmatise as a "poor concern." I beg leave to say that I differ from these august sentiments. After using it six months, I grow more astonished daily to see the results which I produce. I have printed by the Calotype, the Albumen, the Ammonio-nitrate, and the Wenderoth Processes. The ammonia-nitrate and albumen process please me the best, as I have the time to print the limited number that I make. With the right kind of negative, from two to three hours will print a half-length portrait.

I use in salting—

Chloride of ammonium	2 grains.
Water	1 oz.

I have tried every amount from one grain to ten, and prefer the two grain solution as giving the best results.

Nitrate of silver	30 grains.
Water	1 oz.

Made into common nitrate in the usual way, and one drop c.p. nitric acid added to each four ounces of solution.

Toning bath as laid down in the Moulton process.

The Wenderoth process works rapidly, and produces fine results in my hands, but is more expensive and requires much more care, when only a small number of prints are made. In large establishments where hundreds are made a week, its value is not to be told.

For all our silver solutions, I melt clean snow in an earthenware vessel, and use it in place of distilled water, as it produces better results than Croton, bottled (labelled distilled water), and sold for fifty cents per gallon. Those who have never tried it can easily save their fifty cents per gallon, and have a better solution in the bargain.

The most pleasing pictures that I have printed in the printing frame, were made by a process for calotypes, by Mr. Sutton, but which I modified as follows:

Water	1 oz.
Pure white gelatine	6 grains.
Common salt	4 "

Put the ingredients into the water while cold, and warm it gently until they are all dissolved (care being taken not to get it boiling hot); filter it through a sponge while warm, and it is ready for use. This should be kept in a warm place, and the paper floated on it two or three minutes and then dried.

For silvering I use—

Water	1 oz.
Nitrate of silver	35 grs.
Lemon juice	1 or two drops.

Float the paper five or six minutes, as the thick body of the gelatine will require that time to soften, so as to absorb a sufficient amount of silver.

Print a very little darker than you want, and tone in the Moulton toning bath; or the bath used for toning your illustrations, which is nearly the same.

The superiority of this process lies in the fact, that the gelatine keeps the picture on the surface of the paper, and the lemon juice gives the print a very warm violet tint when properly toned. Mr. Sutton says,—"No one that has not tried it, can have any idea of the wonderful brilliancy imparted to a print by the mucelage contained in lemon juice."

These remarks were made in reference to prints developed by gallic acid; but I find they are equally applicable to those printed without development. In the prints that I have made by this method, the details are equal to the very best albumen prints. The gelatine having a very fine grain, the surface of the print has not a certain half-glassy, half-scaly appearance, which all albumen prints have on close examination. Moreover, the lights, when properly printed and toned, are *absolutely pure*; which, combined with the other superior quality, make them the most deservable prints I have made. It is like all good things, more work to print a given number of copies by this process, than by the ammonia-nitrate, when the solution is spread with cotton, but the better quality will repay the extra trouble. In spreading the ammonio-nitrate over the paper, I use cotton flannel, after having washed it thoroughly in a weak solution of sal-soda, rinsed and dried. Cut a patch to the desired shape and place it on the paper, nap side down; then lay a small ball of cotton wool on the middle of the patch, gather up the corners so as to enclose the cotton, and proceed to spread the solution, and you will seldom be troubled with greasy streaks which often occur when using the prepared cotton wool.

I have tried many ways to clean glass when negatives were varnished with any of the spirit varnishes, and have never succeeded to my liking until of late. I now make a saturated solution of sal-soda in water, lay the glass in this, and in a few hours the varnish will contract so as to detach the film from the glass. I then rub them over carefully with rotton stone or Norton's cleaning powder; wash it off and the glass is ready for another picture.

I use the soda for cleaning all my glass now, and succeed in getting better results than ever before.

Respectfully yours,

F. B. Gage.

From the Liverpool Photographic Journal.

FRENCH PHOTOGRAPHIC SOCIETY.

At the meeting of the 18th of December, M. Regnault, member of the Institute and President of the Society, occupied the chair. Amongst other matters then communicated and presented was a large collection of prints from paper negatives, which were obtained by M. Civiale, by the following process:

"PAPER NEGATIVES."

The paper employed being *papier Saxe negatif*, of the weight of about fifteen pounds the ream.

The bath for iodizing contains

Céreoléine (10 grammes* of wax in a litre of alcohol of 40°)	1000 grammes.
Iodide of potassium (dissolved in alcohol of 36°)	32 grammes.

The paper is left for two hours, at least in the bath, then it is suspended by a corner to dry.

The sensitive bath contains—

Distilled water	1000 grammes.
Fused nitrate of silver	60 "
Nitrate of zinc (crystallized)	24 "
Acetic acid	30 "

After immersion the excess of nitrate of silver is removed by three excessive washings in distilled water. The paper for the day may be made sensitive in the morning or overnight.

In operating in the Pyronees, where variations in altitude of more than 2000 yards were encountered, the exposure in the camera varied, in sunshine and shade, from six to twelve minutes.

The developing bath contained—

Distilled water	1000 grammes.
Gallic acid	$3\frac{1}{2}$ "

To this a little of the washing water containing nitrate of silver was added. After development the picture was four times

* The gramme about 15 grains, and the litre about 2 pints.

rinsed in common water, and then fixed in a solution containing—

Common water	1000 grammes.
Hyposulphite soda	200 "

Finally the negatives were washed in common water during eight or ten hours, the water being often changed.

M. Girard read a note by M. Frank de Villecholes, upon

"THE USE OF DRY COLLODION."

Among the dry collodion processes which have been published, several have given results generally satisfactory. Neverless many operators succeed only with difficulty, and desire a newer and simpler method than Taupenot's, the gelatine process, &c.

The simplest method, "par excellence," is that of M. l'Abbé Desprats, which consists simply in washing the plate on its removal from the bath. This method, which has long given me very uncertain results, has been abandoned by the greater part of those who have attempted it.

Nevertheless from some information I received I tried again the method of M. l'Abbé Desprats, and convinced myself that my former failure arose from insufficient washing. Sensitive plates, washed for one or two minutes in a stream of water, succeeded but imperfectly, while similar plates, washed in the same way and left to drain for five minutes, and then rewashed as at first, gave a perfect picture.

Certain collodions are not favorable in this case, especially those containing iodide of zinc or cadmium, which do not succeed, unless the bath is strongly acidulated by acetic acid.

I expect M. l'Abbé Desprats' method, properly carried out, will supersede all others.

M. Montreuil remarked that the process just alluded to was the same as that indicated by him. He had learnt a year ago that all collodions well washed succeeded dry on an exposure three or four times the length of that used in the wet way. This year he had taken, on a tour, sensitive plates for eight, fifteen, and even thirty days, developing them only on his return, and all had succeeded, excepting some which had contained iodide of cadmium, the cause being inexplicable. The great point was to wash sufficiently; common water might be used.

M. Vaillat confirmed the observations of M.M. de Villecholes and Montreuil; he saying that he had succeeded very well, by following the same method.

M. Leborgne stated that by mixing nitrate of lead with the nitrate of silver in the bath for collodion, he obtained finer results. He used a weak solution of gallic acid, in developing, instead of pyrogallic acid.

NEW NEGATIVE PROCESS.

Montreal, Feb. 25, 1858.

H. H. Snelling, Esq.,—*Dear Sir:* In reply to your favor of the 19th, I have much pleasure in sending for insertion in your Journal, the following process for producing negatives; the time of sitting originally being less than for a positive.

After exposure, develope with—

Protosulphate of iron	2 ounces.
Acetic acid (No. 8)	12 "
Alcohol (95°)	4 "
Water	1 quart.

Cover the plate with the above, and allow it to remain until all the details appear; then pour off and wash well with water, and continue developing with—

Pyrogallic acid	2 to 3 grains,
Glacial acetic acid	6 drops.
Alcohol	6 drops.
Water	1 ounce.

Previous to flowing the plate with the above, add to it two or three drops of a 30-grain nitrate solution to each drachm, and flow off and on the plate until the desired intensity is attained. In hot weather, the proportion of glacial acetic acid must be increased.

Previous to making the above discovery some three or four weeks ago, to obtain a good negative I found it necessary to have a setting of forty-five seconds on an average. Now I find four or five seconds quite sufficient, having taken many good negatives since with simply removing the cap. The process is invaluable for children and groups, and the quality of the negatives are all that could be desired, giving beautiful detail in the shadows with instantaneous exposure.

I use but one nitrate bath in my practice for positives and negatives, and but one collodion, viz. Anthony's, which I find first rate.

It may seem strange to some, that the time of exposure is less than for a positive, but the reason is that a positive requires a more active developer, which cannot be prolonged to give the detail without injuring the tone and clearness, so desirable in a positive.

Yours truly, J. Notman.

From the Cosmos.

PHOSPHORESCENCE
And Fluorescence Shown by means of Photography.

BY M. NIEPCE DE SAINT-VICTOR.

Does a body, after being submitted to the action of light, preserve in the dark any impression of this light? This is the question which I have endeavored to solve by photography.

The phosphorescence and fluorescence of bodies are known; but the experiments which I am about to describe, have never been made, to my knowledge.

An engraving which has been kept in the dark for several days, is exposed to the direct rays of the sun for at least a quarter of an hour; one half of it being covered by an opaque screen; this engraving is then laid upon a very sensitive photographic paper; and after twenty-four hours of contact in the dark, there is obtained in black, the reproduction of the whites, of that part of the engraving which during the exposure was not covered by the screen.

When the engraving has remained for several days in profound darkness, and it is applied upon the sensitive paper without first exposing is to the light, it does not reproduce itself.

Certain engravings after exposure to the light, reproduce themselves better than others, according to the nature of the paper; but all papers, even Berzelius' filtering paper, with or without drawings, whether photographic or otherwise, reproduce themselves more or less after a preliminary exposure to the light. Wood, ivory, gold beaters' skin, parchment, even living skin, reproduce themselves perfectly under the same circumstances; but the metals, glass, and enamels do not.

By leaving an engraving exposed for a very long time to the sun's rays, it will, if I may thus express myself, saturate itself with light. In this case it will produce a maximum effect, provided it be left for two or three days in contact with the sensitive paper. I have thus attained an intensity of impression which leads me to hope that my operating upon very sensitive papers, and developing the image by gallic or pyrogallic acid, we may obtain proofs sufficiently strong to permit the formation of a *cliche;* this would be a new means of reproducing engravings.

If a strip of glass is interposed between the engraving and the sensitive paper, the whites no longer impress the paper. The same results are found, by interposing a plate of mica, or rock-crystal, or a plate of glass colored yellow by oxide of uranium.

It will be seen further on, that the interposition of these same substances arrests also the impression of phosphorescent lights placed directly in front of the sensitive paper.

An engraving coated with collodion or gelatine is reproduced; but one coated with picture-varnish, or gum, is not reproduced.

An engraving placed at a distance of 0·1 inch from the sensitive paper, reproduces itself very well; if it is a drawing in strong lines, it will be reproduced even at a distance of 0·4 inches: the impression is therefore not the effect of lateral or of a chemical action.

An engraving colored with several colors is reproduced very unequally, that is, the colors reproduce themselves with different intensities, varying with their chemical natures. Some leave a very visible impression, while others scarcely if at all color the sensitive paper.

The same is true of characters printed in different inks; the fat ink, for printing in relief, or for mezzotint, and common ink formed by a solution of nut-galls and sulphite of iron, give no images, while certain English inks give very definite ones.

Vitrified characters, traced upon a plate of glazed porcelain, such as biscuit ware, produces a slight impression.

If after exposing an engraving to the light for an hour, it is laid upon a white card-board, which has been kept for some days in the dark; and if after leaving the engraving in contact with the card-board for at least twenty-four hours, the card-board is, in its turn, brought into contact with a sheet of sensitive-paper, we shall have, after twenty-four hours of this new contact, a reproduction of the engraving less visible, yet still distinct. When a slab of black marble, sprinkled with white spots, is exposed to the light, and then applied upon the sensitive paper, the white spots alone are impressed upon the paper. Under the same conditions, a tablet of white chalk leaves an impression, while one of charcoal produces no sensible effect.

When a black and white feather is similarly treated, the whites only impress their image.

A parrot feather, red, green, blue, and white, produced scarcely any image, as if the feather had been black, certain colors, however, produced a very feeble action.

I made some experiments with stuffs of different nature and various colors, and I will give you briefly the results which I obtained.

Cotton.—White impresses the sensitive paper.
" Brown (madder and alumina,) gives no effect.
" Violet (madder, alumina, and salt of iron,) scarcely anything.
" Red (cochineal) nothing.
" Red Turkey (madder and alumina,) nothing.
Cotton.—Prussian blue on a white ground. The blue produced the deepest impression.
" Blue, by the indigo bath—nothing.
" Chamois (peroxide of iron,) made an impression.

Stuffs of linen, silk, and wool, also gave different impressions according to the chemical nature of the colors.

I call attention particularly to the following experiment, which seems to me curious and important: Take a metal tube (tin for instance,) or any other opaque substance, closed at one end, and covered inside with paper or white card-board; expose it, the open end in front, to the direct solar rays for an hour; after this exposure, apply the open end to a sensitive paper, and it will be found after twenty-four hours, that the circumference of the tube has formed its image. What is more, an engraving on Chinese paper interposed between the tube and the sensitive paper will be found also reproduced. If the tube be hermetically closed as soon as the exposure to light has ceased, it will preserve for an indefinite time the faculty of radiation which the exposure has given it, and this faculty will be demonstrated by the formation of the impression, whenever the tube is applied to the sensitive paper, after removing the cover.

I repeated, with the luminous images formed in the camera obscura, the experiments which I at first made with direct light. A card-board is taken from the dark, and exposed for about three hours in the camera, into which a bright image of the sun is thrown; the card-board is then laid upon the sensitive paper, and by twenty-four hours contact there is obtained a quite visible reproduction of the primitive image. A long exposure is necessary to obtain an appreciable result, and this is probably the reason why I obtained nothing by receiving the image of a solar spectrum upon a sheet of white card-board for an hour and a half only. I am, nevertheless, convinced that an exposure of several hours with a sheet of very absorbing paper or card-board would give an impression of the spectrum; and this fact, which is not without its importance, may be considered as established. I have not yet had an opportunity to experiment either upon the light of the electric lamp, or the discharge in vacuo, but I purpose to do it as soon as possible.

In some experiments, but as yet very few, I thought I remarked that the light absorbed and kept in a vessel, exercised also an action upon plants, among other things upon flowers, which open by day and close at night.

It remains for me to speak of the experiments which I have made upon phosphorescent and fluorescent substances.

A drawing traced upon a sheet of white paper, with a solution of sulphate of quinine, one of the most fluorescent bodies known, exposed to the sun and applied upon sensitive paper, reproduces itself in a much more intense black, than the white paper forming the ground. A plate of glass interposed between the drawing and the paper, prevents the impression. A plate of glass, colored yellow by oxide of uranium, produces the same effect. If the drawing in sulphate of quinine has not been exposed to the light, it produces no effect on the paper.

A luminous drawing traced with phosphorus upon a sheet of white paper, without exposure to the light, will impress the sensitive paper very rapidly, but if a plate of glass is interposed, there is no action.

The same effects are produced by fluoride of calcium (fluor-spar,) rendered phosphorescent by heat.

These are the principal facts which I have observed. Space is wanting to enumerate all the experiments that I have made; there remain still many more to make, and I therefore publish this note without waiting to make it more complete. I think, that I may be permitted to hope that my new mode of exhibiting properties of light heretofore scarcely suspected or imperfectly established, will attract the attention of physicists, and lead to important researches.

PHOTOGRAPHY IN THE WEST.

WOODVILLE, Miss., Feb. 12th, 1858.

FRIEND SNELLING:—Thinking that a few lines from this section might not be unacceptable, has emboldened me to write to you. At the time of closing my business in your city, I supposed I had bid "a long farewell" to the trials and perplexities as well as the pleasures of photography, but as human calculations are not infallible, I find myself once more, with renewed health, pursuing my old vocation of Picture Making in this section of the "Sunny South." While journeying, without any definite object in view beyond recruiting my exhausted energies, I strolled into some of the leading galleries in the Western cities; a passing glance at those visited may not be out of place. At Cincinnati, the "Queen City" of the West (where a number of years of my photographic experience were passed), there are several who lay just claim to the front rank; among whom may be mentioned Faris, Porter, Hawkins, etc., etc. The many fine specimens of the Photographic Art, exhibited at the rooms of Mr. Farris, attest his proficiency and skill. The new style of picture introduced by him and Mr. Hawkins are very fine, although, in my humble judgment, not equal to those made by Mr. Faris, at his New York gallery. Mr. Porter, whose motto is "Excelsior," is fitting up one of the most beautiful as well as convenient gallery in the country. His collection of life and Cabinet size photographs are the finest it has ever been my privilege to see. His artist, Mr. Quick, is a gentleman of fine talents, and an ornament to his profession. His operator in photography is a Mr. Wallace, a gentleman of superior skill. With such ability in the different branches of the art as it has been Mr. Porter's happy fortune to secure, his productions must secure liberal patronage. Mr. Hawkins is confining his attention entirely to his new style of picture—the "Diaphaneotype," a style of coloring photographs which is destined to become very popular. Of their merits I have spoken above. From Cincinnati I passed to St. Louis; in that city there appears to be but very little attention paid to photographing. The best unretouched I saw was at Mr. Long's gallery. He took the premium at the late fair. Fitzgibbons, the renowned "Fitz," has quite a number painted in water colors, by Mr. Brown (who, I believe, was for some time with Mr. Brady, of your city), which are very creditable. The other galleries, of which there are quite a number, are engaged almost exclusively in Ambrotyping, of which style I saw many fine specimens. There is one gallery in that city which has passed by all the boasted improvements in the art, and has pursued "the even tenor of its way" with success. Mr. T. M. Easterly (to whom I refer) has continued to make the daguerreotype in a style which will equal anything in the country; while his views of Niagara, and other scenery, are unsurpassed. It has been my good fortune, since my advent at this place, to meet with an amateur photographer (a rare circumstance, I believe, in this country), who not only makes very creditable pictures, but shows his love for, and appreciation of the art, by being a subscriber to your valuable Journal, and through whose kindness I have the privilege of meeting with my old friend.

I see from the late No. of your Journal that you have taken upon yourself to supply the numerous wants (for cash) of distant artists. May your success not only bring you honors, but "put money in thy purse." I shall, before returning Northward, visit New Orleans, and may take a glance at the galleries there.

With the highest consideration,

I am very respectfully yours,

C. H. E.

From the London Art Journal.

TALK OF PICTURES AND THE PAINTERS.*

BY AN OLD TRAVELLER.

CHAPTER VII.

First Visit of the Englishman in Venice—Paolo Veronese—Works at home and abroad—Public Galleries—Luton House—Mr. Harford's Collection at Blaise Castle—Lord Darnley's at Cobham Hall—Bonifazio Veneziano —Petworth—Colonel Egremont Wyndham's Gallery—Alton Towers—The Return of the Prodigal Son—Works in Foreign Galleries—The Bassani—Examples in Collections open to the Public—Jacopo at Edinburgh—Francesco and Leandro at Hampton Court—Francesco at Liverpool—Pordenone—Lord Brownlow's Collection—Works at Chiswick and Burleigh—Berlin—Udina and Piacenza—Mantua—Venice.

There is perhaps no Venetian master—Titian alone excepted—whose works receive, and have received, so much attention from the great body of English travellers, as do, and have done, those of Paola Veronese: all rush to the Ducal Palace before they are half a day old in Venice; and the certainty of this fact helps to diminish my regret that I cannot, with due respect to the brilliant qualities of an artist so much admired, here attempt to do more than allude to the whereabouts of some few among the vast number of paintings produced by his hand.

The National and Dulwich Galleries, Hampton Court, the Fizwilliam Museum at Cambridge, the Royal Institution of Edinburgh, and other public bodies, possess pictures by Paolo Veronese always accessible to the student; there are besides examples of his works in almost all the more important collections in the country. The Marquis of Bute has four at Luton House. Lord Darnley's collection at Cobham Hall boasts an equal number. Mr. Munro has two, both of high artistic value, and considered to exhibit the most admired qualities of the painter. In the collection of Mr. Harford, at Blaise Castle, there is a "Pietà" by Paolo Veronese, very beautifully painted. There are drawings by his hand at Chatsworth; and they have one in the magnificent collection of those treasures possessed by the University of Oxford; a banquet of cardinals is the subject of this drawing, which is one of great interest to the admirer of the master. The portrait of Paolo, painted by his son, Carlo Cagliari, will be found, amongst those of other great painters, in the collection of the Duke of Bedford, at Woburn Abbey; that in the Uffizii, at Florence, will be familiar to the recollection of all acquainted with the Florentine galleries.

Works of varied character by Paolo Veronese enrich the Louvre: of these the most important and justly renowned is the "Marriage in Cana," a favorite subject with the gay and genial painter. To this picture increased interest has been given by the description which Zanetti cites, as preserved in the Venetian convent of San Giorgio Maggiore, that document proving nearly all the figures to be portraits of persons the most distinguished of their time—the Emperor Charles V.; Francis I. of France, with his queen, Eleanor of Austria; our own Mary; Soliman I., Grand Signor; Alfonso D'Avalos, Marquis del Guasto; and the justly celebrated Vittoria Colonna, Marchese di Pescaro,—are among them, as is Paolo Veronese himself, with his brother Benedetto Cagliari, and his brethren in Art, Tintoretto and Jacopo da Ponte.

Speaking of this work, Vasari calls it "Opera maravigliosa per grandezza, per numero di figure, per varietà d'abiti, e per invenzione."† When Vasari wrote, Paolo Veronese was not more than thirty, or perhaps thirty-two years old—a circumstance to which the biographer has previously alluded,‡ and one which amply accounts for the fact that Vasari has not described his works at greater length.

A picture representing Jesus in the house of Simon the Pharisee, and which, although scarcely so characteristic of the master as that last named, is yet of great interest, as regards many important qualities that cannot here be insisted on, will also be found in the Louvre: Vasari describes it as "La cena che fece Simone lebbroso al signore, quando le peccatrice se gli gettò a piedi." In this work, painted for the refectory of San Nazzaro in Verona, a monastery of black friars, there are two dogs, highly praised, among other parts, by Vasari,—and with justice, as all who have remarked that animal when painted by Veronese will readily believe. "They seem to be alive," says the biographer; and to this adds the following—"More in the distance are certain figures of lame and halt, which are also excellently done." There is a sketch for this picture at Alton Towers, where will also be found a portrait of a lady, declared to be from the hand of the same master.

To say nothing of Venice,—because all seek Paolo Veronese *there*,—the galleries of Vienna and Munich, the Brera at Milan, with the collections at Dresden, Berlin, and other capitals, have also works by this master, but those here named must suffice for our present purpose.

Of Bonifazio Veneziano, of the Bassani, and of some few beside, among the Venetian masters of the period before us, we would fain cite pictures recurring pleasantly to remembrance, as the churches and palaces of Venice rise before the willing eyes of the gladdened memory; but we must restrain ourselves for the most part to the mere mention of some few works in the possession of English collectors within reach of the English student. By the first named painter there is a picture, but not a good one, at Hampton Court—"Christ with the Woman of Samaria" is the subject, and the work was long attributed to Palma Vecchio; it has been much injured, but even when at best can scarcely have presented a fair specimen of the master.§ Of much higher value is the "Last Supper," in the Royal Institution of Edinburgh—since this work, if my recollections do not mislead me, gives full evidence of that elevation of thought and dignity of manner so entirely distinctive of Bonifazio, and which raise him to a level with the very first of his contemporaries. Nor is the Edinburgh picture of less importance as an example of that perfection in coloring wherein Bonifazio, as is well known, was scarcely inferior to Titian, whom he did without doubt follow zealously, as regards that great essential, but with no servility of imitation, nor in any manner derogatory to his own high and true genius.

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* Continued from p. 268, vol. x., no. ix.

† See "Opere," vol. iv., p. 329.

‡ "Opere," as above, p. 327.

§ Many valuable details respecting this and other painters of the period will be found in the "Notizie" of Morrelli (*L'Anon mo.*)

In the collection of Colonel Egremont Wyndham, at Petworth, there is an Adoration of the Kings, from the hand of Bonifazio Veneziano, respecting which Dr. Waagen has the following remark:—"Besides his usual warmth and transparent harmony of color, this picture exhibits a closer finish of detail than is usual with Bonifazio."* Higher eulogies might have been added, and with justice; nor is there reason to believe they would have been withheld, had the German writer consulted his inclination only, and had he not been restricted by the brevity imposed on his words by the exigencies of his subject. This may be inferred, not only from the general tenor of Dr. Waagen's works, as they relate to masters of the highest class in general, but also from various remarks respecting Bonifazio in particular, to be found in other passages. Thus, describing a valuable picture by that most noble artist, in possession of Sir Charles Eastlake,—Our Lady with the Divine Child, and other figures,—Dr. Waagen speaks as follows:—"This rich and beautiful composition, with the fine character of the heads, especially that of the female saint, approaches Titian in warmth and harmony of coloring." So far the German critic, if he had added the declaration that Titian is not unfrequently surpassed by the less familiarly known painter in depth of thought, in purity of sentiment, and in elevation of purpose, he would have done no injustice to either master.

But perhaps the most important and valuable work by Bonifazio in possession of any English collector, is that now at Alton Towers, and which was long attributed to Titian. The subject of the picture is the Return of the Prodigal Son; the figures, life-size, are in Venetian costume of the painter's day, they have, therefore, not the pastoral character always suggested to the mind by the words of the sacred text, but, apart from this circumstance,—redeemed by many considerations, that cannot here be entered on, from its seeming character of a fault,—these figures are absolutely perfect, as is the whole scene wherein they act, with all its details. The principal group is standing before a building, which, if not of the most lofty pretensions, is evidently the dwelling of an important and opulent personage; the moment is that immediately subsequent to the command, "Bring forth the best robe, and put it on him, and put a ring on his hand and shoes on his feet." The "shoes" are already on—one servant is presenting the "ring," which he holds daintily between his fingers, while another has approached his master with the robe, and stands at his left hand, holding the garment of honor with due respect across his outstretched arms. In the face of the prodigal, whom the father—a venerable and beautiful old man, and, as might be supposed, the chief person of the drama—is raising from what has doubtless been a second prostration, made in acknowledgment of his goodness, there are ample evidences of that weakness ever to be found, under some one of its many forms, in the company of vice; nor has this been done by the wise and thoughtful master without due reference to our instruction; of that we may be sure, and shall do well to profit by it. The elder brother, on the contrary, is a noble and dignified figure, as befits the man of passions duly restrained and life devoted to life's duties: thus, although the lesson given us in this parable of our Lord does in some sort involve a reproof to the elder brother, yet is it on him—after the father—that the attention of the spectator is most permanently fixed, and not on the prodigal, whom one is willing to leave to the cares of the servants, so dutifully ready to attend him. This our favorite then, despite his fault of momentary displeasure, which will not be lasting—we have but to look on his fine face for assurance of that fact—is seated on horseback at some distance from the principal group. He is returning from the chase, and his dogs are at the feet of his horse; servants also are round him, and from these he is receiving an explanation of the event passing before his eyes. It is impossible to imagine anything more life-like, and, at the same time, more graceful than are all the figures composing this group, on which the critic in Art might long expatiate before enumerating half its merits: the horse is not such, at all points, as the connoisseur would select for his uses; but Venice does not count among her glories the being an especial land of horses; nay, a man may live long years in the midst of her beauties—our benison upon them, one and all!—without ever seeing a hoof, save only those belonging to St. Mark's stud, of immortal renown. But even the horse, noble as he is when truly portrayed, and well as we love one "of a worthie race," as Gervase Markham hath it, can scarcely detain us in this instance from the human interests around us, and of these we have in this one picture enough to minister food for thought that may last you a life-time. And in this fact is the real triumph of the master truly great, as is Bonifazio Veneziano. You will delight in him for the beauty wherewith he has blessed your eyes; but that is a benefit you may derive from others: *his* distinction is that he awakens and enriches the mind, and for this you revere him and are grateful; that he softens and amends the heart, and for this it is that you give him the dear love of a lifetime.

Not to all great painters is that last best tribute due; nay, you shall count the names that compel it from you on little more than the ten fingers of your hands—but Bonifazio Veneziano is pre-eminently among them; and with some two, or perhaps, three, of his Venetian brethren, added to certain among the older Florentines, will come first to your recollection when this highest of all qualities is in question. A bright name or two from the Roman schools, with yet more, and of better claims, from those of Umbria, rise appealingly to the recollection, as one writes of this matter, and most lovingly has each "its claim allowed;' but to your memory and your good heart, oh reader, must now be left to pay the debt for all, seeing that the grand work of the revered Venetian now before us looks for all our attention, and is not of the class that can be duly treated with aught less. A rich mountainous landscape forms the ultimate background and closes the whole; but within this are various distances, all appropriately occcupied: over one of them there is a hunting party galloping cheerily, and to them it is we may suppose the servant, making signal from an exterior gallery, is blowing a horn, bidding them return to their part in the feast about to be prepared. Beneath a portico of the lordly dwelling other servitors are preparing the board; figures are in movement within and without, and in all directions, yet each maintained in due subordination, and none of all interfering with the chief action of the piece, which maintains its interest unimpaired through all. Women are looking forth from their apartments in an upper story of the house; there are two now issuing from a doorway; they approach the summit of a flight of steps: but half-informed of what is causing the movement below, they are about to summon a servant who will give them better intelligence: we need not listen to him, since we know all he can tell; but they have a pleasant "coign of vantage," there, with their faces to the beloved mountains, and it is not without reluctance that we leave it.

Of this Bonifazio, we have said that it is *now* at Alton Towers; but alas for the mutability of things human, how little value is there in that "now!" To be precise then, it is there at the now of the present—this bright and blessed morn of June, being the seven-and-twentieth day of the month, in the year of our redemption one thousand eight hundred and fifty-seven.

But when the month shall call itself August—where?

It is a question that would bring most sorrowful considerations, were it not for our hope that the great lessons conveyed by this immortal work may be thenceforth secured for the benefit of larger numbers than have ever yet been permitted to profit by them. Nay, who knows that we may not all become "part-owners" in this invaluable gift from one who stands high among the best of the richly productive past to the needy and desiring of our sterile present? Why should the nation itself not then be proprietor of Bonifazio's bequest to all time? Let us entertain so consoling a hope; there can be no good reason to be given against its realisation; and be sure that no picture in our present possession will assemble so large a crowd as will

* See "Treasures of Art in England," vol. ii. p. 265; see also vol. iii. p. 42.

daily be seen around "THE RETURN OF THE PRODIGAL SON,"* if you will but give it fitting place in the gallery that must some day be made worthy to be called the National Gallery of England.

There are three pictures by Bonifazio in the Louvre—a Resurrection of Lazarus, a Holy Family of great beauty, and a Madonna with the Divine Child, St. Catherine, St. Agnes, and St. John, also a child. This picture was long attributed to Palma Vecchio.

Our good and rarely failing friend, the Royal Gallery of Berlin has one work, and I think but one, of this master: the picture represents our Saviour pointing out the writing he has traced, to the Pharisees, who have brought before him the woman accused of adultery. The accused, surrounded by her captors, awaits her judgment at his hands; a group of pitying spectators is in the distance, and in the background there is a landscape with buildings.

But for Bonifazio, as for all the masters now in question, the cities of Italy, more especially Venice, must be visited, if the student would make effectual acquaintance with their works. In the Libreria Vecchia is a painting, wherein Bonifazio has represented the encampment of the Israelites: this is said to be the first attempt made by any painter to give the real effect produced by the sun. The Academy—Academia delle Belle Arti—has a picture, among others, of "The Rich Man's Supper," thus described by Kugler, with whose words our brief notice of the master must close:—"The time is the afternoon, the place an open hall, with a table at which the rich man is seated between two female figures; one, with her hand on her breast, is assuring him of her fidelity, the other listens thoughtfully to a lute-player, and to a half-kneeling violincellist, whose music is held by a Moorish boy, while a bearded noble overlooks the group. On the left are two pages drinking wine; on the right, Lazarus, the beggar, is being turned away by a servant with a dog; in the background is a stately garden, with falconers, pages, and grooms."†

Other Venetian masters are represented in the Shrewsbury collection, and among them are Giovanni Bellino, Giorgione, Sebastiano del Piombo, Pordenome, Bonvicino, and Tintoretto: no less than four pictures are attributed to the last-named of those great masters, and three of them may be by his hand; the fourth does not appear to be so, but it is a point we cannot now discuss. There is one by Carlo Crivelli, but of this, as of some by other masters, notice will be found in a subsequent column. Palmo Vecchio is also here, as is Morone, who has four pictures under his name: of these, two are hung so high that the spectator has no power of examination; the third is certainly not by his hand, but the fourth has every appearance of being the work of Morone, and is a fair example of the master.

The gardens of Alton Towers are said to be the finest in Europe, and in their manner—they are Italian gardens—they do certainly surpass all previously seen by the writer; even those of the Villa Doria, outside the walls of Rome, were not, in all respects, equal to them, although "beautiful exceedingly," before those grievious changes wrought among them, as in those of the Borghese Villa, during the year '48.

The gardens of the Kinski Palace, outside the fortifications of Prague, will recur to the remembrance of all who, knowing *them,* shall ascend the private footway to the seat of the Talbot family; but there is a care and finish in the English garden not found in that of Prague. The gardens of Daserta, always a favored residence, and now the constant abode of the royal family of Naples, are extensive, and in parts richly decorated, but they are not equal to those of Alton.

Unlike the German boast of Schwetzingen, also widely renowned, the Alton Gardens, which resemble them in the variety of their fountains, waterfalls, temples, lawns, terraces, and gleaming statues, have the inappreciable advantage of a fine site; and if in this respect the Boboli Gardens of Florence overmatch them, as regards grandeur of distant prospect and wealth of association, yet is this fair Staffordshire "pleasance" richer in its bright loveliness, and infinitely more attractive in its immediate surroundings, or what may be called the home-views, which consist of emerald slopes and wooded heights, well worthy to make part of paradise. They have, beside, the charming quality of being well within the range of vision, although extending to great distances, and forming a truly magnificent domain.

To the beauty and rich odors of that series of living and breathing pictures called "the Rock-walk of Alton," no grounds known to the writer can offer a parallel. There is a delicious solitude, of slightly similar character, at Chatsworth, but even this—rarely seen perhaps, by any but such as linger most lovingly where Nature is least restrained, and little known to the mere passing visitor—will not presume to compare its paler loveliness with the royal perfections of its sister at Alton. Or you may here are and there find a priceless jewel hidden preciously among the far depths of the flowery Pyrenean valleys, and to these the memory may recur, with a glad recognition, when coming suddenly on some new beauty in this bright vision, the legitimate "Pride of Staffordshire;" but in mere "grounds" formed by man, look for no resemblance to it. Happy he who may linger in the whole fair region more years than we are giving weeks to its enjoyment; yet even our weeks are growing to months, may Heaven make us thankful for the privilege! and I would that you, who do but read thereof, were here to share it.

That family of artists, of whom Jacopo Bassano, called Da Ponte, has the most distinguished name, is represented in our country by a picture in the National Gallery from the hand of Leandro, the son of Jacopo; at the Royal Institution of Edinburgh, where there are two pictures by Jacopo himself; at Hampton Court, where there are several by Francesco Bassano, with one by Leandro; and at the Royal Institution of Liverpool, where there is a work by Francesco, with one attributed to Jacopo but this last, unknown to the present writer, is not considered, to be a good specimen of the master. In private collections works by the Bassani may also be found: that of Mr. Miles, at Leigh Court, has a "Presentation in the Temple" from the hand of Jacopo, and there is an Adoration of the Shepherds, also by Jacopo, at Belvoir Castle; this last is a work of great beauty. At Chiswick there is a picture of high value by Bassano—it represents Christ bearing his Cross; and the Marquis of Exeter is in possession of a Return of the Prodigal Son, and "The Israelites gathering the Mana;" these are at Burleigh. The late Mr. Rogers had a picture by Giacomo Bassano, which he greatly prized, and with reason, the subject is, "Dives and Lazarus: in the same collection was a "Good Samaritan," by Francesco Bassano. There are two important pictures by Giacom at Devonshire House, and the "Maries," at Chiswick, will at once recur to the memory of all who have seen that work; there was one at Alton Towers, but the student who desires to see it must now look elsewhere. The subject of the last-named work, also by Giacomo da Ponte, is the Nativity of Christ; it bears the name of the master, and if not in all respects to be accounted among the best of his works, is allowed, and by severe critics, to exhibit very fine coloring.

* Since the above was in type, the writer has heard numerous remarks from persons varying much in condition, all proving this picture to be one of those that fulfil the highest purpose of the master—whose aims are truly great—by touching the large heart of the people; a single instance shall suffice. Bewailing the dispersion of the paintings generally, a keeper in the Alton woods, declared to the writer, that for the loss of one among them he could find no consolation. "That one I did love," said he, "and when I used to be called to move any of 'em in John Talbot's time,—for my lord would have 'em changed sometimes,—I was more afraid of harm coming to that, than to all the rest put together. Aye! I *loved* that picture."

"And that one," inquired the writer, "what was it?"

"They called it the Prodigal Son," replied the woodman, and he looked down sadly on the bright green turf before him, evidently recalling the features of his lost favorite with a deep regret. These were the words, but how eloquent were the looks and tones! they were such as the noble master himself might have seen and heard with a just pride.

"John Talbot" is the Straffordshire name of the earl. John, the predecessor of the late Lord Shrewsbury—few titles have so grand a sound as have those two names on the lips of the peasantry, still mourning him who bore them; nor is any title often pronounced with so respectful affection as is that fine old name, "John Talbot."

† Schools of Painting in Italy, vol, ii. p. 451.

The gallery of the Louvre is rich in works by the Bassani, and among them are several by Jacopo; Berlin has examples of all these masters. Dresden is equally fortunate, nor is Florence unprovided. "St. Martin dividing his Cloak with the Beggar," and the "Baptism of Santa Lucilla," are at Bassano. The early manner of Jacopo Da Ponte is, in many respects, preferable to that of his later day; a specimen from the hand of Francesco will be found in the Church of San Lugi de' Francesi, at Rome; and there is one by Leandro in that of San Giovanni e Paolo, in Venice; this last is considered to be a highly favorable example of the painter.

Of Giovanni Licinio, called Pordenone, the friend and follower, perhaps the disciple, of him whose early death "the noble Arts" (as they are truly called by the loving Vasari) can never sufficiently deplore—the still and ever to be lamented Giorgione, as of the other admirable masters above named, none should presume to make a mere casual or hasty mention, nor shall we do so without extreme reluctance. He, too, is represented at Hampton Court and in Edinburgh. A Holy Family, two finely painted portraits, and a lady playing on a musical instrument, form part of the first-named collection; the second has but one example, nor is that one among the best productions of Pordenone —the subject of the work is our Saviour on the Mount. There are three pictures by Pordenone in Lord Brownlow's collection,—one, the figure of a man with an open music book, bearing the name of the master and the date 1524. There is an admirable work of the same earnest painter at Alton Towers, the figures recalling that elevation of character which all who have seen his works in Venice, will remember, with a pleasure much enhanced by that respect for the artist which the best of his works inspire. "The "Adoration of the Kings" is the subject of the work; and if there were not a thousand good reasons why the lover of beautiful Nature should ever rejoice in some fair excuse for visiting the attractive region surrounding Lord Shrewsbury's seat, the lover of Art will find sufficient cause for doing so in this one picture. In the best manner of the Venetian school, the "Adoration" here in question, might also be transferred with advantage to the national collection. The head of the worshipper, who is bending to kiss the foot of the divine Child, is remarkable for the majestic beauty which Pordenone so well knew how to impart to the features of one whom he delighted to honor: the reverential expression impressed on the whole being of this noble personage, in no wise detracts from the dignity of his aspect, which is entirely worthy of Pardenone. The second of the Magi regards the Babe with a mingled expression; whether to wonder most or most to adore seems undetermined in his mind; not so in that of the attendant beside him, whose face is eloquent of the deepest awe. There is not enough of the exterior world in this picture, which one longs to see extended, by that masterly hand, over a broader space of landscape. It is, beside, in so disadvantageous a position at the present moment, that minute examination is nearly impossible: let us hope that the coming change will at least correct that fault.

The Marquis of Exeter is in possession of two pictures by Pordenone, erroneously attributed to Titian and Jocopo da Ponte. The first is the "Finding of Moses"—"noble in the characters and expression,"—as it should be, if it claim to bear the name of Pordenone;—"grand in the forms, and of a warm, full tone of coloring, I do not know any other gallery which can boast two such works by this rare master." So says Dr. Waagen, speaking of the first-named of these paintings, the second he calls, and justly, "a rich and admirable picture." This last is that hitherto attributed to Bassano (Jacopo da Ponte), but declared by Dr. Waagen, as is the Finding of Moses, before mentioned, to be the work of Pordenone.

In the excellent collection at the Royal Museum at Berlin, there are two pictures by Pordenone which the writer remembers with pleasure,—these are "Christ washing the Feet of the Apostles," and the "Woman accused of Adultery;" a third is mentioned, but this we have not seen.

Of Pordenone's works in Udina and Piacenza, we can but say here, that no student or lover of Art who may pass within reach of either city should neglect to visit them. Vasari speaks in highly eulogistic terms of a fresco at Mantua, exhibiting beautiful children twined fancifully amidst the giant letters of an inscription purporting that the dwelling of the owner is reared for himself and his friends,—a familiar custom of the day: this we have not had the good fortune to see, in the sole visit made by the writer to Mantua; a city which has not too much in all the riches of its varied associations to make up for the utter dreariness of its water-logged aspect. In the Venetian Academy, in the Church of St. Rocco, and in other churches and palaces of Venice, are all works of inestimable value, by Pordenone; but we can do no more than intimate the fact. Fortunate the eyes that shall verify it for themselves.

From the Liverpool Photographic Journal.

CHORLTON PHOTOGRAPHIC SOCIETY.

The ordinary monthly meeting of this Society was held in the Chorlton Town Hall, on Thursday evening, January 14th, Mr. Deane in the chair.

After the minutes of the previous meeting were read by the Hon. Secretary, Mr. Hepworth read the following essay, containing—

"AN HISTORICAL SKETCH OF THE PHOTOGRAPHIC ART— ITS PRESENT INFLUENCES AND PROSPECTIVE DEVELOPMENT, APPLICATIONS, AND USES."

The rapid progress of photography during the last few years is no less remarkable than that its existence as a scientific art should be of such modern date, when we bear in mind that the great source of light, heat, and actinism has shed its radiance over the world for so many thousand years, and that silver, the principal agent at present employed, was one of the first metals of which man possessed any knowledge, and with several of the compounds of which the alchymists were intimately acquainted. Many of the effects of light upon color, too, must have been observed for ages, bleaching some and deepening others, yet the application of these to any practical purpose was reserved for the philosophical minds of the present century. Mr. Wedgwood, in 1802, appears to have been the first to avail himself of the property that light possesses of blackening the nitrate of silver when in contact with organic matter, yet both he and Sir Humphrey Davy failed to fix the impressions that were obtained by this, the first imperfect printing process; and photography seems to have been abandoned till 1814, when M. Niépce, of Chalons, directed his attention to the production of pictures by light, but by a process that was for several years kept secret. He appears to have experimented for about ten years alone, when he became casually acquainted with M. Daguerre, between whom a sort of partnership seems to have subsisted. The sensitive surface used by Niépce was a thin layer of bitumen, obtained by pouring upon stone tablets or metallic plates a sort of varnish composed of asphaltum, oil of lavender, and petroleum; when dry they were ready for use. This bitumen has the property of hardening on exposure to light, and of becoming imperfectly soluble in liquids that previously dissolved it most readily; he had only, therefore, to submit his plates, after exposure in the camera, to the action of these for a short time, to remove such portions as were unaffected by light, and thus to obtain the first permanent pictures of which we have any record, though they required an exposure of several hours to produce them.

In January, 1839, Mr. Fox Talbot communicated to the Royal Society his photographic discoveries, which consisted of the preparation of a surface of chloride of silver upon paper; on this he obtained a negative copy of an engraving, leaves, lace, &c., by placing them in contact and submitting them to the influence of light, and from the negative thus obtained, on similar sheets of prepared paper, was enabled to procure any number of positive prints, and these were fixed by the application of a saturated solution of common salt, in which chloride of silver is soluble to some extent. The patent for what is called the calotype or Talbotype was not obtained till 1841, a process so well known that it will be unnecessary for me to describe. This was even more sensitive than the beautiful process of Daguerre, which was given to the world by the French Government about six month's after Mr. Talbot's first announcement in 1839. I well recollect with what wonder I gazed upon the first daguerreotype that I beheld about sixteen years ago; it was at the meeting of the British Association for the advancement of Science, held in Newcastle-upon-Tyne, and many of you who are listening to me will, I doubt not, have experienced similar feelings, for, despite, the wonderful discoveries that have since been made, I question if any process has produced such marvellous accuracy of detail and delicacy of light and shade as can be procured by the employment of the iodized silver plate. The Daguerreotype process was, however, at first extremely slow, more especially before the employment of bromine as an accelerator; besides, it required the face of a sitter for a portrait to be smeared with whiting. I recollect an example of this: an intimate friend of mine who took considerable interest in all scientific affairs, thought he would try his hand at photography; he procured the necessary apparatus (and these were in those days very imperfect in comparison with what we are now enabled to obtain), prepared his plate according to the most approved rules, chalked his face till he resembled a plaster cast, seated himself in his garden on a hot summer's afternoon with the sun beaming upon him, got a friend to focus and adjust the camera, and resigned himself to the influence of a July sun. Now this gentleman was somewhat stout, and consequently the perspiration streamed down his face during the fifteen minutes that he underwent the process of frying, and this in its descent of course removed the chalk, till his face somewhat resembled a modern map of this country intersected by railways; he sat his time, however, then ran with impatience to see the result of his fortitude, and after all did not obtain a trace of his countenance on attempted development. Whether this arose from imperfect manipulation I am not prepared to say, but it will serve by contrast to show what a wonderful improvement has since then been made in rapidity of action. The discoveries of Talbot and Daguerre are epochs in the history of photography, and from that time till now its progress has been most extraordinary. They were succeeded by many discoverers of minor importance, who gave to the world a host of processes of various degrees of merit. Sir John Herschell and Mr. Hunt stand pre-eminent in this respect, and many and valuable are their contributions to the scientific art. To them are we indebted for the chrysotype, cyanotype, energiatype, chromatype, and others. Sir John Herschell, too, was the first to employ glass plates for supporting a sensitive film; this was in 1840. He was led to try this from observing that the calotype failed to produce such delicate results as can be procured on metallic plates, in consequence of the rough texture of the paper fibre. His method was to precipitate chloride of silver from very weak solutions, and allow it to deposit in a state of fine powder on a plate of glass placed at the bottom of the vessel used for precipitation: then by very carefully removing the surrounding liquid a layer of chloride in a fine state of division was obtained. This plan is ingenious but difficult, and unadapted to the present requirements of the photographer. For the albumen process, by which the beautiful transparent stereoscopic slides are produced, we are indebted to M. Niépce de Sainte Victor, nephew of the original discoverer of the same name; he published his mode of manipulation in 1848, but this process is better adapted for positive prints than for use in the camera, for, as well as being slow, it is deficient in that softness which constitutes the beauty of a good photograph. M. Le Gray, of Paris, was the first to suggest the use of collodion for supporting the iodide of silver upon glass, and Mr. Scott Archer to carry this suggestion into practice. The process, as described by the latter gentleman, in 1851, continues to be practised with no material alteration, and certainly no discovery has tended more to popularize and advance the photographic art than this has done, for it has simplified the manipulation, presented us with a more sensitive film, enabled us to produce results hitherto unattainable, given an impetus that seems to increase with accelerated power, and casts such a fascination around the art as completely captivates the minds of those who are engaged in it, and ever leads them to perseverance under the greatest discouragements. Still the mind of man remains dissatisfied so long as there is a nearer approach to perfection to be attained, and the further we progress the more desirous are we to press forward to this goal; consequently imperfections, or rather, I should say, inconveniences, were soon experienced, and the last few years have been prolific in modifications to meet the requirements, more especially of those who work out of doors, the great drawback of the collodion process being want of portability in the apparatus and chemicals required. Various plans for preserving the sensitiveness of the plates were therefore devised to obviate this difficulty. The use of deliquescent salts, honey, glycerine, and oxymel were tried and with considerable success; but as they always retain a certain amount of moisture, and consequently are liable to the adherence of dust, they are superseded by various dry processes, in which the surface was protected by a coating of gelatine, metagelatine, dextrine, albumen, or other substances. The collodio-albumen process of M. Taupenot is, however, I think, the most worthy of attention, both for its keeping qualities and admirable results. The utility and convenience of dry processes is indisputable, but that they will ever be as sensitive at moist plates is not to be expected, inasmuch as moisture is essential to facilitate rapid chemical action. The waxed paper process of M. Le Gray has produced such beautiful results when applied to landscape photography, as to leave but little to be desired; it seems to stand in the same relation to the calotype as the process of M. Taupenot does to collodion. Such is a brief and imperfect sketch of the photographic art. For the sake of brevity I have omitted a reference to several topics that might interest you: the limits of one essay will not, however, admit of my doing full justice to so instructive a subject, and I will now attempt to describe its present influences. These, for the convenience of distinction, may be divided into three classes,—social, intellectual, and relative.

The social influences of photography may be best exemplified- I think, by glancing at the assembly that is now collected with, in his room, and by calling your attention to the number of similar societies established in most of the important British and continental towns: men of different stations of society, and of various degrees of mental culture, uniting with one common object in view—the advancement of that art so universally admired and practised throughout the civilized world. Nor do the advantages of such societies terminate with the mere attainment of the purpose for which they were instituted, but tend also to foster a more friendly feeling amongst their members, to remove the baneful spirit of jealousy, and prompt those who are professionally rivals generously to impart, for the benefit of all, such knowledge as experience has enabled them to acquire, and to depend alone for success upon their superior skill, application, and artistic taste. Neither must we forget the benefits that photography has conferred on society, by casting a cheering ray of influence into almost every family in the land, for now-a-days there are but few houses, from the cottage to the palace, that do not contain specimens of our art. Perhaps I may here be allowed a digression, to remark that I am not one of those who would indiscriminately decry the cheap portrait system, though it has its abuses; men must to some extent suit their prices to the locality in which they reside, and if all were to adhere to the charges that some think necessary to uphold the respectability of the profession, the poor man would be totally deprived of the gratification of seeing his humble dwelling adorned with the portraits of those who are dear to him; he possesses the ordinary pride, instincts, and feelings of humanity, sometimes even in a stronger degree than those who claim to be his superiors; these have a right to be respected, and price is to him a matter of vital importance. Therefore the photographer who places this gratification within his reach, confers a boon that meets his sincerest gratitude. From the peer to the peasant the hearts of thousands have been gladdened and consoled by the possession of portraits of those who are united to them by the ties of kindred, affection, or esteem. None, I believe, but those who have experienced it, can appreciate to the full the value of this blessing conferred upon society. The widow could tell you with what emotion she gazes day by day upon a semblance of the lost partner of her joys and sorrows—the mother with what rapture upon the reflected countenances of those loved ones who are scattered abroad engaged in the ordinary pursuits of life, and between whom lands and seas may intervene—the child at school upon the fond, indulgent countenances of his parents—the lover upon the image of the idol of his heart—the man of the world upon that of those who have won his friendship or esteem—and people generally upon the faces of the eminently good and excellent of the earth. All of you must have felt this influence in some degree; it will, therefore, be superfluous for me to dwell more fully upon it.

In an intellectual point of view the influence of photography has been such as to excite in the mind a love for all that is noble, grand, and beautiful in nature and art, and by leading us from effects to causes, to create a desire to become more intimately acquainted with those laws by which the governance of the universe is maintained, and which are ever seen to act with as undeviating perfection upon the smallest particles of matter as in the motions of the planetary world.

Every man, to be a really intelligent and successful photographer, must possess a good knowledge of the properties of the substances with which he works, and such an acquaintance with chemistry as will enable him to understand the decompositions that ensue in the processes that he employs, otherwise he will be continually groping in the dark, and dependent upon others for that aid which a more perfect knowledge would have enabled him to dispense with. Photography has excited a desire for this knowledge; books and teachers have not been wanting to communicate it, and many, I am happy to think, have availed themselves of the opportunities afforded for its acquisition. I would ask many who are present if they do not now possess such an acquaintance with the rudiments of chemistry, optics, and the properties of light, as they would never have attempted to acquire, had they not been stimulated by the practice of this delightful art. Has the eye not been educated to appreciate more fully the beautiful—the taste elevated and refined; and do they not (apart from the mere practice of photography) feel that they are wiser, and consequently happier men. Nor does the development of the intellect end here; photography has become a teacher to those who know nothing of it as a scientific art; aided by the stereoscope, it has made them more intimately acquainted with the scenery and inhabitants of distant lands than books or verbal description could ever have done. The world has been ransacked, as it were, to bring before us all that it contains that is worthy of admiration—the photographer with his camera has mounted the snowy Alps and trodden the torrid sands of Egypt, wandered through the peaceful vales of Switzerland and over the battle-field of Inkermann, sketched the crumbling palaces of the mighty Cæsars and the splendid structures of modern times, the statuary of Greece and Rome, the swarth Nubian and the fair inhabitant of Western Europe, the barren mountain and the verdant plain; and this, too, by the unerring pencil of nature, with a truthfulness that the most accomplished draughtsmen can never hope to rival. By this means may we now see more of the world in an hour, and at our own fireside, than months of toilsome travel would enable us to do.

The influence of photography as a teacher may be aptly exemplified by the interesting exhibition that may be daily seen at the Manchester Mechanics' Institution, where small photographs, illuminated by the oxyhydrogen light, are magnified to cover a screen thirty feet square. Description would fail to convey an adequate idea of the beauty of most of these, I may remark, however, that whilst some are inferior as photographs, yet capable of imparting a vast amount of instruction, others are of surpassing brilliancy, and show by the rapturous applause with which their appearance is greeted that they at once impress the mind with wonder and admiration, and that their merits are fully appreciated. Where so many are beautiful it will be difficult to make a selection; yet few, I think, can gaze without emotion upon that magnificent statue erected to the memory of the gifted and much lamented Malibran, who died so suddenly in this town some years ago; there is something that is absolutely angelic and ethereal in the aspect of the picture as it gradually fades from sight, whilst the organ gives utterance to the sweet plaintive melody that was sung by the accomplished vocalist but a few hours before her melancholy decease. Other specimens of statuary are but little inferior to this; the copy of a gigantic vase, and the interior of a cloister are also especially worthy of attention, and are perhaps the best photographs that are there exhibited. Firth's Egyptian pictures require no comment of mine, for whoever beholds them and listens to the clear and instructive description given by the clever and energetic secretary of the Institution, cannot quit the building without having received both gratification and a large amount of information. The value of this Exhibition would, I think, be much increased, however, by the addition of pictures of local interest, and I would suggest, that if any of our members are in possession of such, they cannot do better than send copies of them to the committee of the Institution, by whom, I have no doubt, they will be thankfully accepted.

Did time permit, I could show that photography is not destitute of a moral as well as a beneficial physical influence, by weaning men from pursuits that degrade and enervate, whilst it substitutes those which purify the mind and invigorate the system; but to avoid trespassing too much upon your patience, I will next treat of photography in relation to the industrial arts. Its influence in this respect has been most remarkable and beneficial; it has not only given new impulse to several old branches of industry, but called many new ones into existence. To be satisfied of this it will merely be necessary to direct your attention to the multitude of advertisements crowded on the covers of our journals and contained in the columns of our daily papers. Paper makers vie with each other to produce an article suitable for the uses of the photographer; chemists to supply the constantly increasing demand for the products of their art; grinders of lenses to furnish the most perfect instrument that modern science enables them to produce; workers in brass to give perfection to the movements of these; manufacturers of porcelain to provide us with baths, dippers, levelling stands, dishes, and various useful implements; makers of cameras, plate boxes, camera stands, stereoscopes, mats, preservers, cases, passepartouts, India rubber and gutta percha articles, colors, brushes varnishes, collodion, glass and metal plates, in fact the multitude that is daily laboring to supply our requirements, bears testimony to the benefits that photography has conferred upon the industrial arts. In the future of photography there is such a scope for the imagination to revel in, that unless it be restrained by the curb of reason, we shall be led into the most extravagant exaggeration. Beautiful as the present productions are, and faithful representations as they are of nature, still there is much to be acquired, and the mind will not rest satisfied till greater things are accomplished, or lengthened experience has shown that it is impossible to imitate her more closely. The great end to be attained is a fac-simile of nature's magnificent colors, the finest copy will ever be inferior to the original so long as we cannot imitate her in this. To say it is impossible is an assertion as rash as it would be unreasonable, for there is no more improbability of this than there was twenty years ago of our being able to obtain the results we daily behold; besides, there are now and then faint glimpses flickering as it were over the plate, sufficient to inspire us with hope for the future. Several have obtained a decided color in foliage, others the bright red reflections of brick buildings, and the true coloring in light and shade of stone colored edifices. On the Daguerreotype plate bright impressions of the solar spectrum have been obtained, as well as very close copies of highly colored drawings; but the latter have unfortunately been as evanescent as they were beautiful. You will be aware, too, that a Mr. Hill, of New York, was said some years ago to be in possession of fifty pictures obtained by him in all the beauty of nature's coloration; the process employed by him was to have been disclosed when more completely perfected, as this has never been done, we may reasonably question the truth of the statement; besides, without wishing to cast any aspersion on the character of individuals, the intelligence comes from a very questionable quarter, as the *long bow* is a weapon that is apt to be drawn to the fullest extent by our brethren across the Atlantic. The pictures were said to be obtained on iodized silver plates by the application of a new chemical preparation. Unsatisfactory as these results appear, I still most confidently expect that the ardent wishes of the most enthusiastic photographer will ultimately be crowned with success. I do not, however, believe that it will be accomplished by the deductions of reason, but rather by some happy accident; men often stumble on the most brilliant discoveries, and so, I believe, it will be in this case. To assume also that we have attained the highest degree of sensitiveness in our preparations is, I think, equally unwarrantable, and if not, what may we not expect from the future of photography. The difficulty experienced in photographing the moon consists in the necessity of moving the sensitized plate in a corresponding degree with the motion of the earth, so as to keep the object constantly in the field of the camera; but if a sufficiently increased sensitiveness be obtained, this will be rendered unnecessary, and the planetary bodies be photographed as perfectly as objects in a state of rest. What interesting historical pictures, too, might be obtained of the most important events that take place, and illustrative of the manners and customs of a country, coronation, marriage, and funeral processions, riots and revellings, in fact of assemblies collected for any important object. Some of you may smile with incredulity at this, and attribute the idea to the warmth of enthusiasm; but have not similar effects been shown by Mr. Fox Talbot, in his celebrated experiment at the Royal Institution, when he caused a piece of printed paper to be attached to a rapidly revolving disc, and copied it with such accuracy by the light of a strong electric spark, that the letters were perfectly legible. The brilliancy of the light in this case no doubt compensated for the want of sensitiveness of the film, still I do not see any reason to question the possibility of copying bodies when in rapid motion by ordinary light, if we can but sufficiently increase the sensitiveness of the surface employed. Imagine, if you can, the interest attached to an accurate picture of a crowd of persons agitated by a variety of passions and feelings, and this, too, probably rendered as endurable as the substance upon which it is taken, for burnt in photography promises much for the future, not only as contributing to the ornamentation of various articles of taste and utility, but also as enabling us to procure permanent records of interesting and important historical events. The purposes to which this branch of the art is applicable is legion; our fictile ware will, I doubt not, be ornamented with faithful transcripts of nature, instead of the montrosities that too often disfigure it. The time-hallowed willow pattern will have to give place to more elegant designs, and as noblemen have their crests engraved upon their plate, so may they also have their dinner and tea services adorned with views of their residences and the surrounding landscapes, and hall-lamps, glass shades, staircase windows, and other objects for which transparent media are used will, I doubt not, ere long be ornamented by this art.

Photo-lithography and photo-galvanography lead us to expect that the future will be prolific in illustrated literature; how greatly then will the interest in our perusal of the books on Travel, Natural History, and other subjects be increased, when we feel assured that they contain true representations of the objects described, instead of being, as they too often are, dependent upon the imagination of the artist. Suppose, for instance, that in reading of some of the wonderful monuments of antiquity, how much the interest will be enhanced when you feel certain that you see it as it is; that the picture even shows you the mosses and tufts of grass as they cling to the hoary ruin, and that every crevice, leaf, and lichen, is depicted with the greatest fidelity. I believe, too, that the long neglected Daguerreotype will be reinstated in general estimation; for, as I before stated, I do not think that any of the more recently discovered processes can compare with it for microscopical accuracy of detail and delicacy of shadowing: it has some defects, but these, I think, will be overcome, and by it alone, I think, we can ever hope to obtain nature's reflection of herself in all her gorgeous beauty of coloring. Nor is it improbable that the silver salts will, to a considerable extent, be superseded by others that are cheaper and likely to give more permanent pictures; for we find that those of iron, copper, nickel, and other metals are already used with considerable success, especially the chromates, these will, in all probability, completely revolutionize the photographic art. I might also allude to the further application of photography to criminal detection, the recognition of dead bodies, and other practical purposes; but this essay has already extended to such an unusual length that I will sot trespass further upon your indulgence.

It only remains for me now to give you a general summary of this paper, which I trust will not prove unprofitable, but repay you in some degree for the patience with which you have listened to it, for which I most cordially thank you.

The historical part of my subject is necessarily brief and imperfect, but sufficient, I trust, to show the rapid progress of the art, and to convince us that it has not yet attained the high standard of excellence that it will eventually reach; for where so many active minds are engaged in one interesting pursuit, it is not possible for it to remain stationary, but must continue to advance, and, ultimately, fulfil our most sanguine expectations. I have endeavored to show you its influence in a social, intellectual, and relative point of view; that it unites men into societies for mutual edification—tightens the bonds of love, friendship, and esteem—elevates man morally and intellectually—awakens in him an admiration for all that is noble, grand, and beautiful, in nature and art—prompts him to become acquainted with the laws established by his Creator for the governance of the universe—weans him from pursuits that would degrade and enervate, whilst it inclines him to those which improve his mind and invigorate his physical constitution—it stimulates industry, inculcates patience and perseverance, and, I doubt not, tends to make us better men, and more intelligent members of society.

At the conclusion of the above an animated discussion ensued on several of the arguments advanced by the essayist, and an unusually protracted meeting terminated by votes of thanks being passed to Mr. Hepworth and the Chairman.

A conversational meeting will be held on the second Thursday in February.

OUR PHOTOGRAPHIC ILLUSTRATIONS.

I.—MRS. GLADSTANE; of Boston. II.—J. B. HOWE; as Richard III.

Negatives by J. B. Heywood of Boston.

These two pictures by Mr. Heywood are characteristic, and worthy specimens of the Photographic Art. They are printed on plain American paper, and are, therefore, not so good as they otherwise should have been. Our object in printing them thus, was to test the texture and sizing of the paper, in order to correct the imperfections in the next lot we are to have made. Consequently we experienced a great deal of trouble from spotting, inequalities in the sizing, &c.; besides the difficulty of toning clear. We have also had considerable trouble with our nitrating solution, for want of pure nitrate of silver.

[Since this paragraph was put in type we have succeeded in overcoming our greatest difficulty—spotting and want of cleanness—and our American paper works now as well as any paper we ever used. The means will be given in our next.]

Most of our readers are, probably, better acquainted with the personal histories of the lady and gentleman, whose portraits are here given, than we are ourselves; our knowledge of them extending no further than seeing their names on theatrical bills; but as their reputations are widely known, the pictures will prove interesting.

These pictures were printed by the following formulas:

SALTING.

Filtered water	1 gal.
Chloride ammonium	180 grs.

The silver solution as heretofore,

TONING AND FIXING SOLUTION.

Water	½ gal.
Acetate of lead	900 grs.
Salt	720 "
Chlo. Silver	720 "
Acetic acid, No. 8	2 ozs.
Hypo. Soda to saturation.	

If a decided black is always desired from this bath, acetate of lead and acetic acid must be occasionally added in small quantities. This should be done when the bath fails to give a purplish black color in fifteen or twenty minutes. If the solution becomes milky, clear it up by the addition of hypo. soda.

From the London Art Journal.

COLLODION AND PHOTOGRAPHY.

BY ROBERT HUNT.

Photography was, but a few years since, regarded as one of the wonders of science—it is now numbered amongst the common things of the day. Herschel, Talbot, and one or two other men, *were* the only persons engaged in examining the striking phenomena of chemical change under solar influence, and the results of their studies *were* handed about as examples of a strange natural magic. Daguerre, the French dioramic painter, who has given his name to the photographic process, which he discovered, *then* required a period of twenty minutes to obtain a picture on his metal plate, and he *then* wrote to the writer of this article, stating his belief that he had discovered a process by which portraits from the life could be taken in from two to three minutes. *Now*, there *are* thousands at work, and their productions *are* in every person's hands. At the corner of every street we are beset by *touters*, proclaiming the merits of their respective works, and they parody the human face "at any price you please." From the twenty minutes of Daguerre, we have advanced in the chemistry of this art so rapidly that as many seconds are all that are now required, under ordinary circumstances, to produce a far better result than any which he obtained. In skillful hands, and with careful manipulation, such a degree of sensibility can be secured that less than a second of time will fully impress the prepared tablet with any set of images, full of the minutest detail. It is instructive to contemtemplate what photography has done and is doing.

From all parts of the world we receive sun-pictures of celebrated scenes. The pyramids of Egypt, and the tombs of her kings and priests, with every hieroglyphic, so faithfully printed that Mr. Birch can read their story with as much ease as a schoolboy reads our ordinary letter-press, are now in every photographic portfolio. Assyria and Babylon, and the sites of old civilisations, are brought home to us in strange fidelity. The sands which have worn the porphyries of which the enduring monuments of those ancient powers were constructed, can be counted at the base of a statue, and the marks of the fine attrition are preserved upon the stone in the sun-picture. The vegetation of any and every clime, in all its native beauty and wildness, can now be copied, and the botanist can study in his closet the flora of far-off lands. The peculiar characteristics of the human race, whenever one of the great family is found, can now be secured and preserved for the benefit of the untravelled ethnologist. Beyond this, the proverbially restless ocean, is now made to leave upon our photographic plates true delineations of its passing waves, and impressions of its breaking billows. The fleeting cloud, whether in sunshine or in storm, now leaves its ever-varying image on the sensitive tablet. The moon—"pale mistress of the night"—is compelled by her "mild light" to print her own image; and the "god of day" is to be made to register, for our instruction, those strange disturbances, manifested to us as black spots, which are ever, with strange regularity, taking place in the atmosphere by which the great centre of our system is enveloped. In our observatories, too, we press photography to our aid. The varying pressure of the air is registered by it;—the constant changes of temperature are recorded by it;—and those mysterious alterations which are ever occurring in the magnetism of the earth are noted with rare accuracy by its means. Man must have repose, and there are limits within which the range of human—even the most trained—observation are confined: consequently the most skilled observer could only register results at certain fixed periods, and many variations are too small to be noted by the human eye, or marked by mortal hand:—the camera-obscura, aided by the light of a common gas-burner, is placed for ever before the instrument, and each movement for every second of the twenty-four hours is marked for the study of the philosopher!

All this arises from the careful study which, a few years since, was made of the chemistry of the art, but which we fear is too slightly thought of at present. In all our photographic processes there has been much refinement in the manipulative details, and whether we regard the calotype, the albumen process, the wax paper, or the collodion, we cannot but be struck with the degree of certainty with which, in skilled hands, a high degree of perfection is secured. To nothing, however, has the wide extension of photography been due, so thoroughly as to that curious chemical preparation to which the name of COLLODION has been given; and it is our purpose to devote a short space to the consideration of the physical peculiarities of this compound, and especially to direct attention to some improvements, by which it would appear that the prepared collodion plates can be kept in a state of high sensibility for a considerable time.

Gun-cotton dissolved in ether is called Collodion, because of its adhesive properties. If cotton-fibre or paper, which, being prepared from some vegetable fibre, is in fact chemically the same material, be examined as to their properties, we shall find that they will not dissolve in water, in alcohol, or ether, but we shall discover that if placed in nitric acid (*aqua fortis*) they change character, and are gradually dissolved. A careful investigation of what takes place instructs us in the fact that the cotton or paper (chemically *lignine*) has received some oxygen from the acid, and then it has become soluble in that fluid. If sulphuric acid be added to the nitric acid in certain proportions, the latter acid will no longer dissolve the *lignine*. If we examine the cotton or the paper treated with those mixed acids, we shall perceive that there has been a contraction of volume, but beyond this no visible change. Upon removing either of those substances from the mixed acids, we shall discover that they have respectively increased in weight by nearly one half, and they are now soluble in ether and alcohol. Beyond this, whereas the cotton or paper burnt but slowly in the first place, it exploded with violence when brought in contact with flame after it has been treated with the acids. We have here a very remarkable change in the properties of a body without its having undergone any visible change of form. It was cotton to the eye, but there are striking physical differences between the two substances.

Schonbein, of Balse, the discoverer of this preparation, announced the fact at the meeting of the British Association at Southampton, and it was then thought that it possessed properties which rendered it in many respects superior to gunpowder as a projectile. Trials were made with it as a destructive agent, and great were the advantages to be derived, *apparently*, from its use. Additional experience proved, however, that there were many objections to the employment of gun-cotton in war, and the great danger which attended its manufacture in large quantities has in this country led to its abandonment for this purpose. In Austria, however, experiments are still being carried on in the hope of employing gun-cotton for artillery.

Cotton thus changed in its character has been called *pyroxyline*. An analogous substance has been called *xyloidine*. Gun-cotton, or *pyroxyline*, appears to be a direct combination of anhydrous *lignine* with nitric acid. Hydrogen and oxygen, which exist in the equivalents necessary for the formation of water, exist in the *lignine*, and, by the acid treatment which we have described, two atoms of these elements are replaced by two atoms of nitric acid. *Lignine* is composed of—

Carbon,
Hydrogen,
Oxygen.

This is treated with nitric acid $\left\{ \begin{matrix} \text{oxygen} \\ \text{nitrogen} \end{matrix} \right\}$, and the result is *pyroxyline*, having the following composition—

Carbon,
Hydrogen,
Oxygen,
Peroxide of nitrogen.

There are three or more varieties of *pyroxyline*, dependent upon small differences in the mode of manufacture which has been adopted. Some of these are not so well fitted for photographic purposes as others. The gun-cotton best fitted for the manufacture of collodion is not very explosive, but it dissolves freely and entirely in a mixture of ether and alcohol. It is not our purpose to describe the processes of making collodion further than we have already indicated them. We will suppose the amateur is either familiar with the best process for making it, or that he depends upon some skillful chemist for his supply.

This *collodion* is to be impregnated with a salt of iodine (usually the iodide of potassium); this is effected by dissolving the salt in alcohol, and mixing the alcoholic solution with the collodion. In this state it is known as iodized collodion. When poured upon a plate of glass, and uniformly diffused over its surface, the ether, evaporating, leaves a very delicate film, which is the surface on which the future picture is to be formed. When the film is set, the plate is placed in a bath of nitrate of silver, and the iodine, combining with the silver, forms *in the film* iodide of silver. This iodide of silver, in contact, probably in combination, with the complex compound constituting the film, is rendered exceedingly liable to change under the influence of the chemical rays of the sun.

The collodion has been frequently stated to be used merely "to support a delicate film of iodide of silver upon the surface of a smooth glass plate. This is but taking a very narrow view of the important part played by the collodion. In no other body with which we are acquainted have we the same important set of elements—carbon, hydrogen, oxygen, and nitrogen, so combined as to be constantly in what Sir John Herschel calls "a state of unstable equilibrium." By Heat, by Light, by Electricity, the balance of affinities is readily disturbed, and decomposition ensues. The sensibility of the collodion process depends upon this "unstable equilibrium," which renders the photographic compound one which is instantly overturned by the actinic power of the sun-ray; and the decomposition of the collodion is at once communicated to the metallic salt (iodide of silver) in combination with it. Iodide of silver, spread in the most delicate film on dry collodion, is no more sensitive than other preparations. The collodion process, on account of this wondrous instability, which renders it so easy of manipulation at home, is a source of constant trouble to the traveller. The plates have been usually presented to the object while still moist, consequently a tent, or cumbrous contrivance about the camera-obscura in lieu of a tent, has to be employed out of doors. The operator has to prepare his plates in the field, and to carry from place to place his collodion and his silver bath, and indeed all his stock of chemicals. This has greatly retarded the use of collodion by the traveller; and it is quite certain that, although very fine photographs may be obtained by some of the paper processes, there is not one of them which ensures such perfection of detail as the collodion process. The attention of photographers has been turned to the preparation of collodion plates which would keep; and many of the modes adopted, especially by Mr. Llewellyn, with his oxymel process, by Mr. Shadbolt, with his glycerine, by Messrs. Crooks and Spiller, with their deliquescent salts, and by some others, have been successful. One process, however, appears to commend itself beyond others, and to that, a process devised and published by Mr. Charles A. Long, we desire to direct attention. Mr. Long has published all the details of his process in a little book, to which we refer our readers, intending only to deal with the preservative solution, which appears applicable to the collodion film under a great variety of conditions. In the first place we will give the mode of preparing this preservative solution:—

Some care is required in the preparation of this solution, in order that it may be clear and bright when finished, and not contain particles that would be deposited in its passage over the collodion film when being used. The chief precaution to be observed, is *not to allow it to boil too rapidly, and not to conduct the operation over too fierce a fire;* attention to this will prevent many failures, and ensure a solution in every way suited for the process. Take 200 grains of the best transparent gelatine, cut it into small shreds, and throw it into a pipkin in which has been previously placed 10 ounces of distilled water; set this on a slow fire, or over a lamp, until the gelatine is completely melted; then weigh out 100 grains of pure citric acid, and dissolve it in 2 ounces of distilled water; adds this to the solution of gelatine, stirring it during the addition with a glass rod. The solution in the pipkin is now to be gently boiled until half of it has evaporated; this should be in about 15 minutes: remove it from the fire, and add sufficient distilled water to make up the bulk of liquid to 12 ounces. When quite cold, the liquid in the pipkin is to be filtered through two thicknesses of pure white blotting paper into a bottle perfectly dry and clean. We now add to every 12 ounces of filtered preservative solution 1 ounce of alcohol, of the specific gravity of ·840. The solution thus prepared is ready for use, and should be of a pale amber color, without any signs of insoluble particles floating in it; should any appear after it has been prepared for some days, a second filtration will remove them, and render the liquid again bright and clear."

The collodion plate being prepared, the preservative solution is applied in the following manner:—

"Taking the plate in the left hand by means of the pneumatic holder, incline it slightly; then having poured into a perfectly clean measure rather more of the preservative solution than is necessary to cover the plate twice,* pour half of it along the upper edge in such a manner that a wave of the solution may flow uniformly from one end of the plate to the other; allow this to flow off into the waste pan or sink, and then bring the plate to the horizontal position, and pour on the remainder of the preservative solution, four times at least, allowing it to flow back into the measure from each corner in succession, in order that the whole plate may be brought uniformly under its influence. The plate is to be then placed on a piece of clean blotting-paper, and its back wiped with a fragment of blotting or *papier Joseph*, in order to remove any of the preservative solution that may have run from the surface to the underside in the previous operation. The plate thus preserved is to be reared on a piece of blotting paper, with its face against the wall, until dry, and is then to be stowed away in a plate-box, perfectly light-tight, to await the exposure in the camera-obscura."

It will be evident that the great point which has been secured is the preservation of the collodion film from the influences to which the disturbance of its instability are liable. It is defended by an air-tight coat of gelatine; and we can state from our own experience, that plates thus prepared have been kept a fortnight without losing any of their sensibility. A set of plates were prepared by Mr. Charles Long for a gentleman who took them with him to Belgium. He, without any trouble, impressed them with a set of views, replaced the plates in his dark package, and on his return to this country the pictures on them were developed—and most perfect representations of nature they were.

It will be understood, that the sensitive plate fully retains that degree of sensibility which it has when first the preserva-

* A plate, 9 inches by 7, takes about 1 ounce of solution.

Photolith. of J.A. Cutting & L.H. Bradford.

L. H. Bradford

LITHOGRAPHER 221, Washington ST. BOSTON

tive solution is applied. The sensibility is slightly lowered by its application, but for a month the plate is said to suffer no further loss of power; the surface is so hard that any number of plates can be packed together in one parcel. They can be taken out—*in the dark of course*—one by one as required, placed in the camera-obscura, and impressed with the lenticular image, again removed from the camera, and placed—*in the dark*—in the package, until a favorable opportunity occurs for developing the dormant picture. If the result of enlarged practice confirms the results of our own experiments, this process of Mr. Charles Long must prove a valuable addition to photography.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The monthly meeting of this Society was held on the 3rd instant, in the rooms of the Philosophical Society, George-street. Mr. Alfred Nield in the chair.

Mr. Sidebotham read the following paper contributed by Mr. Jas. Mudd, on

"THE ARTISTIC ARRANGEMENT OF PHOTOGRAPHIC LANDSCAPES."

Landscape photography! How pleasantly the words fall upon the ear of the enthusiastic photographer. What agreeable associations are connected with our excursions in the country. How often have we wandered along the rough sea-shore, or climbed the breezy hill-side, or descended into the shady valley, or toiled along the rocky bed of some mountain stream, forgetting, in the excitement of our pursuit, the burdens we carried, or the roughness of the path we trod. What delightful hours have we passed in wandering through the quiet ruins of some venerable abbey, impressing, with wondrous truth, upon the delicate tablets we carried, the marvellous beauty of Gothic window, of broken column, and ivy-wreathed arch. How pleasant our visits to moss-green old churches, and picturesque cottages, and stately castles, and a thousand pretty nooks, in the shady wood, by the river side, or in the hedge-rows, where the twining wild convolvulus, the bramble, and luxuriant fern have arrested us in our wanderings.

We may have had little mishaps; some disappointments. Our ingenuity may have been exercised to find a substitute for a broken ground-glass, or the ring of a lost tripod stand. The rustic population in bye places may possibly have misunderstood our vocation. Our mission not being clear to them, they have probably taken us for railway surveyors, electric telegraph people, sappers and miners, or, lower still, for ratcatchers, bird fanciers, or itinerant showmen. The writer of this paper has stood in the street of a small village in Yorkshire, at the side of his camera, surrounded by a numerous circle of wondering rustics, while offers of a pecuniary nature were freely made, by the small capitalists of the party, to secure a "look" at the peep-show. And, indeed, our conduct on some occasions may have very reasonably excited a suspicion, that we were even worse characters than those already referred to. As, for instance, when prowling about some farm-yard, we have seized upon a stray wheelbarrow, hayfork, or milk can, to introduce into the foreground of our picture; the bewildered owner of the property, appearing suddenly at his threshold, and seeing his goods and chattels walked off before his eyes, might very rationally doubt the safety of his hen-roost, and entertain the thought of letting loose the dog upon us. We have often appeased the worthy man's fears, however, and have entertained him with a view, on the ground glass of his house, and yard, and wheelbarrows, and wife—all wrong side up, the latter, to his amazement, walking comfortably about the premises on her head! After showing him the inside of the empty camera, without wheels, or clockwork of any description, (of which he was sure it was full,) and attempting a short description of the process, with the hardest possible words, he has walked away muddled and dead beaten; and, I have no doubt, while pondering over a soothing pipe, has felt that there are more things in heaven and earth, than are dreamt of in *his* philosophy. After this, we could always do what we liked with the wheelbarrows.

And thus, good humoredly bearing our breakages, or losses, or misunderstandings with the agricultural mind, we have made our way, and, on arriving at our resting-place for the night, have spent pleasant evenings in laughing at our adventures, and in the very interesting labor of developing the pictures we have taken during the day. And over that same development, how delightfully anxious—how timidly hopeful—how busy and fluttering and interested we have been!

You will perceive I have been assuming that the process employed is a dry one, for I can scarcely imagine the same amount of pleasure in connection with the laborious duties of a tent. The constant occupation of time in preparing, exposing, and completing the plate on the spot, leaves but little leisure for enjoying the beauties of the scene around, while the demand upon the physical powers is something considerable. I have known photographers who remember, with no very pleasant sensations, their voluntary incarceration in the portable tent, or, what may not inappropriately be called (remembering its Indian temperature sometimes), the photographic, black hole."

Now, although our excursions, as I have said, are often very pleasant, we do not always return with really good pictures. I need not remind you of the many causes of failure. They are indeed too numerous to mention. It is often the case, however, that we get good photographs free from streak, or stain, fog, or blister—perfect specimens of some photographic process, but still they are not *pictures*. There are grave errors in the arrangement of the subject, or in the subject itself. The object of the present paper is to recommend attention to the selection of subjects, and to mention a few rules which are of use to the painter, and which may possibly be of some little benefit to photographers also.

In the early days of photography the most commonplace objects satisfied us. The ardent experimenter of that period looked with pride and wonder at the picture of a stack of grim chimneys, taken, perhaps, from his little laboratory window, or his surprising view of a dead brick wall and water tubs. He could count every brick; *that* was the marvel. But the novelty of this soon wore off, and something more was desired, namely, *beauty in the object itself*. So the photographer went to nature, and the hills and fields, and streams became fitting subjects for his art.

Now, although nature may be said to be always beautiful, yet are there certain groupings of objects in relation to each other, certain agreeable outlines and combinations of forms, which, however difficult to explain in words, are seen at once, and recognised as picturesque, and it is to the selection of these points of interest the artist photographer would do well to attend. Great advances have been made in the artistic qualities of photographs, yet by far too many show a lamentable deficiency in this respect. Our delightful pursuit will have taken up a new and improved position in relation to art when more attention is given to the subject. Artists admire portions of our pictures, as a foreground, a rock, or tree, but justly complain of a want of completeness as a whole.

Of course, the photographer has not the same command of arrangement as the painter. While the latter is but little dependent on the arrangements of external nature, and is left to himself to determine the order in which objects shall be associated, the former, after all, must take the view as it really stands before him. He has merely the power of selecting the best combination of objects from the most favorable points of view. It would be useless, therefore, where our power is so limited, to mention all the rules laid down for painters, but there are some which, I think, will enable us to determine which *is* the best view, and *why* it is. At any rate, we shall be none the worse for carrying this knowledge with us, and making use of it when circumstances allow us to do so. I will now refer to one or two rules for composition.

But, first, let me recommend you, on arriving at the locality you are about to photograph, to take a careful survey of the spot. The photographer who plants his camera at the first pleasing object he meets with, frequently finds a much finer view of the same thing afterwards. Take, then, a liesurely walk round before you decide, dropping a stick or a stone on the grass to mark the points of view you like best. In making your selection, perhaps the following rules may serve as a guide:—

Avoid getting the principal or leading features of a picture perpendicularly over, or horizontally level with each other. This is an important rule. J. D. Harding, in his work on Composition, says, "The flat surface upon which a picture is painted, and on which the painter has to invest the ideas of space, is not among the least of the difficulties with which he has to contend. The four lines at right angles with each other, which form the usual boundaries of a picture, present another obstacle to the painter, in consequence of the artificial limits thus assigned to his view; for it is as well known to all the world, as to himself, that natural views have no such artificial boundaries. These may appear at first self-evident and unimportant facts; but it will be seen that they lie at the root of many of the difficulties with which the painter has to contend in the composition of his subject. In the composition the painter makes his first effort to convey the idea of the separation of the various objects, and to overcome the difficulties I have pointed out as connected with the flat surface on which he paints. To effect this none of the leading features of the picture should be perpendicularly over, or horizontally level with each other; because if they be so placed, they either repeat actually, or by suggestion, the horizontal or perpendicular lines which artificially limit his picture, and which require to be concealed as much as possible from observation."

These remarks apply equally well to photography as to painting, for the latter has the same difficulties to contend with as the former, namely, the flat surface upon which his picture is taken, and its artificial boundaries. In the case of stereoscopic pictures, where the effect of space is produced in another way, the difficulties are not so great or the defects of composition so glaring; for, however confused they appear when the pictures are seen separately, the various objects become disentangled, and fall into their relative positions when placed in the stereoscope. Where, however, there is no assistance of this kind, as in the case of larger single pictures, you must rely upon the arrangement to prevent confusion of objects, and to give effect of space. And it has been found, from investigation of impressions made by art (not from a study or imitation of nature, for all pictures are equally true imitations of nature), that such result is gained, in some degree, by attention to the rule I have just mentioned. That, by a certain arrangement and separation of the parts of a picture, the effect of space is produced; while by placing objects immediately under or over each other, or on the same level, the contrary result of flatness is the consequence.

It sometimes happens that the photographer finds it impossible to select his view free from disagreeable lines parallel to the bottom of the picture. In a case of this sort, a deal may be done to conceal them from the eye, in various ways. Here is a photograph of a very picturesque cottage, with the ground line and the line of the roof nearly parallel with the bottom of the picture. This defect has been considerably lessened, by rearing against the low walls of the cottage, some rough planks and logs of timber, which were lying about at the time the view was taken, and which serve admirably to attract the eye away from the horizontal lines, besides adding considerably to the interest of the picture. There is, frequently, some stray timber or branch of tree you may make very useful for this purpose, or for objects in the foreground. You may, also, if such means are not at hand, take the cap off your lens, and rush into the picture yourself, taking care, however, that you are not made a ghost of by the still unbroken line showing through your body.

Endeavor to occupy every portion of your picture by some object of interest or pictorial value. It often happens in pictures, especially in photographs, that strips from the top to the bottom, or across, may be cut away without removing one feature of interest in it. The plainness of the skies, one of the greatest defects in a photographic landscape, must be as far as possible concealed, by breaking up the space with trees or other objects. Pity it is that we are driven to such a course, but we have not yet arrived at the knowledge which will enable us to combine the beauties of earth and sky. How beautiful would fine landscapes be with the clouds and skies of Le Gray! Let the foreground of your picture have much of your care and attention. The exquisite detail of rock and bramble, tall reedy grass and fern, or the gnarled roots or trunks of trees, which serve for excellent foregrounds, are also amongst the most interesting and beautiful objects in a photograph. By thus getting near objects at the base of the picture, you give distance to those beyond. We have all seen pictures very deficient in this respect. Here is one of the kind, with an unbroken solitude of field at the bottom; and above, a mass of white paper, which represents the sky. By removing both portions you have still all that is valuable left behind.

But, while making these remarks, I would just observe, that it is impossible to crowd too much into a picture, so as to have, indeed, three or four pictures in one. In such cases the eye wanders from point to point, vainly endeavoring to decide which is the principal subject. There is no repose or order where so many objects are dividing the attention, and thrusting themselves forward as principals. Let there then be one leading object, around which the rest are grouped as accessories.

Let the principal feature of interest, whether it be a castle, or cottage, or group of rocks, whatever gives name to, or is to claim the chief attention in the picture, be placed in the most conspicuous position, which is near the centre of the picture. I do not mean the point where lines drawn from the opposite corners would intersect each other, but any point equally distant from the sides, though unequally from top to bottom.

But in thus placing it, take care that the objects on either side are varied, and do not resemble each other in size, or form, or weight of masses. For example: A building in the centre of your picture, and a tree on either side, equal in size and appearance, would, you can easily imagine, produce a picture very faulty indeed in arrangement. When the subject is a single object, as a tree, it should be placed near the side.

With respect to the subject of light and shade,—I may say, I think, with safety,—avoid broad unbroken masses of shade. Every photographer knows that the shady side of nature is her least attractive side. Amongst your collection of failures, I fancy we can find a more formidable array of ghostly forms, and half-developed images, arising out of the gloom of shady places, than Mrs. Crowe ever dreamed of in that very sepulchral work of hers—the "Night Side of Nature." But while avoiding much shade, we must not fall into the other extreme. A picture with the light full in front is usually flat, and wanting in the agreeable variety and relief which shadows thrown from projecting objects give when the light comes in at the side of the picture. A side light is therefore preferable.

Never let the horizon of a picture be half the height of the drawing; but above, or below, as the subject requires.

In taking a view of an avenue of trees, a street scene, or long perspective of arches, do not let the distant opening be exactly in the centre of the picture, but more at one side, and nearer the base of your picture than the top.

A word or two on the introduction of figures. How rarely do we find in photographic landscapes a nice arrangement of suitable figures. Why are they always looking full at you? Why do they always seem to have so little to do with the picture—to be *in* it but not *of* it—standing uncomfortably erect, with their faces to the spectator? No doubt it arises from the curious fact that people invariably look straight at the camera when invited to stand in a picture, and photographers usually, either for want of time or taste, allow them to arrange themselves in that manner. Let us take a lesson from the painter, who generally finds his figures something to do in the scene he paints. Remembering the rule I have mentioned, be careful not to place them immediately under any leading object of the picture. Let the "right man" be in the "right place," and all figures be appropriate to the scene. An old man, or child in a churchyard—a fisherman on the banks of a stream—a group of rustic children in a village—a farm laborer among his stacks of hay or corn—these are all suitable to the character of the pictures, and in harmony with them. To introduce into such scenes, a fine dapper gentleman in glossy hat and kid gloves, or a lady, whose small circle of parasol above sets off the mighty circumference of crinoline beneath, would be absurdly out of place. And yet we see such mistakes every day. It may be difficult to meet with suitable figures, but that is no reason why unsuitable ones should be introduced: the pictures would be better without figures at all.

Besides the rules I have mentioned in this paper, there are some others laid down for painters, but they are so very remotely applicable to photography, that I have not thought it necessary to refer to them, but have merely recommended those I thought most available. If what has been said should induce you to seek further on the subject, or to pay increased attention to the arrangement of your pictures, the object of this paper, and of my wishes, will have been gained.

There are two things that photography must do for us; it must increase our love for nature, and our admiration for nature's imitators, the painters.

We cannot go forth into picturesque districts in search of subjects for our pictures without improving our taste, and increasing our love for nature. We cannot possess so many charming copies of those beauties, as our portfolios contain, without becoming more intimately familiar with all the beautiful details and exquisite finish of nature's handiwork.

And while we admire these beauties, we are, I think, capable of appreciating better the work of the landscape painter. We see how earnestly and patiently he has studied, and with what truth he has rendered on his canvas the very forms we have become so familiar with: the ripple on the stream, the markings in rock and stone, and trees, and crumbling wall, and (what is beyond our art), the thousand hues and tints of earth and sky.

There is one thing I should like to say before I conclude, I hope, as there will be no Art Treasures Exhibition to claim our time this season, we shall attempt something in landscapes of an important size. I should strongly recommend you to emancipate yourselves from the custom of only taking pictures for the stereoscope. In my humble opinion a good nine by seven landscape is a more valuable work than twenty stereoscopic ones. The latter have engaged our attention almost exclusively for a season or two; and I fear there is a danger of our becoming a society of very small operators indeed. I do think, gentlemen, judging from my own sensations, that you would derive more gratification in the production of larger pictures.

I have referred to the Art Treasures Exhibition. I refer to it again, in conclusion, hoping that we all profited by our delightful acquaintance with the great works of the painters exhibited there; and I trust by studying the rules which have been their guide, and by understanding the principles of art, we shall become the greater admirers, and the more successful practisers of landscape photography.

The above paper was illustrated with a number of diagrams, which made the subject very interesting.

The Secretary, Mr. Cottam, then read a communication he had received from Mr. Noton, relative to an experimental revolver he had made, furnished with different shaped stops, and applied in front of a plano-convex lens for views—diameter two and a quarter inches, focus about eight and a half. The revolver will carry a stop of any shape, (two inches from the lens,) but so far only four shapes have been used, namely, a rectangular one, 1·2 inches long by ·007 inches wide; a triangular one, 1·2 inches long, ·2 inches at the base and ·003 inches at the point; also a round one, ·5 inches by ·5 concentric.

The object has been to ascertain whether or not the shape of the stop had any effect upon the picture, (not the exterior of the field). It is rather difficult to explain the various appearances of disturbance, distortion, &c., produced by the various shapes, but their character certainly alters, as one or the other are used.

One experiment, with the rectangular stop, may be mentioned for illustration. The camera was set up on its legs in a room, and pointed to look through the window into the street, and focussed for an intermediate wall there, a five-eighths round stop being in front of the lens; this stop was then removed, and the rectangular one substituted for it. Upon revolving this, all the objects out of focus were at once set in distorted motion—the disturbance was most in the bars of the window, those being the nearest; the wall in focus was apparently unaffected, and a slight motion in objects at a considerable distance could be perceived. When the slit was set at an angle of about 45°, all the window bars were out of focus, as they were with the five-eighths round stop, (the light being of course less, as the area of the rectangle was only about one-fourth of the circle,) when the slit was vertical or horizontal, the vertical or horizontal bars were corresponding in focus, as were the lines in the objects at the greatest distance.

The conclusions drawn from the experiments made, are, that a stop should be shaped to suit special cases; a scaffold pole, or a tree, out of focus, which cannot be got rid of, may be very much sharpened by a vertical stop of a proper shape.

From the Liverpool Photographic Journal

MR. SUTTON'S DEVELOPING PROCESS.

The problem of printing on plain paper has occupied much of Mr. Sutton's attention for some years. As a matter of taste, he extremely dislikes prints on albuminized paper, and no doubt there are many who probably entertain the same feelings, and it is for them the present article is especially intended. Those who prefer that peculiar kind of vigor and brilliancy which is exhibited by a piece of black sticking plaster, or a well-polished Wellington boot, to the depth and vigor of the blacks of a fine engraving on plate-paper, need not concern themselves with this process; for the best results which it appears capable of yielding do not surpass, in point of vigor, the best proofs from the press of the copper-plate printer.

With respect to this process;—let the copper plate or lithographic printer select, in the first place, a paper of the peculiar tint which he thinks most suitable for his purpose, and in the second place, an ink of the most appropriate and beautiful tint. This done, let him exert his utmost skill in producing a fine proof. The result will be a proof on India paper, either in common printing ink, which is of a cold greenish black tint (very beautiful), or in a fancy ink of some tint lying between a purple brown and either a green or purple black. Now, Mr. Sutton affirms that *this* photographic printing process is capable of yielding positive prints which will bear the most critical comparison, as regards artistic effect, with the best copper-plate or lithographic proof. You may lay the photograph on the finest engraving or lithograph, and find it impossible to say that one is superior to the other in effect; both being equally vigorous and beautiful, and the effects being of the *same kind* in both. But for the peculiar truthfulness and inconventionality of the photograph it might be mistaken for an engraving. The process has also the merits of economy, and the prints are capable of withstanding the action of destructive tests, such as milky hypo, far better than those which are obtained by the common process. Mr. Sutton, however, admits that the *finest* results are only obtained under certain favorable conditions, with respect to which there is at present some obscurity. He has not yet completely made out the subject of tints, as regards the production of effects with absolute uniformity: but the difficulties which remain only appear to be such as a little perseverance will surmount.

The operations are very simple, and the want of uniformity in the results appears to depend mainly on the variable condition of the nitrate bath. Variations in the amount of light, and degree of temperature, affect the result of course to some extent, but he has obtained some of his best prints in the gloomy month of November, and apparently under the most adverse circumstances of light. His dark room is always heated to 60° Fahrenheit, at least. A temperature of 70° appears to be about the best, and he believes it to be impossible to work successfully at a lower temperature than 50°. This process requires no toning bath.

Any good photographic paper may be employed, but different papers require different treatment. The operations on Hollingsworth's THIN paper are as follows:—First, for the salting bath take—

Filtered rain water	1 ounce.
Common salt	from 6 to 10 grains.
Lemon juice	from 1 to 3 drops.

Use a fresh lemon, and do not on any account cut it with a steel knife. Stick a pounted piece of wood into it, or bite off a piece of the peel. If you introduce any citrate of iron into the paper, the nitrate bath willl turn black as ink.

Observe, there is no gelatine, nor serum, nor any troublesome mess in the salting bath. The bath is nothing but salt and water, with a lemon squeezed into it.

Filter the solution through a fine cambric handkerchief, laid in a glass or gutta percha funnel (not block tin), and use it at once. When done with, throw it away, and give the lemon to the cook. You may either immerse the papers in the bath a great many at a time, or float them on it one at a time. They should remain *on* the bath for at least two minutes, and if immersed, the time of immersion may vary from five minutes to twenty-four hours. A rather long immersion seems to give the most vigorous prints, and not to cause the print to sink in the paper and become mealy. Still, as the fine grain of the paper is somewhat injured by long immersion, it would no doubt be a good plan to submit it to pressure, when dry, between glazed mill-boards in an engraver's press.

The papers may be hung up by one corner to dry. Mr. S. cannot say how long they will keep, for he has invariably used them within a week or two of their preparation.

The next operation is to excite the paper on the nitrate bath, which is made thus:—

Distilled water	1 ounce.
Nitrate of silver	from 20 to 30 grains.
Lemon juice	10 minims.

Filter the bath, and float the papers on it, for two or three minutes. Then hang up to dry by one corner. Never dip a pin into the nitrate bath, or it will turn the bath black.

The paper may be excited over night, exposed the next morning, and the picture developed in the evening (*i.e.* twenty-four hours after it has been excited.)

Expose in the pressure-frame until a faint image of the picture is perceived.

Develop with a solution of gallic acid, freshly made; or to speak more clearly, add four grains of gallic acid to an ounce of *distilled* water; shake up well, and use at once; filtered of course.

The cleanest and best way of developing the picture is to turn up the edges of the paper, and make the print into a tray. Lay it on a sheet of glass truly horizontal, with a piece of clean white blotting paper under the print; then pour a little gallic acid solution on the darkest part of the print, and spread it all over as quickly as possible, with a bent glass rod.

Push the development to the proper stage; then wash the print in clean rain water, and place it immediately in the following hypo. bath:—

Clean rain water	20 ounces.
Hyposulphite of soda	1 ounce.

Let it remain in this fixing bath for fifteen or twenty minutes; then throw the hypo. away, and wash the print well in several changes of water, under a tap, and leave it to soak for several hours in a tub, with other prints, changing the water several times. Lastly, hang it up to dry. The print is then finished.

ON THE PERMANENCE OF PHOTOGRAPHIC PRINTS.

II.

In toning, there are no general rules that will apply to any one bath. The same bath will work differently on different days, and frequently at different hours of the same day. We have found our baths—no matter how made—to give beautiful, clear blacks in the morning, when in the afternoon no amount of toning would produce the same effect. Every attempt to change its operations only made bad matters worse. We therefore came to the conclusion to let them alone, and be guided entirely by the brilliancy or dullness of the print during its immersion: so long as they were clear and brilliant both in lights and shades we made no alterations. When dullness, or a veilness appeared in the whites, we added hypo. soda in small quantities until the defect was corrected. If the shadows presented the same appearance we added chloride of silver; or chloride of gold gradually which often alone proved effectual; and when both lights and shades were dull or clouded, both hypo. and chloride were added; but when these were not effectual, we concluded the bath to be too acid, and neutralized it with aqua ammonia; or bi-carbonate of soda—the latter is the best.

All the chloride of gold baths we have made, appear to possess wonderful disposition and faciltiy to change ; more particularly in warm weather—half an hour being sufficient, on some days, to alter its action entirely. We have toned prints at nine in the morning to the desired tint in fifteen minutes; have left them in the same bath the same length of time at ten o'clock, and had them so completely sulphurized as to be worthless; laid aside they faded out entirely in a few weeks. Again, in the evening at six o'clock, twenty minutes would be required to produce the same purple tint obtained in the morning at nine o'clock. At first this state of things gave us great trouble, and in our endeavors to correct what we considered an evil, we spent an unnecessary amount of money. We threw away solution after solution and made fresh—dosed the baths with hypo., silver, bi-carbonate of soda, and many other things too numerous to mention, as the auctioneers say, with no benefit to the general result. The amount of gold or silver taken up by each print, cannot be safely calculated for universal practice, as no two samples of paper will work alike in this respect; as a rule therefore, add more silver and gold when the picture appears weak or thin, after obtaining the desired color in the proper time—which should be in not more than twenty minutes. Of course it is necessary that the print should be brought up to the proper strength in the pressure-frame; which strength can only be ascertained by due reference to the capabilities of the negative, some requiring more intensity of coloring in the positive than others, to produce a given result. Much of the brilliancy of a print depends upon the quality of the paper. A porous—badly-sized—coarse-grained paper will be deficient in this respect; and it is in the fineness of grain more than any other quality, in the albumenized paper that renders the prints made on it so charming to the artistic eye. It is, also, only albumenized paper that a permanent sepia tint—so much admired by those of an artistic taste—can be obtained. When produced on plain paper by removing the print from the toning bath before it has reached the purple tint, it must eventually fade—but more rapidly—as sulphuration, and consequently destruction, has already commenced. In order to obtain this much desired color with a surety of permanence, we must employ a salt that will give it within the period of time necessary to fix the print. We have not tried the chloride of copper yet; but we should suppose it might be successfully employed. Two drops of chloro-chromic acid in the ordinary gold bath of half a gallon, will produce a very fine warm sepia, or brown, color; but we have some fears of its eventually destroying the picture. We see that Mr. Moulton gives, in his book, his formula for toning bath as containing 10 drops hydrochloric acid. This, we are convinced, is a very dangerous addition, and will effect the destruction of every photograph in which it exists. It undoubtedly gives warmth to the tone; but if used at all, two drops, or even one, would be sufficient. We should, however, advise operators not to use it. We have made two attempts to test the durability of photographs toned with the chloro-chromic acid addition; but have been foiled each time by the disappearance of the impressions from their hiding place. They may not have faded, although they did not keep. However, the nature of this acid is similar in its action to the hydrochloric, and it must be used with caution.

The use of warm water in fixing we consider decidedly injurious. The only quality, of all that are claimed for it by the English writers, it possesses, is its speedy removal of the hypo. Its objections are, weakening of the print, destruction of the sizing, and consequently loosening of the fibre; and imparting greater tendency to the sulphurization. Cold water is decidedly preferable, as it obviates all these difficulties without creating new ones, besides giving greater brilliancy. Prints treated in every way alike, except in the temperature of the washing bath, produced the differences above stated; and when exposed to the atmosphere, those submitted to the warm solution faded in a few days, while the others have remained unchanged. We are indebted for the hint that led to this experiment, to C. Guillou, Esq., of Philadelphia, who, during a photographic tour to Schooley's Mountain, observed a marked change for the better, in prints washed out in an icy cold spring, over those treated at home in water at the usual summer temperature. Where running water can be procured, no other should be used for the final washing.

H. H. S.

METHOD OF ILLUSTRATING LECTURES Or Scientific Papers by means of Photography.

BY MR. W. HISLOP, F.R.A.S.

[Read before the North London Photographic Association, Dec. 30, 1857.]

I wish so direct the attention of the meeting this evening to an application of photography for the purpose of illustrating scientific lectures or papers, and also for educational purposes. Those who are called upon to perform these duties, either occasionally or continuously, know that a large portion of the labour and expense is expended in the preparation of diagrams. In microscopy, in physiology, and in astronomy especially, the subjects are often so elaborate as to require a great expenditure of time and money to prepare the representations which are absolutely necessary for the purpose of illustration.

Transparent positive pictures have already been used in the magic lantern, and it occurred to me a short time since, that we have a ready and perfect means of producing a representation of the object required on as large a scale as may be deemed desirable. My plan is as follows:—I take a drawing or engraving of the subject to be depicted, and fastening it by pins, tapes, or any other convenient means against a board, with a small stereoscopic view lens of five or six inches focus, I take a negative, including the title or description attached, if there be any, and reducing the size if necessary. I then obtain a transparent positive from this negative, either by superposition on a dry plate, or on wet collodion by the camera, with the same lens. The result is mounted in the ordinary style of slides, or similarly to a stereoscopic transparency. The specimen which I now hand round has been prepared in this manner. It may be observed that we need not to confine ourselves to plain black and white, but transparent color may be added by the ordinary methods.

The slides may be shown by the magic lantern; but a very great improvement will be made if the common magnifier be removed, and a quarter plate photographic portrait lens be fitted in its place. This arrangement being achromatic will give a more perfect definition.

In order to avoid the inconveniences of a perfectly dark room to the lecturer and audience, I should recommend a modification of the common plan. I use a ground-glass screen, about twenty-four inches square, set in a wooden frame with a foot. This is placed at a sufficient distance from the lantern to be equally illuminated, and the space between the lens and the screen is covered with black cloth, supported on a light frame. The picture may thus be shown without the whole of the lights being extinguished.

I take this opportunity of remarking, that by the aid of photography, the view shown by the phantasmagoria lantern are capable of an extraordinary amount of improvement, and I think that this method of preparing pictures has not received the attention which it deserves. At a far less comparative cost of labor and money, productions superior in every respect may be made to take the place of the coarse and incorrect representations which now go by the name of "dissolving views."

From the Liverpool Photographic Journal.

LONDON PHOTOGRAPHIC SOCIETY.

The Annual General Meeting of this Society was held on Tuesday, the 2nd of February, Lord Chief Baron POLLOCK in the chair.

The minutes of the last meeting having been read and confirmed, the CHAIRMAN, after a few congratalatory remarks on the increase of the Society and the prosperity of the Society's Journal, proceeded with the delivery of the annual address:—

Gentlemen,—I have to call your attention to a very few matters; but there are some which I think I ought to mention on the present occasion. Among the first is a communication that I have received from the Royal Society of Arts, respecting the co-operation of this body in an object which I think every honest and well-directed mind would concur in for the protection of what might be called intellectual or artistic property. A committee has been formed, composed of members of the Royal Society of Arts, and they have selected some members of the Photographic Society, and, I believe, of other societies, for the purpose of endeavoring to protect by law, (where direct protection is not afforded,) those results of scientific labor, or the mere efforts of genius in producing that which instructs and delights mankind.

In my opinion the Photographic Society is, at least as much —I had very nearly said more, and I am not sure that I should not have been right if I had said so,—is more interested than, perhaps, any other class of persons. It would be altogether out of place if I were to express any personal opinion as to the state of the law; it is quite sufficient to say that the most eminent persons that belong to that profession entertain considerable doubts as to what is the protection given to a photographer.

I will give a case in illustration:—

Some gentlemen, votaries of photography, arrange to go to some interesting spot, many hundred miles from this country, at great expense. They take with them an apparatus, calculating to bring back memorials of all the treasures of art, of antiquity, and of whatever is curious that the spot they have selected can afford. They go there—they accomplish their object—they return, and communicate with some person whose business it is to make such things public. They receive scarcely more than a remuneration,—perhaps not so much as the expense they have incurred in providing this instruction and entertainment for the public,—and, in a short time, the person who has advanced his capital for their remuneration discovers that an individual has purchased a single copy, has instantly derived from it a negative, and proposes to publish at an under price that which is an imitation of what he had purchased; and it is said,—and I am by no means prepared either here, gentlemen, or anywhere else, to say otherwise, but it is said,—that that can be done without any let or hindrance from the law. I think that is a great grievance, and that such a proceeding is very dishonest Now, it may be said that the person who did this had a right to do it. He may say, "I violated no law," "I broke no commandment of either God or man" He may be right, perhaps, in not having broken any commandment of man; but if he recollected the precept, "Do unto others as you would be done by," I do not think he can say he did not break any commandment of his Maker; and, gentlemen, I cannot help repeating what I have frequently said, both at the bar and on the bench, that if a man confines himself simply to the law of the land, and merely does what the law compels him to do, and abstains only from that which the law forbids and punishes, he may be the most wicked, dishonest, and mischievous person in the kingdom. There are morals and manners to be observed which no gentleman can omit to notice, to respect and reverence, without forfeiting the character which belongs to him. Gentlemen, I have to request your cordial co-operation, and I am asked to make this request by the Society of Arts. They have communicated with us as they have with many other societies, who, like us, are connected with the instruction, and the improvement, and the delight of mankind by the images that we present of whatever is great and glorious, whatever is resplendent in art, and whatever is dignified and exalted in nature; and they request that we will co-operate with them, and render every assistance in procuring the passing of a law, (if a law be necessary,) to make the same provisions and protection in respect to all works of art, or copies of art or nature, which undoubtedly exist with respect to engravings.

Gentlemen, I have made this communication, that you may then, in your several departments, endeavor to give facility to the course that the Society of Arts, with the assistance of the committee, have adopted, and that you will labor, each of you, in the Societies in which you may be, to advance the object which unquestionably has a tendency to make photography successful, and to prevent the labors of one man being pilfered by another.

Gentlemen, there is another matter which, I think, I should mention; I allude to the very remarkable discovery of M. Niépce de St. Victor. I mention it, I must say, with some personal satisfaction. If there be any of you who have attended these annual meetings for the last two years, you may have heard me say that I expected that the study of photography, and the pushing the enquiries that photographers were making, would result in some new discoveries with reference to light and to the intimate knowledge of the construction of bodies, which would tend considerably to increase our scientific knowledge of those objects which we are desirous to study and to learn. Probably many of you have seen the particulars of this discovery, and, therefore, it would be wrong in me to occupy any great length of time in dwelling upon it; but there may be some who have not heard anything about it. I think it may be worth while just to express in a few words what I have to say. It has been discovered that if an engraving, which has been for some time kept in darkness, be taken into the light, and exposed to the rays of the sun for a time, for some purposes a quarter of an hour, for other purposes two or three hours; then apply it to some sensitive paper, put it in darkness, shut it up for some four-and-twenty hours, and, when you open the receptacle where it has been concealed from light for that time, you will find on the sensitive paper a copy of the picture. The engraving will be repeated upon the sensitive paper that has been thus put in communication (but all in darkness) with the engraving which has been exposed to the sun. It is stated that the paper exposed to the sun gets saturated with the sun's rays—so saturated that you can avail yourselves of them, and they go on operating after you put them in a place of darkness; and "if, after having exposed an engraving to the light for an hour, it is placed in contact with a piece of pasteboard which has been kept in a dark place for some time previously, and at the expiration of not less than twenty-four hours, the paste-board be brought into contact with the prepared paper, and allowed to remain there for another twenty-four hours, the result will be the reproduction of the engraving." Now that is very astonishing, for here it appears not only that you can accumulate the rays of the sun, so that they shall produce, in the absence of the sun, an effect as if you had concentrated them, and spread them over, so that they were capable, on being put in darkness, of gradually evolving themselves, and performing an office, of doing something that nobody ever dreamt of before, but you have this—the pasteboard takes from the engraving the faculty that belonged to the engraving, with all its variations, and, upon being applied to the sensitive paper, you seem, as it were, to have taken, one knows not what to call it—to have taken an invisible copy of the engraving on the pasteboard, and then transferred it to the sensitive paper from the pasteboard that has nothing upon it; you get from that not so entirely perfect a representation of the engraving, but fainter, though still very perfect. Hardly anything can be more extraordinary than that, but it goes still further; if you take a tube that is not transparent, made of metal or porcelain, anything that is perfectly opaque, line it with white, and expose it to the sun, that the sun may shine into it, and then turn it down upon a piece of sensitive paper, light somehow or other appears to issue from the tube, and blacken the sensitive paper, and if there be an engraving between, you get the image of the engraving upon the sensitive paper, and, what is more, the tube continues to have that property, if you hermetically seal it and shut up: it seems to have that property for an indefinite period. And, further, if you take a piece of paper—a new term is adopted—I think *insolation* is meant to represent the exposure of an article to the sun; if you take an engraving, expose it to the sun, fold it up, put it into a tube such as I have described, hermetically seal it up, and take it out at the end of a fortnight, it will do just as well as it would have done the moment you took it from the rays of the sun. Now this is a mode not only for condensing, but of preserving the rays of the sun, and is one of the most remarkable facts that has ever been discovered in the course of what may be called practical science, and it is entirely the results of the efforts of photography to extend its views. I think it would be premature to offer any theory, or to say anything about it, but it certainly appears a new path of discovery, of that character that I had anticipated at the first time that I had the honor of addressing this assembly, and, it appears to me, in acting upon different substances, to have a tendency to prove many matters connected with their intimate structures and intimate properties, not varying very much in principle, though no doubt entirely different in detail, from that which is exercised by polarized light, and perhaps something of that sort was to be expected from the improvements in the study of light, such as photographers have lately persevered in.

Gentlemen, in the course of the year, there is another matter very interesting, but which, I think, does not admit of the same distinct and clear statement; I allude to the discovery made by Mr. Grove.

Gentlemen, you will hear an allusion in the Report of the Council, to the death of Mr. Archer. The Report contains what the Society has done, and what may be expected from the liberality of the members; and there can be no doubt that photography has lost a person who has conferred considerable benefits upon it, and made great progress in the art, and though it will not, perhaps, be justifiable in saying of him quite as much as Newton said of Coates, "If Coates had lived, we should have known something," but at least, I must say that the Society has lost a very active, useful, and persevering member of photography.

Gentlemen, I am not aware that I have anything else to present to your particular notice, and I can only say, that I trust the progress that we have made will merely be an incentive to go on increasing as we have done, and I think if our room is not so large as that in which we used to assemble, at least it is our own, and I trust while I have the honor to preside on these occasions, that I shall always have the opportunity of presenting to your attention, nothing but what is favorable and prosperous.

The Secretary then read the report, which was adopted *nemine contradicente;* and the report of the auditors was taken to be read, and ordered to lie on the table for a week for inspection.

Mr. Le Neve Foster asked that the council would state, in a few words, the money which had been spent upon the house, the terms upon which it was held, and the accommodation it was likely to afford.

Mr. Roslyn: The cost of making the alterations in the rooms is £411 9s. 5d. We have expended for furniture £149 9s. 6d.; for miscellaneous articles £32 6s. 0d.; for gas-fittings £29 5s. 9d.; and a few small sums besides, the total cost being somewhere about £700.

After a short conversation respecting the tenure of the premises,

Mr. Wilks said—Perhaps your lordship will allow me to make one remark as to what has fallen from yourself. I am not aware whether, from the formation of this Society to the present hour, we have ever elected an honorary member; if not, I think the time has come when we ought to elect Mons. Niépce de St. Victor; and I beg to move that Mons. Niépce de St. Victor be now elected an honorary member of this Society, and that that election may be conveyed to him by the Secretary in such complimentary terms as may be desirable.

Sir W. Newton seconded the motion.

Mr. Henry Pollock:—I may be allowed to state that at present we have honorary members. I remember moving that the President of the Photographic Society of France, and the Secretary of that Society, be elected members, and that was carried.

The Chairman: I must say I entirely concur in the feeling that Mons. Niépce de St. Victor should receive from the Society every acknowledgment that we can possibly make to him, and by electing him, as it were, on the spot—that is, immediately, without notice, without any question—would confer upon him in the most ample way the honor that we propose to pay to him.

Mons. Niépce de St. Victor was then elected an honorary member by acclamation, without the ordinary routine of the ballot.

The Chairman then put to the meeting the question whether the election of officers, or the reading of a paper should be proceeded with, when it was resolved to proceed with the former.

During the proceedings of the election, Sir W. Newton expressed his regret at being compelled to retire from the council, and that his engagements would prevent him from attending their meetings in future so often as he could wish.

The scrutineers having announced that the President and Treasurer had been re-elected, and that Mr. Fenton had been elected in the place of Sir W. Newton. The Chairman briefly returned thanks for the honor again conferred on him, and the meeting adjourned.

REFRACTION OF LENSES.

To the Editor of the Liverpool Photographic Journal.

Sir,—In reference to the phenomenon alluded to by "Amicus," in your last number of the *Journal*, I fancy that the results of a trial I made some months ago may throw some light on it. Sir D. Brewster says, in page 175 of his work on the stereoscope, that when objects *less* than the *lens* are taken, that beyond a certain point, other objects behind, and less than the front ones, will be seen through the centre of them like ghosts. Not being satisfied with this assertion, even from so learned a person, I tried, and found the fact not in accordance with his statement. My experiment was this: —I placed a circular piece of black card, half an inch diameter, as my first object, on a piece of wire, and at the proper distance behind this, another circular piece of white card, three-tenths of an inch, and on focussing the black object there was seen a *white ring round* the black image, and not *within* it, as Sir D. Brewster said would be the case. This, it appears to me, may at least tend to account for the phenomenon in question, and I shall be glad to know if it should be thought to do so.

The variance between the statement of Sir D. Brewster and the fact as observed by myself, remains a subject of inquiry for some one better acquainted with optics than I am, for I admit I have only common sense to guide me. Still, I must say I have hitherto supposed that the pictures resulting from the lens were formed by converging rays, and not by diverging light; for were it so, surely there would be but a thorough conglomerate of pictures on the glass, and not, as I know to be the case, a properly defined position of objects before the camera. And I cannot help thinking that the ring of white round the black object was formed by the refraction of the rays from the small white object, as they passed by the edge of the front one, and that the diagonal rays had nothing to do with it; at all events Sir D. Brewster's assertion and the facts do not agree.

I am, Sir, your obedient servant,

T. L. Merritt.

PORTER'S NEW PHOTOGRAPHIC GALLERY.

Cincinnati, Ohio, March 15, 1858.

Mr. H. H. Snelling,—*Dear Sir*: Among the many improvements that have taken place in this city during the past year, there is none more worthy of notice than the splendid building lately erected by that well-known and energetic artist, W. S. Porter, Esq.; and I have no doubt, but that a description of this beautiful gallery would not only give a correct idea of the progress of the Arts in the West, but also prove very acceptable to the many readers of the *Photographic and Fine Art Journal*. For some years past, Mr. Porter has occupied a fine suite of rooms on the south-east corner of Fourth and Vine streets; as his business rapidly increased, he found it necessary to procure rooms more adapted to the wants of his patrons, and in keeping with the many splendid improvements all around him. Fully convinced of this, he leased an old building on the north side of Fourth street, a few doors west of Vine; and then commenced the work of demolition previous to the erection of the finest Photographic and Daguerrean Gallery in the United States. After months of vexatious delay, he was at last enabled to throw open his doors, and give hearty welcomes to his friends. The front of the building is one of the most artistical of our city's improvements: the front is built of fine cut Buena Vista stone, 40 feet wide by 125 deep, and three stories high. The second and third stories are occupied exclusively by Mr. Porter. The first story forms an arcade, and the ornaments of the building are almost all confined to a large three light window in the centre of the building. In the centre of the pediment that surmounts it, is a piece of sculpture, allegorical of the rising sun, Aurora attended by the nine graces drawing forth her chariot. Rusticated piers inclose the building, and it is crowned with a handsome cornice, and panelled blocking, the dados supporting four vases. In the centre of the building, over the cornice, a handsome niche is introduced, in which a statue, representing the Spirit of the Photographic Art, is placed. Having thus given a description of the exterior, we will enter the wide doorway, and ascend the fine stairs that leads to the interior of the building. Opening the door at the head of the stairs, we emerge into the grand reception room. This room is forty feet long, twenty-five wide, with a core ceiling twenty-three feet in height. In the centre is a large skylight of ground glass, this is a new feature, in a daguerreotype reception room, but an important and beautiful one, as it throws a soft and even light over all of his pictures. The walls and ceiling are beautifully decorated in fresco; while the busts of Daguerre, Michael Angelo, Corregio, and other old masters have appropriate niches in the walls. From each side of the skylight, a splendid chandelier is swung, which, when lit up at night, gives the room a splendid appearance, and forming a great attraction to our fellow citizens; and it is gradually becoming a fashionable and favorite resort. Around his walls are hung life-size photographs finished in oil, of celebrated personages, amongst which Bishop McIlvaine, Hon. Thos. Ewing, Hon. Judge McLean, Edward Everett, Governor Chase, and Nicholas Longworth, Esq., deserve especial mention. These and a thousand others, are arranged in the most approved and tasteful style, presenting to the beholder a sight well worthy of attention. Each side of the large window is placed a mirror reaching from the ceiling to the floor, reflecting in all its gorgeousness, the splendid velvet tapestry carpet, that adorns it. In the centre of the room, stands the steam generator that warms the building; this is covered by a marble slab, which acts the double part of ornament and pier table. The furniture is of the most costly character, being covered with a new style of goods imported expressly for this establishment, called silver damask Brocatelle. Passing from this splendid room, which we do with reluctance, we emerge into another, which, though smaller, is in keeping with everything around it. This is the toilet room for ladies and children *only*. In this room, every modern convenience is introduced that will administer to their most immediate wants. As a specimen of the costliness of the furniture in this room, I would mention that the dressing table and appendages, cost the snug little sum of one hundred and sixty-five dollars. Adjoining the toilet room, and also connected with the reception by a fine hall, is the daguerreotype and ambrotype operating room. This is very large, being over fifty feet in length, having a splendid side-light twenty-eight feet long, and fifteen in height. Passing from this room, we emerged into the photographic sitting-room; this is forty feet in length, having one of the finest sky-lights in this country; adjoining these operating rooms, are its chemical departments. To the photographic department three rooms are assigned, furnished with every convenience of water, &c. Ascending a pair of stairs at the side, is the magnifying and copying-rooms. In this part of the establishment is made those splendid life-size pictures, that have rendered the name of Mr. Porter so famous. This whole arrangement of reception, sitting, and toilet rooms (all being on the second floor), proves of great benefit to the persons who dislike climbing two or three flights of stairs; thus earning their picture by bodily exercise ere they sit for it. The third story of the rear building is occupied by the painters and their studios. To this branch five rooms is assigned, together with a handsome sitting for their subjects. Every room in the building is heated by steam, thus avoiding annoyance of fire, dust, and soot. There is also a back entrance to the building, thereby removing, by this method, all material nuisances from the public rooms and entrances. There are sixteen rooms in all, connected exclusively with this business. Mr. Porter in erecting such a palace, deserves the hearty approval of every Cincinnatian, in thus giving them in the midst of their many advantages, the pride of having the finest, largest, and most complete gallery in the United States. And as he has thus proved the superiority of our city in this spirited and tasteful manner, we are confident it will be appreciated by the public, and meet generally with the success he so well merits.

Yours, &c., F. H. S.

From the Liverpool Photographic Journal.

SMART'S NEW PHOTOGRAPHIC TENT.

This portable tent, though simple in construction, is very firm, and affords ample room for the operator to manipulate with perfect ease and convenience; it is rectangular in form, is six feet high in the clear, and three feet square, affording table space equal to thirty-six inches by eighteen inches. The chief feature in its construction is the peculiarity of its frame-work which constitutes, when erected, a system of triangles, so disposed as to strengthen and support each other: it thus combines the two important qualities of lightness and rigidity. The table is so made that when not in use it will fold up; attached to it is a "sink," made of waterproof material, which obviates the necessity of carrying a dish for developing; a tube is also connected to the sink, by which all waste liquid is conveyed outside the tent. A water bottle of a very convenient and portable form has also been contrived, for use with the tent; in fact, all has been done that experience and care could suggest. Its entire weight is 17 lbs., and it is easily erected or taken down by one person. By the use of this tent we believe the operator will insure the means of working the wet collodion process in the open air with ease, comfort, and convenience.

From the Liverpool Photographic Journal.

ACTION OF LIGHT.

The following letters, addressed to the Editor of the *London Photographic Society's Journal*, are of much interest, as extending our knowledge of certain properties of light which have hitherto been only superficially observed.

REVERSED ACTION OF LIGHT.

Sir,—The letter of Mr. Jackson, in the November number of the Photographic Journal, and the discussion upon it, has recalled to my memory an experiment I made seven or eight years ago, before there was either Photographic Society, Photographic Journal, or, indeed, much interest taken in photography. While making experiments on the operation of light on iodized paper, I exposed a piece of negative prepared paper under a small engraving for two hours, in a bright summer sun. On removing the engraving, I was surprised to see a positive-looking copy, and on developing I produced the enclosed (Hilton's "Cupid and the Graces," from the *Literary Souvenir* for 1829). I endeavored, without success, in various subsequent experiments, to produce agreeable lights in lieu of the dull brown ones which this copy exhibits. I threw the results aside as of no value, but kept the enclosed, and recorded on the back the manner of its production as a curious fact, and nothing more. Your late discussion reminded me of my experiments. The second enclosed copy is Harlow's picture of Mrs. Siddons, from the *Souvenir* of 1830, produced, I think, at the same time.

You will perceive from these specimens that it is really true that light, after a certain time, proceeds to bleach the picture it has blackened, till the positive assumes the exact light and shadow of the negative. I have doubts, however, whether there be any value in this, except as a fact.

The manipulation of the process is so easy that it requires no explanation. Every one who is interested may at once convince himself by exposing an engraving to a bright sun over negatively excited iodized paper.

Thos. Craddock.

Mr. Malone is quite in error in supposing that the sun *destroys* by long action; it merely *reverses;* or, at any rate, it reverses before it destroys.

[We are quite content with the admission that destruction is a result of long action.—Ed. L. & M. P. J.]

NEW ACTION OF LIGHT.

Clarendon Square, January 7th, 1858.

Sir,—Some five years since, I commenced some experiments on photographic printing. Determined that all the light which passed through the white portions of my negative should be utterly absorbed, I covered the area of my copying frame with several folds of black woollen cloth. I was able to obtain some powerful copies in my first attempts. I repeated them on different days; but my subsequent attempts on each day were utter failures: not the slightest trace of a picture could be obtained. Struck by this remarkable effect, this problem arose: Would the photographic superficies of a newly-prepared print impart its photographic power to a sheet, also newly-prepared, but preserved in utter darkness? To ascertain this, I took a sun-developed print, and immediately, without washing, fixing, or any other preparation, laid it on an unexposed sheet, submitted the two in contact to a powerful screw pressure, and obtained, in a few moments, two prints, both positives, but of course with reversed sides. The fact was established; and the phenomenon was remarkable for this—that photographs could be obtained in *utter darkness!* I was much gratified with the fact; but it was of no practical value to me at that time, and I laid it by for use on some future occasion.

On glancing at the above record, we readily perceive that the results of M. Niépce's experiments: that gentleman was obtaining results from surfaces only mechanically sensitive—myself from surfaces chemically sensitive. M. Niépce's greatest photographic power was obtained in his colorless portions, one instance excepted—that where he employed Prussian blue on white cotton. His black marble and charcoal failed to record any evidence of their action. My own whites were perfectly unsullied; but these were natural results, as they had not been submitted to *direct* solar action.

W. T. Pratt.

BLUE GLASS.

To the Editor of the Liverpool Photographic Journal.

Sir,—The report of my remarks at the last meeting of the Liverpool Photogrophic Society conveys, I think, an impression different from, if not opposed to, the one I intended. I was made "to express surprise that you had not entered into the discussion in a more fair and liberal spirit." I can bear the imputation of vulgarity (!) in having given way to an emotion without adequate cause, though I am afraid that, like Sir Charles Coldstream, I am past all surprises. I can even allow it to be supposed that I could make so ill-natured, discourteous, not to say presumptuous, a remark, but I could not permit it to be understood, Sir, that I am so ignorant of my mother tongue as to employ such an absurd conjunction of adjectives as "fair and liberal," and not only import them where they were not needed, but where their use, even if proper in themselves, would be absurd. If I had wished to convey disapproval in the same sense, my habits of thought would, I hope, have inclined me to use the word "just" in preference to any other. But I really had no surprise to manifest, and certainly none at the absence of such a subtle spirit as is involved in the semi-contradiction of the terms "fair and liberal."

What I did intend to express was, that, having worked for several months in the room built for Mr. Constable on the Marine Parade, Brighton, and also at the Polytechnic Institution, London, for some days, both of which rooms were glazed with blue glass, my experience justified and corroborated your statement, that it had been tried, and found inferior for all practical purposes to white glass. But—and this is the point which must have led to the error—I did not think, even with this proved, that the question was exhausted, or that you were justified in pronouncing absolutely for or against white or blue glass. As far as dark blue glass is concerned, I am satisfied. But, Mr. Forrest proposes a very light blue; and, although I do not think any advantage will follow its use (of course, to outweigh disadvantages), it is certain that what is true of dark blue is not necessarily true of light blue, and that thus your remarks did not conclusively settle the case.

The dark blue glass I believe with you darkens materially by exposure; and it has always appeared to me that a much more simple and inexpensive mode of application would be to insert a disc of blue glass in front of the lens.* This would, I think, determine the value of its asserted accelerative power at once; while the glass, partially protected from strong light and the influences of weather, would not be so liable to darken, and, if changed in tint, could be replaced.

One word more. My remarks—and I must presume myself more than ordinarily obscure—on the evening of the meeting, tend to throw a shade of disrespect, which I did not intend, on the person confiding to me the mode of transferring positives—an itinerant photographer. Very few persons are likely to have read what I said, and the person alluded to, is still less likely to recognise himself in your pages, even if he should see them, which is hardly probable. But, to avoid even the possibility of injury being done to a person whom I had no right to consider other than deserving, I would wish to say, what I believe I expressed, that the portrait I drew was a first impression, and that I found it entirely incorrect. He showed me fully and efficiently his mode of transfer, which I have since practised. He seemed, as far as I could judge, a well-informed person; and I considered, at the time, my fee a most judicious investment.

Your obedient servant,

James T. Foard.

* We can give our testimony to the value of this method of using blue glass, having recommended it as early as 1847. When Mr. Catherwood first visited Yucatan in company with Mr. Stevens, he took a daguerreotype apparatus with him to copy the ruins of that country, but found it quite impossible on account of the hot yellow atmosphere constantly pervading. Before making his second visit he called upon us and stated his difficulty, and we arranged his camera tube with the glass precisely in the manner suggested by Mr. Foard. He called to see us on his return, and stated that it worked to a charm. About the same time we arranged a camera in the same way for C. A. Johnson, Esq.; another for Mr. Brady; besides several others since that time.—Ed. *P. & F. A. Journal.*

From the Jour. of the Phot. Soc.

DR. HILL NORRIS'S DRY COLLODION PROCESS.

Birmingham, Nov. 12, 1857.

To the Editor of the Photographic Journal:

Sir,—At the present time, when the dry collodion process seem to be occupying the attention of both amateur and professional photographers, I think I may venture to claim a small portion of your space for one of the many experiments I have made in order to test the value of Dr. Hill Norris's Dry Collodion Process, the superiority of which over all other methods, in the matters of simplicity, certainty, and keeping qualities, only requires to be known in order to ensure its universal adoption. The experiment to which I allude more particularly was detailed before our Society, and the plate therefrom was exhibited. The negative in question was during its production subjected purposely to a series of impediments, which would in all probability never occur simultaneously in ordinary practice.

First, an imperfectly cleaned plate was selected, such as would inevitably give a spotty or streaky picture in the wet process; it was coated with *contractile* collodion, nearly new, excited in the ordinary manner, washed copiously with common *hard* water, coated with *cold* gelatine solution, kept a month, exposed 80 seconds, single-lens camera, 16-inch focus, ¼ inch stop; kept another month, and then developed with old pyrogallic solution and silver (the pyrogallic developer having become quite red with age); in spite of all these drawbacks I succeeded in producing a negative good in every respect, save that it required a little more density; but this may arise from over-*exposure.*

I cannot help thinking that a process which will produce such results, under such very unfavorable circumstances, must be intrinsically good, and worthy of adoption by the photographic world. In connexion with this process, I could give you the results of several curious experiments, but will not tresspass any further on your space at present.

W. B. Osborn,
Secretary of the Birmingham Photographic Society.

From the Liverpool Photographic Journal.

PORTABLE PHOTOGRAPHIC TENT.

To the Editor of the Liverpool Photographic Journal:

Sir,—The following description of my portable photographic tent may be of service to others who may wish to make one at a trifling outlay, wherein may be worked the wet collodion process with as much ease as at home. A tripod stand will be required; the top about ten inches each way, and the legs five feet three inches long, with the spring outside instead of in, "a good plan for making a stand easily, and which I am surprised is not in more general use." This stand is covered with three thicknesses of yellow calico, sixteen yards in all. Each breadth is divided from corner to corner, and then sewn up the centre, then all are joined together. These are covered by a black envelope, requiring five yards, made up the same way. The bottom of the tent is protected by having about eight inches of painted canvas sewn round it; this will fall on the ground and keeps out the light, it also preserves the tent from injury on damp ground, &c. The interior of the tent is now a darkened triangle of twelve feet, and will be found quite large enough for ordinary purposes. To admit light to work by, an opening, eight inches square, is made in the black envelope, and this will be found quite sufficient. The covering of the tent is fastened to the stand by means of tapes, the opening being near one of the legs and three feet from the ground, made by one of the seams being left unsewn for that distance, and protected by a flap of black calico one foot wide. The developing box has a bath at each end, one for nitrate of silver, the other for water to wash the plates in, and a developing tray in the middle; underneath the tray are divisions for bottles containing collodion, developer, &c.; on the sides are grooves for plates. A deep cover fits over the box, which serves for a seat when the operator is inside. A strap from each end forms a handle to carry it by. The tent will do for the camera stand, but frequently an additional stand will be required.

Yours truly, THOS. GULLIVER.

From the Liverpool Photographic Journal.

LIVERPOOL SOCIETY OF FINE ARTS.

The late disputes in the Liverpool Academy have resulted in the establishment of the Liverpool Society of Fine Arts. A meeting to inaugurate the new Society took place at the Royal Institution on Monday, the 8th inst., under the presidency of Theodore Rathbone, Esq. The meeting was very fully attended, and the proceedings were harmonious throughout. Without entering into the matters of dispute with the Liverpool Academy we can wish the new institute every success. While there are some points in common between the new and the old Societies, (such as having annual exhibitions, and the granting of prizes to artists), the Liverpool Society of Fine Arts will have the advantage in an educational point of view—as assistance is to be rendered to students in art in pursuing their studies. There are to be several classes of annual subscribers, who will have in return certain privileges according to the class of subscription. We note with satisfaction that professors are to be attached to the institution, who are to deliver lectures on different branches of the fine arts during the exhibition season. There is one deficiency in the scheme, as proposed at the meeting, to which the proprietor of this *Journal*, in the interests of the new and beautiful branch of art to which our labors are directed, thought it right to direct the attention of the promoters, namely, that while painting in oil and water colors, sculpture, and architecture, are to find a home in the new institution, photography, as a branch of the fine arts, has been ignored. The proprietor of this *Journal* suggested that the photographic art should be represented both on the executive and in the exhibitions of the Society. The suggestion was well received by the chairman and the meeting, and Mr. W. G. Herdman explained that the subject had already occupied attention, and though no result had yet been arrived at, the suggestion would receive serious consideration. We trust this will not be lost sight of by the council, as the photographic art will, year by year, as proficiency in manipulation and the knowledge of chemical and optical science advances, force itself more and more upon the attention of all academic authorities. We trust the example set by the managers of the Art Treasures Exhibition will not be lost upon the promoters of the Liverpool Society of Fine Arts. We may add that a large array of the leading artists of the country have given in their adhesion to the Society, and promise to send pictures; and from present appearances we may augur favorably of the future of this new art institution. We believe the *locale* fixed upon for the exhibitions is the Queen's Hall, Bold-street, which is to undergo the necessary changes to adapt it to its new circumstances.

— WE are again obliged to defer our article on Photographic Patents, in consequence of being unable to lay our hands upon all the documents required to give the subject that consideration it deserves.

Personal & Art Intelligence.

— WE cannot take a retrospective view of the history of the Photographic Art, both in this country and Europe, without feeling chagrin at the position in which our photographers are placed, intellectually, in comparison with those of the Old World. The boasts which are continually made by our photographers, as an offset to the apparent superiority of mind among Europeans, that we have always excelled them practically in their own processes, is no apology for the selfish, lazy, and ignoble practice of American photographers of "hiding their talents under a bushel." It is no apology for the foolish attempts to retain within our own bosoms, every little discovery or modification in a process which has a tendency to improve the art; and still less is it an excuse for the dishonorable practice of travelling about the country teaching what,—in many cases stolen,—are alleged to be new processes or improvements. Questions as to the value of this or that process which are hawked about the country, have become so frequent, that it becomes the duty of every editor of a Photographic Journal to advise his readers to kick every peripatetic teacher of photography out of doors, the moment he pokes his nose into the room, unless he can give better evidence of his ability to teach than his own assertions. Thousands of dollars are spent annually by the American photographers upon swindlers of one and another kind; and it is almost invariably the case that nine-tenths fall victims before the photographic editors know any thing about the matter. It is not unreasonable to suppose that an honest man who has made a valuable discovery in the art, would seek the approval of those who could give weight to its value, and thus, also, make sure that it was original with himself. But so great is the desire for "*selling*" brother artists with the majority of American "*operators*," that the rule is to strive to the utmost, to keep a knowledge of their proceedings from the editors. The fact that *one* editor has taken advantage of secrets entrusted to him, and forced the parties by *threats* to *give* him an interest in a patent, is no reason why the others should be laid under the band. There is always one black sheep in every flock, very seldom none. It is, or should be a faithful editor's *pleasure* to assist the deserving inventor, but it is equally his *duty* to lay bare all impositions that may come under his notice. The rapidity with which improvements in photography are now made, opens the door very wide to imposters; and a circumstance has recently occurred which has given us great pain—inasmuch as it is the transaction of one whom we have heretofore esteemed highly, and who we thought to be of the most honorable mind. We shall refrain at this time from giving the name, merely stating the circumstances, in hopes his present career may be checked without further danger to himself or to those whose confidence he has abused. We will therefore at present content ourselves with cautioning our subscribers against buying a process for coloring photographs *in oil* upon the back, from a *very gentlemanly looking man*, who is now travelling in the west selling what belongs to Messrs Hawkins & Faris of Cincinnati and New York—but which he claims as his own. That the process is that of the *Diaphaneotype*, we learn from one whom he had induced by the most false representations—and by positive assurance that it was not the Diaphaneotype—to purchase—or rather to agree to pay him a per centage on his receipts for the sale of the pictures—the use of the invention, and who at once discovered the cheat, having already purchased the patent for the Diaphaneotype. When such men stoop so low, what can be expected of the rough-scuff of the Art? It is such transactions that are daily practised in this country, that place us in no enviable light, and form a black record against the American artists, and it cannot be wondered at, that such allusions should be made respecting us, as those indulged in by Mr. Hepworth in his address before the Chorlton Photographic Society of England; although we may consider that his insinuation, that we are very much in the habit of "*drawing the long bow*," comes with very bad grace from that quarter. The English habit of prevarication, denunciation, and ungenerous denial in everything concerning American discovery, is more than a match for our disposition to indulge in extended archery. Mr. Hepworth's remarks regarding Mr. Hill's (*claimed*) invention, though partially just, are on a par with those of many others who have preceded him on other American improvements, both of unquestionable originality and of modified English formulas. It is true, a Frenchman discovered the daguerreotype; but it devolved upon an American Morse to apply it to portraiture. It is true paper photography was the invention of English Talbot; but who excells the American photographer in its application to portraiture. Can the celebrated Claudet, or any other English photographer exhibit the perfection in full-length, life-size figures on canvas, six feet by ten, such as hang in the galleries of our Brady, our Gurney, and our Porter? But this does not invalidate our remarks at the commencement of this paragraph. The Englishman, the Frenchman and the German, do excel American photographers in that inestimable quality—generosity—so far as liberal interchange of their discoveries is concerned, and for this we can forgive that little peculiarity they have of decrying American inventors. There is no gainsaying the fact, that, as a community, American photographers are desperately wanting in that high tone of character which should be the offspring of *all* art. In all our remarks on these topics, heretofore, we have been met by the assertion, "men who labor for an end and attain that end"—*i.e.* make a discovery, or invent something—"expect, and justly, to reap the benefit of their labor"—and this is always put in as a clinching argument. We grant that every man who does, truly invent after years or months of labor, a thing or process, has a right to demand an equivalent; but we claim that it is not always expedient, even for that man's welfare, particularly in photography. And again, we disprove of the usual method of obtaining that remuneration. In ninety-and-nine cases in a hundred, the alleged years of labor is *humbug*, and we again assert that there are scarce any improvement in photography claimed as original and sold as such, that we cannot produce its counterpart of older date than the one claimed. They are mere modifications, and are not entitled to the remuneration demanded for them. What we have really to complain of is, that the truly original ideas of our photographers do not see the light; or if they do, it is only after some other body across the ocean has made the discovery and published it—then our American steps out of his cell to establish his rights; but it is too late, the prestage is gone. Few, very few, of our artists emulate those of other countries, in a generous development and publication of their labors, and these few deserve the more honor—they are a noble few and they find their advantange in it. Why should we go to foreign climes for material to fill the pages of our Journal? Not because we have none here capable of doing so—two words explain the cause—laziness—selfishness. The first prevents many capable minds from writing at all—the latter hoards up the knowledge in secret; or sends a Draper, a Morse, a R.., and others to England for a market. Where is the Whipple, the Richard, the Hesler, the Masury, the Cutting, the Barnard, and many others, that they should shut themselves up within themselves. They owe it to the art that supports them, to be more communicative in its behalf. Our friends must not take offence if we use the strongest language we can command on this subject, for we write not in unkindness, but as feeling the bitterness of the disgrace put upon the art in America, by those who can and should do better, and who can prevent our becoming the laughing stock of all other nations. Our pride at present is to elevate the Photographic Art to its highest point; for this we labor, and our labor gives us the right to speak plainly whatever we consider will tend to its elevation. We may say unpalatable things; but we are convinced that a day will come when our intentions will be appreciated. We may now receive blow for blow, but the hereafter alone can prove who struck the hardest and most effectually.

The abuses in teaching of which we speak, have become a crying evil, and it becomes absolutely necessary for us to speak out on the subject without reference to any, or without regard to those who may take our remarks to themselves, and we shall, whenever facts call upon us, do so.

— In our present number, several very valuable and interesting articles will be found. That which will interest our amateur photographers the most, is a Dry Collodion, by M. Villecholes, which will do away with the troubles of preservative mixtures, if upon trial it be found to give the results claimed for it. Mr. Long's formula will be found given by Mr. Hunt in his article "Collodion and Photography." It will be seen that he warmly approves of the process.

M. Niepce de St. Victor's paper on "Phosphorescence and Fluorescence," is not only highly interesting but very remarkable, and will certainly call forth the surprise of every philosopher, and lead to the conviction that photography may have no limit to its ramifications.

Having had a great number of inquiries, lately, respecting the "Solar Camera." The paper on that instrument by Mr. Gage, will prove highly advantageous to those who use, or contemplate using it. Whatever may be said as to the merits or demerits of Mr. Woodward's patent, one thing is certain; there is no better instrument, for the purpose, made. It accomplishes all that is claimed for it, and it does its work well. There is no necessity for purchasing the large size, as the small one will answer the same purpose and is more portable, although for large galleries the 4-4 size may be found more stable. We have seen life-size pictures that were printed by a new process, discovered by Mr. Woodward, in four and five minutes without development. This is certainly quick enough, and if Mr. Woodward consults his own interests as well as those of his brother artists, he will give it to the public immediately. In the formula for printing by Mr. Gage, on page 105, we are desired by him to make a correction. The salting solution should be as follows:

Water	1 ounce.
Pure gelatine	4 grains.
Common salt	8 grains.

The solution as previously given will not flow well when *cold*.

We would here take occasion to say that the spotting which has troubled us of late, in printing the pictures for the Journal, and which we mention in our printing formula on page 115, we have prevented by simply changing the chloride of ammonium for common salt, and of increasing the quantity of both salt and gelatine to 200 grains to the gallon. We did this at the suggestion of Mr. Masury of Boston, who had previously corrected the same evil in the same way.

— Mr. Hamilton, of Savannah, informs us that he has adopted the following method of preparing canvas for receiving photographic impressions with decided success. It recommends itself as avoiding the acids now generally used.

The method is to "mix whiting with alcohol, until a pretty thick mixture is formed—paint this over the canvas with a soft flat brush. When dry, rub off with cotton, until all the whiting is removed (which is easily done), and the canvas receives the salt and silver solutions beautifully."

— Mr. Wenderoth has sent us two beautifully executed positives, printed from drawings made direct upon glass. They resemble the finest line engravings perfectly. The half-length drawing of a California panther, is an exquisite piece of workmanship in every respect, far surpassing in finish and softness any engraving. Mr. Wenderoth writes as follows regarding them, and his Solar Camera process:—

Philadelphia, February 18, 1858.

H. H. Snelling, Esq.—*Dear Sir:* Enclosed I send you two specimens of the photographic engraving, recently discovered by Messrs. Nahl Brothers, of San Francisco, Cal. The large one, of which I make you a present, is the title page of a little book on Gymnastics, which they have just published and engraved from their own designs. Both gentlemen are artist painters; the writing as well as the drawing are done in the new style on the glass, and they think that such a plate will give a larger amount of positives than an engraved copper plate. They have been very successful, and received already several orders for large certificates for military and fire companies, of rich design to be executed in this new style.

I learn that some person practising the quick Solar Camera

Process, experienced some difficulty in developing the pictures: I don't know how that could be; I have not met with any failures, and I took, a few days ago, pictures during a snow storm in eight minutes, which were very strong and fine, and better than any I have seen taken by the ammonia nitrate process. The following day I took some pictures (on paper iodized the day before), with a strong sun (the negative was very intense) in five seconds, which were not half as deep in tone, as those taken the day before without sun. I think perhaps that it injures the paper when it is iodized some time before the picture is taken. Generally I iodize in the evening and use the paper the next morning. I will experiment on this matter and let you know the result.

Very respectfully yours,
F. A. Wenderoth.

— It seems that suits have been again commenced (this time in the United States Court) against Mr. Bogardus, of this city, for infringements on the balsam and flowing bath patents. Without entering into the merits of the case here, we would state that it is the desire of Mr. Bogardus, that all who have any facts regarding either case worthy of being submitted to the court, will communicate them to him at the earliest possible moment. It is quite time these cases were settled satisfactory to all parties.

— Mr. Marshall, of Claremont, Ill., writes—"I have found the *carbonate of silver* the most effectual article for neutralizing the silver bath when *iodide* of *ammonium* is not used in exciting the collodion. In answer to his two queries we will say that we have a very poor opinion of the "German quick process," and that Mr. Anthony's collodion is not (we think) iodized with ammonium.

— Messrs. Luccock & Parker.—We cannot say which *is* the best collodion preservative process. Mr. Long's seems to have met the approbation of the greater number of English photographers; to our mind, however, any process that will do away with every species of preservative mixture must be preferable. We should, therefore, advise you to try the method of M. Villecholes, and adopt it if you can work it successfully. We will again state, that a gentleman of this city has succeeded in compounding a collodion with keeping properties, that works admirably in the dry state; giving the finest definition in a very few seconds in the ordinary view camera. Your other query we have answered elsewhere.

— Manual of Photography, *Adapted to Amateur Practice. Whipple's Albumen Process.* By George B. Coale. 81 pp., 12 mo. J. B. Lippincott & Co., Phila. The object of this little Manual, as stated by its Author, "is to demonstrate practically that the Art of Photography may be adopted as a most delightful recreation by any one of moderate leisure, and that the most beautiful results are attainable by the exercise of the most ordinary skill, if backed by a reasonable amount of perseverance." It is also designed to assist photographers generally. It is artistically and skillfully got up, and treats of each subject in a manner that must be readily understood and easily followed.

— Mr. R. A. Carnden has sent us two gems of photographic portraiture; pictures that we have never yet seen surpassed. They speak volumes in favor of the perseverance and skill of the artist. In tone, sharpness, roundness, gradation of light and shade, brilliancy and cleanliness, no one has ever done better. Mr. Carnden has done wonders in the hot region of New Orleans.

— Mr. Robert Benecke has sent us several very good small views and portraits. The negatives of the portraits must be of the most refined detail, as, notwithstanding the positives are very much over printed, they are in every other respect very beautiful. The views are as good as could possibly be expected from a camera with a decidedly spherical abberation, and with the snow at least six inches deep on every level spot. Mr. Benerke is decidedly an artist in every acceptation of the term. For sharpness and minute detail we have seen nothing better. They might be put in evidence—if we understand the theory—as strongly against Pre-Raphaelism.

— Mr. M. B. Brady has opened a splendid Photographic Gallery in Washington City, and has not only received the highest praises from the papers of that city, but has received we hear the honor of being elected to membership in the American Society of Arts, lately organized there. Mr. Brady seems determined to secure the largest collection of portraits of American celebrities in the country.

— Mr. S. Remington has sent us two very good positive prints of Mr. Murdoch, the tragedian. A little more intensity in the negative would have improved them. The head is fine, but the drapery wants strength. If the negative is not varnished we would advise a re-development as follows: wash the plate well in running water, and then pour on and off, until sufficiently developed, the following solution:—A saturated solution of pyrogallic acid, with 30 drops of a 35 grain solution of nitrate of silver added and filtered. Wash after re-development.

— Mr. J. C. Gray writes:—"A good substitute for the ground glass in the camera can be made in a few minutes by rolling a piece of glaziers putty over a clean piece of plate glass. A few trials will show the degree of stiffness the putty should be in order to produce the finest effect.

— The *Baltimore Clipper* says:—"We find that Mr. B. F. Hawkes, photographer, 205 Baltimore street, has taken photographs of all the graduates of the School of Medicine, which have been pronounced in every way unexcelled, and many of the class have kept him busily engaged working off extra copies for their friends. He has also taken likenesses of the graduates of the Dental College, School of Pharmacy, ministers of the Baltimore Methodist Conference, and Odd Fellows, Red Men, Burns Club, and many other associations, all of which are most excellent pictures, and have given entire satisfaction.

— We have to close the labors of this month with the melancholy duty of announcing the death of Mr. Charles Richard Meade, of the firm of Meade Bros., of this city. He died at St. Augustine, Florida, on Tuesday, March 2d, of consumption; aged, 31 years 11 months and 9 days. His remains were brought to New York for interment. Mr. Meade has long been engaged in the photographic art, and few men in this country have devoted so much time and money to its advancement. As a practical photographer few excelled him, and certainly none could have done so had he not been bowed down by the terrible disease which finally ended his career on earth, and ended it prematurely. While he had health his progress in the art was constantly upward—in many respects his pictures were superior to other artists. He leaves a large circle of friends to mourn his loss, and no photographer will hear of his death without the profoundest regret.

At a meeting of the Photographic Operators of the city of Albany, held March 15th, 1858, the following preamble and resolutions were unanimously adopted.—

Whereas, Charles R. Meade, Esq., of the city of New York, a Photographist of great enterprise and more than ordinary artistic merit, has recently departed this life: and

Whereas, Mr. Meade has labored zealously for many years past to elevate the Photographic Art, by disseminating among us many improvements which he, by his perseverance, gathered up in the old world; therefore,

Resolved, That we deeply regret to part with one of our number, whose experience dates back to the birth of the Photographic Art; especially Mr. Meade, whose wise and *gratuitous* counsels and gentlemanly deportment, has endeared him to all who knew him.

Resolved, That we deeply sympathise with Henry W. Meade, in the loss of his brother, to whom he was bound by more than ordinary fraternal ties; and all friends of deceased shall have our deepest sympathy in this sad bereavement.

Resolved, That a copy of this condolence be sent to Henry W. Meade, Esq., and also to the *Photographic & Fine Art Journal*, and *Evening Journal* for publication.

R. E. Churchill, Chairman.

S. E. Parsons, Secretary.

J. B. Heywood Neg. H. H. Snelling, Print.

RALPH SMITH, ESQ.

From the Liverpool Photographic Journal.

ON THE APPLICATION OF PHOTOGRAPHY

To Art and Art Purposes, but more Particularly to Architecture.

BY MR. J. T. BROWN.

Read at the last Meeting of the Birmingham Photographic Society.

BEFORE considering the application of Photography I may not be out of place in tracing generally but concisely the principles of the Art, and although so long ago as 1556 it was noticed by those strange seekers after impossibilities, the Alchemists, that horn-silver, exposed to the sunbeam, was blackened by it, yet in their ardent search for the philosopher's stone, they overlooked in this phenomenon the germ of those most interesting discoveries which have distinguished the present age, nor until the last few years, has the magnitudinous import of the prime command, "Let there be light," issued by the great Architect of the Universe, in the Conversion by his Omnipotent hand of "the matter unformed and void—darkness profound—into a new created world. Earth in her rich attire, the pleasant dwelling-place of men, consummate lovely;" been contemplated, and that great vital principle considered, which called into being, when

> Forthwith the light
> Ethereal, first of things, quintessence pure,
> Sprung from the deep, and from his native East
> To journey through the airy gloom began,
> Sphered in a radiant cloud, for yet the sun
> Was hot; She in a cloudy tabernacle
> Sojourned the while.

and when, by the manifest wisdom of the Creator, who pronounced the light was good, was placed in the centre of our system the celestial luminary, to impart life and energy to every part of his incomprehensible universe; those universal forms of beauty, which, described as God's handwriting—a wayside sacrament, should be by us welcomed as a charmed draught, a cup of blessing.

Certain mysterious agents are perpetually offering astonishing results to the observation of Man, some of which, from their constant presence, become so familiar that they cease to awaken interest in our minds, and of this nature is the existence of the influence called *Light*. While from day to day it fills the sky and overflows the surface of the world, and from night to night, with twinkling points, spangles the heavens, or in its soft floods of phosphorescence half dissolves the veil of darkness, yet how few seek to know whence the constant visitant comes, or what its nature is. Important as is its interference with terrestial affairs, it belongs not to the earth; it is an inhabitant of the infinite, and, free from the fetters that confine denser matter to isolated spheres, floats from the immensely distant sun and yet remoter stars, through the yawning caverns of space, bridging them over with beautiful relations and sympathies. The pulsating stream connecting organized *worlds* with organized *suns,* it makes the universe a living system; without it creation would be a dry skeleton, with it, it becomes a growing, breathing, and palpitating frame.

But what is the wonderful agent which thus widely spreads itself through space? Why does it travel with undiminished speed from one boundary to the other of the vast universe, pass unscathed through the rock of densest crystal, and yet *stop* at the thinnest and palest film of *black* material? Why does it paint the fields with green, the rose with red, and the sky with blue? Why does it move in straight lines and change in the direction of its progress when it enters a substance of altered density? and why does it strike the sensitive membranes of the eye with perfection? In the resolution of these difficulties the grandest generalisations of science are but approximations, and suggestive rather than satisfying.

In arresting in its bright course from one great luminary, one of these subtle, swift-flying beams, and separating its influences, we shall discover three great powers,—the Illuminating-*Light*; the Calorific or *Heating;* and the Chemical or *Actinic.*

That the glorious orb of day pours upon this earth some principle on which the whole animal and vegetable kingdoms depend for health and life every one knows. Without the *luminous* agent the surface of this planet would be no longer beautiful, the brilliant hue of the flowers (supposing the plant to have been produced by the *actinic* power alone), and refreshing tints of the trees would be wanting, all would be colorless. *Light* is that part of the solar beam, which adorns our world with all its beauties, paints the fair flowers, tints the azure dome above us, and flings the glorious rainbow across it.

On *Heat*, or the Calorific portion of the sunbeam, depends the *life and motion* of this our world. As it were with a magical energy, it produces the disturbance in our atmosphere, known as wind, and causes the waters to flow, vivifies and animates all nature, and then bathes it in refreshing dew; and to judge of the influence of heat on both the animal and vegetable economy, we need only contrast *winter* and *summer*, the one radiant and vocal with life and beauty, the other dark, dreary, and silent.

The third constituent of the sunbeam is *actinism,* its property being to produce chemical effect, and it is to this portion we would now more especially direct our attention. Although its effects have been more studied as yet in the inanimate than the organic creation, still its power is known to be of the utmost importance in the vegetable kingdom. A seed exposed to the *entire* sunbeam will not germinate, but if we bury it in the earth, at a sufficient depth to prevent actinism (which, like heat, penetrates to some distance), but to exclude *light*, a chemical change will take place, which experiments clearly prove is to be attributed to *actinism* and not to *heat.*

The influence of actinism on the animal world is not so well-known; but although probable that many of the effects hitherto referred to *light* is in reality due to actinism; it is certain that the animal kingdom are as much dependent upon solar influence as the vegetable, and doubtless more careful investigation will discover this principle to be equally important to the life and health of animals as either of its closely allied powers of light and heat.

Of the actinic influence on inanimate nature, our knowledge is not so scanty, for it is a well established fact, that the sunbeam cannot fall on any body, simple or compound, without producing on its surface a chemical and molecular change; and Niepce discovered that *iodide of platinum*, which readily receives a photographic image, by darkening over the exposed surfaces, speedily loses it by *bleaching* in the *dark*, and hence the singular and striking fact, "*That bodies which have undergone a change of state under the influence of daylight have some latent power by which they can renovate themselves.*" Possibly the hours of night are as necessary to inanimate nature as they are to men and animals, and during the day, an excitement (which we do not heed, unless in a state of disease), is maintained by the influence of light, and the hour, of repose, during which the equilibrium is restored, are most essential to the continuance of *health.*

The immoveable rocks which bound our shores, the mountain which rears above the clouds its lofty head, the cathedral in all its stately magnificence, the very triumph of Art: and the beautiful statue in bronze or marble, are all acted on distinctively by the sunbeam, and would soon perish beneath its irresistible energy, but for the darkness of night,—the repose of darkness being no less essential to inorganic than it is to animated nature. During its silent hours, the chemical and molecular changes are all undone, and the destruction of the day repaired we know not how.

If, as indeed is probable, all elements are liable to change under solar influence, how great must be the disturbance over the face of our planet when the sun is above the horizon! and how varied the developments of electrical, chemical, and calorific phenomena under this excitation, which, if it is continued, must eventually change the features of this planet and of its inhabitants! And how beautiful that design by which, during external quiescence, matter is enabled to resume its former state, and during apparent rest, to restore to the balance that which it has lost!

Where the sunbeam spreads its genial influence there life in all its myriad forms is to be found; where the sun's rays cannot penetrate "death holds his silent court." At the *surface* of the *ocean* for instance, marine animals, varied in form and beautiful in color, are found abundantly; as we descend we find the animals gradually sinking in the scale of organization, and below a certain depth, varying probably in different latitudes, no creature stirs the ever-silent sea.

The influences of this power on inorganic matter, are now only being discovered, and the importance and interest of the enquiry will be strikingly evident when we reflect that in the creation of *light* this planet, previously revolving a mighty chaos, became an orb of beauty and animation; and without it, the entire surface would, even now, be an eternal blank.

The various powers of the sun's rays differ with the seasons, In Spring, the actinic is all potent, when dormant seeds are roused to life. In summer, the illuminating, when soft vegetable tissue is converted into wood by the fixing of carbon; and in Autumn, the calorific, when green fruits are ripened and seeds matured.

But having thus far glanced at the various effects of the solar rays, let us now confine ourselves so the disturbing influence of those several substances which chemistry has discovered to be sensitively alive to actinism, and from which the interesting art of Photography sprung.

It has been shown that a sunbeam, passing over a plate of iron, leaves indications of its path; and in 1813, M. Niepce, on his failure in lithographing on pewter—in his researches for a metallic plate, sensible to the luminous rays, and capable of being impressed thereby with the representation of external objects, solved one of the most complicated and perhaps the most difficult problem of the century in which he lived. Belonging to that class of indefatigable experimentalists who, without much technical knowledge, and with a very slender stock of apparatus, venture into the deepest and most intricate paths of science unwillingly; and ignorant of the fact that when he proposed to himself to create pictures by the chemical action of light he was bringing himself face to face with the gravest difficulties of human science—difficulties that had already baffled the most profound philosophers in the world, and which Sir H. Davy and the patient Wedgewood, after a thousand failures, had declared to be a problem insoluble—he did not frighten himself with any prescribed difficulties, nor conceive that this problem, in appearance so simple, would cost him 20 years of experimentalizing, and that death would suspend his labors before he had received the recompense and the legitimate satisfaction to be derived from his experiments.

In 1829 Niepce communicated all the facts relative to his photographic researches to Daguerre, an able painter, and a man of singular ability, who had also embarked in a similar pursuit, unknown to Niepce, and who, once initiated into the secret of his discovery, applied himself without relaxation to its improvement, and five years after the death of the author of this most interesting discovery—who, without one ray of fame, and neglected by his co-citizens, departed this life with the sad thought that he had lost 20 years of a laborious career, dissipated his patrimony, and compromised the prospects of his family in the pursuit of a chimera,—fully conceived and developed in the Photographic process, which entitled him to the honor of attaching his name to a new science.

To the researches of other eminent laborers in the same field, we are much indebted, but to Mr. Fox Talbot more particularly so. In speaking of his own process in 1839, I find him to have said—"The first kind of objects which I attempted to copy were flowers and leaves, either fresh, or selected from my herbarium. These it renders with the utmost truth and fidelity, exhibiting even the venation of the leaves, the minute hairs which clothed the plant, &c. &c." It is so natural to associate the idea of *labor* with great complexity and elaborate detail of execution, that one is more struck at seeing the thousand florets of an agrostis, depicted with all its capillary branchlets (and so accurately that not one of all this multitude shall want its little bivalve calyx, requiring to be examined through a lens) than one is by the picture of the large and simple leaf of the oak or chesnut. But in truth the difficulty is in both cases the same, the one of these takes no more time to execute than the other, for the object that would take the most skilful artists days or weeks of labor to trace or copy, is effected by the boundless powers of natural chemistry in the space of a few seconds.

I have not time or space to follow further the many and various modifications of the first theory, but perhaps may pay a tribute of respect to the discoverer of the Collodion Process, the late Scott Archer.

I leave to other and more worthy hands the application of Photography to science, but at the same time imagine that Physiology, Geology, Botany, and Zoology, Surgery and Astronomy, cannot but be immensely benefitted by its agency.

Before proceeding to its application to *Art* purposes, I may notice that to such perfection has Photography arrived, that astronomers (aided of course by proper mechanical contrivances), have been enabled to depicture the Moon, and what great results may we not anticipate from general Photographic views of the heavens; and through its medium may probably elicit some information concerning the cause of the difference in the light of some stars from others, and may also determine why every *bright* star does not impress its image on the same sensitive surface with equal intensity.

But to the present object of my Paper.

Bulwer Lytton describes "*Art* as more godlike than *Science*, insomuch as while Science discovers, Art creates."

Art affects national prosperity, intellectual culture, and material and social happiness; *Art* shows us man as he can by no other means be made known; gives us nobler loves and nobler cares, and furnishes objects by the contemplation of which we are taught and exalted; and every department of art, whether practised by the painter or engraver, sculptor, architect, or engineer, must from its association with Photography, gain rather than lose by the connection.

Although painting and sculpture are the twin sisters of, and depend in a great measure upon, the more ennobling art of Architecture, yet photography opens a wide field, and each may take from it what he requires, and by taking his own course, not only will Photography be improved, but *Art* will be considerably advanced.

Time will not permit me to take more than a cursory glance at the use which the Artist and sculptor should make of the science of Photography; but I am convinced that good must result from the unreserved intercourse between scientific men and artists. It seldom happens that the purely scientific man has much time to bestow upon the subject of Art, nor has the artist, with his ceaseless mental occupation in the composition and execution of his pictures, time to follow out a series of experiments in Photography; yet he can throw much light upon Photography, in an artistic view, while he remains dependent upon his scientific friends to correct lenses and promulgate the shortest and most certain means of obtaining Photographic pictures.

To the artist, the masses of light and shade, their forms, and the proportions which the shade bears to the light, and the half tints to both, is more the object of his study than correct definition, and pictures valuable in the eyes of the artist would by the scientific photographer (although delighting him with their broad masses of light and shade, and their truly suggestive character), be pronounced entire failures, and while Photography can reproduce facts to their most complete form, yet there are evanescent effects of light and color, momentary developments of beauty in life and character, which will occupy the whole attention that the artist can give them, and in which no powers of Photography can render any assistance. The mature knowledge of the artist will select specimens, and the camera in a few seconds will present a perfect transcript, the accuracy of which will be so minute as to afford as complete a means of study as if the object itself were continually before the artist; but this correct definition, so important where minute forms and the varieties of texture are required, is not in a general sense absolutely necessary to render Photography *useful* to the artist, who with his camera may plunge into pre-Raphælism, or Rembrantism, or Reynoldism, and thus watch closely the effects of Nature herself as she kindly sets them down with the pencil of light for the benefit of the student in art; while in the natural studies of breadth of effect to guide the painter in the conduct of light and shade in his picture, correct definition would be injurious.

But Photography can never reach the poetry of Nature, and although every variety of subject, from the most solid and substantial to the most light and airy, are displayed with such exactitude of delineation as to completely set at nought the exertions of manual ingenuity; yet all attempts on the part of the artist to sordidly copy such elaboration of detail, destroys the poetry of fine art.

In portraits especially, Photography must render great assistance to the artist, by furnishing him with those elaborate details, which, as in the case of a court-dress or uniform, require making out, and necessarily involve considerable expenditure of time.

Wonderful as are the powers of the camera, we have not yet attained that perfection so as to faithfully represent the effect of *colors*, and consequently of *light and shade;* and valuable as it may be in assisting the private studies of the artist in composition, yet it is by no means calculated to *teach* the *principles* of art. To aim at the attainment of every minute detail is not necessary or desirable, but to endeavor to produce a broad and general effect, in which the *suggestions* which nature offers, will assist his services materially. Nor until the Art-Student has made himself acquainted with the true principles of his art, and has acquired sufficient power of hand to draw with ease and correctness the outline of any object he may have to represent, would I recommend him to take up the camera as a means of advancement in his profession.

The taste for the higher works of art is only acquired by great and continual cultivation, either by the artist or the public; and those of the old masters more particularly, many of which are but sparingly known out of the country in which they were produced, have hitherto been placed before the student by means of the art of engraving, which was for many years the only ready means of multiplying the conceptions of genius for the use and edification of the million. For want of engraving, the works of the ancients, with the exception of a comparatively few fragments in sculpture, are lost to us; by its aid the sublime creations of the pencils of Angelo, Raphæl, and Correggio may, in most of their essential characteristics, be spread over the wide world and handed down to unborn ages long after the originals have perished. To a discriminating eye, an engraved copy of a picture skilfully, conscientiously, and feelingly executed, preserves all the excellent qualities of the painting itself, as design, composition, expression, drawing, &c. Color alone is wanting, yet though not there as color, speaking in the same language, it is still there, "translated" into judicious graduated tints. In this particular Photography is at fault for although we may realize, as does the engraving, the design, composition, and expression, yet unless the picture is painted purposely we cannot realize its *beauties*, solely in consequence of certain colors, such as bright red, yellow, and green, which act as *lights* in a picture, always appearing *dark* in a photograph, and blue, on the contrary, presenting a *light* appearance.

But in the re-production of engravings, our late Exhibition fully proved the competence of the process, and more particularly in the case of valuable old engravings, the plates of which have long ago been destroyed.

Only a few weeks ago, the *Times*, in one of its leading articles on the subject of the Manchester Exhibition, just then closed, said,—"The body of the working people are as yet too undeveloped in taste to come within the scope of the influence of the collection of the best works of the old masters. They must be acted upon by a more *popular* art, by better prints in the shop windows, better cuts in illustrated periodicals, better shaped jugs and cups, better built streets, better designed shop fronts. When they have ceased to live in Paradise Row, to eat of the willow-pattern plate, or to take in illustrated romances in penny numbers, we may introduce them to the great painters, sculptors, and carvers, with some hope of success." And Burke says,—Taste is improved exactly as we improve our judgement, by extending our knowledge, by a steady attention to our subject, and by frequent intercourse."

My space will not allow me to enlarge on the lives or works of Ghirlandajo, Donatello, Leonardi-di-Vinci, M. Angelo, of Correggio, Rembrandt, and Guido, of Rubens and Vandyke, Claude, Titian, and Murillo, or of those men who have more lately rendered inseparable their names and the art of painting; but I may be allowed a few words on Raphæl, with a sincere hope that the artists of the present day of all ranks, may be induced to follow the glorious pattern set by him, who, born not many years ago in Urbino, in early life gained for himself such fame and glory as seldom fall to the lot of man. Courted by the great and companied by princes, who that their names might be preserved from the obscurity of time, sought to wreath their own in the halo of his immortality. And when at length he prematurely died, and the eyes of Italy were fixed in sorrow on his tomb, his fame survived, and continually growing brighter and larger, has steadily increased with the *world's* growth; and now, though his body has long been at rest, and his fair form has returned into the dust from whence it came, who shall affirm that Raphæl is dead? Is not his spirit even now with us? Is not his fame greater and brighter now than ever? And while the world lasts shall it ever die? Yet this man, this wondrous man, whose name has been a watchword to so many eager and alas! all too-devoted followers, did not fruitlessly and foolishly *complaim* that to *him* sufficient opportunity was not accorded; for he knew that nothing was so small, but there was in it ample room for *mind;* that greatness of the soul was shown in finding nothing too trivial for its notice, and that he who cannot rule with wisdom over small things, would assuredly fail yet more miserably if the sphere of his power were enlarged and the weight of his influence increased.

To the sculptor also Photography is valuable, although not to the same extent as to the artist; as the use of plaster of Paris places within his reach, at a small cost, casts of all the best and most perfect models, handed down from antiquity; but where, as in some cases, this is by the present owner denied, Photography steps in and places within his reach a more exact representation, and by the aid of the stereoscope a nearer embodiment of the original, than can be obtained by any amount of manual labor.

As to the use of Photography to the engineer, I need only instance the case of the Suspension Bridge over the Dnieper, at Kioff, constructed by M. Vignoles, for the Emperor of Russia, photographic views of which were taken weekly during the whole period of its construction. In the case of interchange of ideas with foreign employers, each party only partially and imperfectly understanding the other, details of complicated structures may be rendered intelligible, and in the superintendence of distant works, which, by the principal, could only occasionally be visited, Photographic views would be invaluable.

I now proceed to the application of Photography to Architecture,

"That Art which lifts the mighty dome on high ;
Points the tall spire towards the kindred sky ;
Marshalls the colonnade in long array ;
Bends the proud arch across the victor's way ;
'Twines the rich tracery in the storied pane ;
Spreads the broad transept in the holy fane ;
Extends the nave, and vaults the length'ning aisle,
And crowns with mighty towers the noble pile."

And if, in tracing the bearing of Photography on the student, in the study of that art, I occupy more of the time of this Society than would seem to be desirable, I must crave your forbearance, as the religion, manners, and customs of the nations through which we pass, are so embodied, and must necessarily be, in all *true* Architecture, that to deduce the true principles involved, we shall have to touch upon each of these topics.

It was well said by Sir C. Wren, that "the pursuit of Architecture was the study of antiquity rather than of fancy, and following that course must lead you back to the *past*, where—

"Far in her realm withdrawn,
Old Empires sat in sullenness and gloom;
And glorious ages gone,
Lie deep within the shadow of her womb."

All men of reading desire to possess faithful representations of the monuments of antiquity—the pyramids of Gizeh, the palace of Carnac, or the Cyclopean walls of Greece. We feel a pure and healthful pleasure in examining even the images of scenes made sacred to our memory by the deeds of heroes or the words of sages. The temples of Athens, the wonderful Acropolis, the mysterious ruins of Pæstum, and the fanes and arches of Rome, misnamed the Eternal, speak even from their pictures. There is the still small voice of the past speaking to the present of the mutability of all things. The lesson they thus give us—even those who have never crossed the sea which washes our island home, is but little inferior to that which the traveller receives who contemplates the moral of a broken column or a crumbling arch on the very spots, where once, the glory of the age, they stood. Even in our own land we have temples, which in their consistent and beautifully elaborate architectural details, realise the poet's fancy of a *"petrified religion."* We have monastic piles hastening to decay, but even in their dissolution—beautiful; and baronial halls, whose battlemented walls are tangled with ivy and clothed with the moss of centuries. These are hallowed by holy recollections which cling to every British heart, and cannot pass away until we have forgotten the history of our land, or ceased to enjoy the privileges won for us by our forefathers. Each and all of these we are now able to preserve with the strictest fidelity, and impressed by the subtle finger of metal and glass, or on sheets of paper, every stone will tell its own tale, and as the mind of the poet shines for ever from his productions, so the very genius, the very spirit of the place, will speak to future ages as they now speak to us.

In tracing the history of architecture, we must in reality examine the progress of the various parts of the world towards civilization, and in many cases their relapse into barbarism. All that remains of many once powerful nations are a few ruins, which although isolated and dismantled, yet enable us to form correct ideas of the religion, recreation, manners, and ability of the people by whom they were erected. Ideas expressed in earth and stone by the contemporaries of the Pharaohs, and who have exercised strong influence on society, remain to us almost uninjured. How powerful are the images which they raise! A link in a great chain, they serve by association to re-people the wastes whereon they stand, and call back to the mind, remembrance of the whole course of past events.

The several styles of architecture have uniformly been the *result* of the religion, habits, and modes of thought of the nations which produced them, and may be said to be *the material expression of their wants, faculties, and sentiments,* under the influence of climate, and of materials at command, and have each undergone a process of gradual decline in proportion to the changes to which each nation, in course of ages, has been subject.

The splendid works of Egypt show us how wonderfully architecture is there the expression of a symbolic mythology. Religion was the teacher, the priest, the artist. Vast, stupendous, mighty as the system on which he was founded, never has any style of architecture appeared so fully capable of handing down to posterity a complete chronicle of the manners, customs, knowledge, and feeling of a people. On the most public portions of these temples, we may still read the complete history of their kings, and the most remarkable events of their most flourishing times, whilst on their tombs are found delineated a complete record of the arts, science, and commerce, known and practised by this most remarkable people.

Layard, in his researches at Nineveh, has afforded the students in architectural history fresh links in the chain of enquiry. The discovery of the *arch*, the prevalence of the honeysuckle ornamented (adopted by the Greeks, but nowhere seen in Egypt), the germ of the Ionic order, by the extent of which, Greek art is indebted to Assyria on all points of study.

In Mexico too, discoveries have within a few years been made of ruins not inferior in importance to those of Egypt, and coinciding in some measure with the pyramids and structure of that country, and although no other record is left to us but these ancient monuments of a once powerful people, may we not in a great measure trace their history in the stones? No fewer than forty-four cities have been discovered, and the effect on the traveller when he first stumbles over these wonderful monuments of the wilderness (tenantless ruins, overgrown with enormous trees), long buried and unknown, which, like skeletons wrapped in their burial shrouds, rise from their graves, must be startling and intense; and the first appearance of a cluster of columns in the midst of the rapid vegetation of that climate, equal in magnitude and surpassing workmanship those of Egypt, miles distant from any habited spot, and of which the natives have neither knowledge nor tradition, may be imagined rather than described.

In Greece, with a new civilization, a new style arose, borrowed in its characteristic features, (as was also its religion) from Egypt; and the religion, which in Egypt was spiritual and mystic, became in Greece purely material. The Egyptians in the beginning worshipped *all* Nature, the air, the stars, the sun, the moon, the Creator and His creations, and these they represented by certain forms of men and animals, but long ere their religion had passed to the Greeks they had abandoned the adoration of the thing signified for the grosser idolatry of the objects themselves, so that losing sight of the original allegories they were led to invest their divinities with the supposed attributes of the Heavenly bodies, and hence the religion as derived from Egypt being purely material, impressed a material character on their architecture. The object of Greek art, addressed more exclusively to the intellect and the senses, was the most refined beauty—and feelingly alive to all the bounteous gifts of Nature, they embodied them in their art, without the symbolism prevalent in Egypt,—and conceiving God in the image of man they made men like Gods.

But under the Romans, Greek art became still more material, and lost the refinement with which the Greeks redeemed it. Having attained an almost boundless power over the then known earth, the Romans neglected the traditional deities of their forefathers and set themselves up as Gods.—Glory, conquest, and luxury was their real religion or bond of union, the monuments handed down to us as the true chronicles of their times,—the Coliseum, the baths, theatres, and triumphal arches, and it is for these only they claim any originality of invention. *Greatness* and richness, though two of the principal elements of architectural effect are not the only ones, and although many of the Roman edifices add to those qualities *appropriateness*, even that will not suffice. Concealed construction, the junction of incongruous styles and ornaments, and the juxtaposition of inappropriate parts, copying and borrowing blindfold instead of inventing, in short, a want of artistic feeling and understanding of the subject, characterise and spoil all the architectural efforts of the Romans.

Close following the fall of paganism, and with the rise of the christian religion, a new era in art arose, than which, when science, religion, and love, under the influence of faith ministered to it, no style has been more glorious or more beautiful. If we carefully analyse christian architecture, we shall find it in the requirements of the age and country to which we direct our attention. Whether we look at the Gothic of Northern Italy, Lombardic, or Venetian, with all its picturesque effects of light and shade, of Spain or Germany, or our nearer neighbor and now ally, France; or in our own much loved land, we shall find the tendency in all the same, the elevation of the heart and mind, through the medium of pillar and arch, pinnacle and spire, gradually and by degrees, leading our thoughts from earth and worldly matters to those more immediately connected with the soul. Those beauteous structures which—

> Children, that come to see these saints in stone,
> As day by day out of the blocks they rose,
> Grew old and died, and still the work went on,
> And on, and on, and is not yet completed;
> The generation that succeeds our own
> Perhaps may finish it. The architect
> Built his great heart into these sculptured stones,
> And with him toiled his children, and their lives
> Were builded with his own into the walls
> As offerings unto God.

And among those I may justly call attention to the Cathedrals of Wells (with its wondrous west front and glorious display of sculpture); Winchester, a perfect history of architecture; Lincoln, with an accumulation of beauties nowhere rivalled; Lichfield, with its three spires; Westminster, the resting place of Kings and of early arts the record; of Salisbury, the most uniform of all, and a perfect whole—or those glorious abbeys, many of which, like Tintern, in its delicious vale cunningly placed, reft of their thousand beauties, stand as relics of the mighty age in which they were erected; or the village church, whose spire, the perfection of the elements of design, shoots up into the sky. In this country, the culuminating point of gothic was reached, and all its crowning elegancies achieved in the decorated period—when saints sanctified in stone, took their place beneath sculptured canopies, and floriated pinnacles, and running foliage curiously cut, grew up into the hollows of mouldings. The possession or these noble piles, the combined results of the piety, liberality, genius, skill, and taste of ages gone by, entails upon succeeding generations a serious responsibility in scrupulously preserving them from injury, and handing down intact and unimpaired their beauties to generations yet to come.

The religion of Mahommed produced an art in unison with its imaginative and poetic doctrines, an art as essentially the offspring of the Koran as gothic that of the Bible, and the palaces of Granada and mosques of India and Cairo, shew everywhere the calm, voluptuous translation of that doctrine. The Mahommedans, forbidden by their creed to represent *nature* in any of her multitudinous forms, and more particularly the human form divine, were led to adorn their temples in a style peculiar to themselves. Expressing faith while adding beauty—inscriptions from the Koran were interwoven with geometrical ornaments and flowers, and the offspring of this art, the Alhambra, or red castle, the celebrated palace of the ancient Moorish kings of Granada—combines in its architecture every element required in a true style of art.

With the exception of the Chinese (whose peculiar architecture is little known and less appreciated) the Mahommedans are the only race who still practice the art which grew up with their civilization, and although that art evidently suffers when brought in contact with European influences, as in Turkey and parts of India, they are still faithful to the *art*, as to the religion, habits, and modes of thought which inspired it.

I need not refer to any of the other styles of art which have existed, but all have, with more or less of faith, been inspired by spiritual or political ties.

In the application of Photography to architectural purposes, correct definition, which to the artist is unnecessary, is to the architect of first importance, and regardless of any other consideration, every effort should be exerted to get the detail as sharp and clear as possible—though, for producing picturesque effect, a different treatment is required.

In the study of architecture, there are three great constituents of that divine Eurythmia, which awakens in the mind the perception and joy of beauty. Fitness of parts, harmony of ideas, and unity of purpose.

Beauty is the true aim of art, and not of high art alone, but of everything that appeals to the taste; nor can we with impunity fall away from beauty, to offer up our ingenuity and skill on the altars of the strange gods of our ancestors. *Virtue, order, happiness,* depend in a great measure upon taste. The hills, the glens, the woods, the waters, the birds, the flowers—all things that God has clothed with beauty, possess a medicative power to heal the soul and invigorate the affections. But the enjoyments of the works of nature will be of little use, if their impression is to be instantly effaced by the *artificial objects* that surround us, and each one of these objects therefore, even the most minute and insignificant, ought to be constructed on the same principal of harmony which plans a temple or glorifies the Heavens.

It will be found that there are principles conveyed to us through the natural kingdom, which man has endeavored to apply to all he undertakes, and Certain it is that in Architecture and its concomitant arts, he has followed the working of nature to a great extent. Our Shakespeare, in his "Winter's Tale," says—

> That Art
> Which you say adds to Nature, is an Art
> That Nature makes.

And the same source, which is inexhaustible, is equally open to us as it has been from time immemorial to the artists of every clime, who from thence have derived forms of grace and elegance.

A beautiful building resembles a great epic poem, in which all the parts are so justly balanced, and so nicely harmonized, that the effect produced on the mind is that of beauty and repose.

If we examine the works of the middle age Architects, we shall find they did not work without rules, or guiding principles, and the more fully we study our ancient edifices the more clearly does it become apparent that nothing was introduced unnecessarily or deceptively for mere appearance sake: that the excellence of effect, which is apparent, resulted from the use of sound principles, laid down not with a view of producing that effect, but with reference to *stability, convenience, and fitness,* good taste and great skill being afterwards employed in adorning that which was necessary, and making the useful a producer of the beautiful.

For the true test and foundation of all pure ornament—Geometry—the Architect is indebted to Nature. Art combinations would, without the aid of that science, cease to be graceful, and their symmetrical combinations would no longer exist. So long as ornamentation is disposed as designed upon natural laws, so long will it be beautiful and endurable, for "a thing of beauty is a joy for ever;" but if, on the contrary, unnatural outlines and fantastic shapes be festered, the growth of the spreading boughs, the budding of the clustered foliage, will be arrested, and an unhealthy formality mistaken for beauty.

The principles to be followed in imitating nature, are those which she herself adopts in the organization or arrangements of her works; no abortions, imperfections, or peculiarities, ought to be copied; but the Architect's object should be, not to make things as *Nature makes them,* but as she *would make them.* PERFECT foliage, flowers and vegetable forms, must be distributed and applied in strict accordance with Nature's rules. The idea of perpetuating, in stone, the beauties of the vegetable kingdom, emblematically expressed, was a happy one of the greatest antiquity, and there is no style of architecture without its *flora* more or less conventional'zed. So extensive is the range of art decoration in every civilized country, each of which possess its own characteristic development, that to collect, analyse, and study comprehensively the resources of so widely cultivated a field, would occupy a lifetime. The Architect requires a greater knowledge of *living* plants than of *dead* ones, leaves and flowers are of little use after they have been flattened, as the undulations and the beauty of the forms are lost. The form of the leaf, the disposition of the veins, the position of the leaves upon the stem, the form and character of the stem, the flowers and the fruit, are all of moment, and require to be carefully studied.

In this study of ornament it is that the architectural student will discover the benefits arising from the use of the camera, in assisting him in the consideration and adoption of all those varied combinations required in ornament, which, as Ruskin, in his "Lamp of Beauty," says, "must consist of such studious arrangements of form as are imitative or suggestive of those which are commonest among natural existences, that being, of course, the noblest ornament which represents the highest orders of existence. Imitated flowers are nobler than imitated stones, imitated animals than flowers, imitated human form of all animals the noblest. But *all* are combined in the richest ornamental work, and the rock, the fountain, the flowing river with its pebbled bed, the sea, the clouds of Heaven, the bird, the beast, the man, and the angel, mingle their fair forms on the bronze of Ghiberli." But if the student, after a patient contemplation af Nature and Art, should not be enabled to put into *execution* the qualities necessary in the production of great architectural works, by their study and observation, he would at least enhance the happiness of his existence.

Let the architectural student look back to days long gone by, to the Monk architect at work in his narrow cell, and study to emulate him,—see his pale cheek glow with delight as he built up in his mind the edifice which he was studying, his thoughts are not merely to copy but to surpass all his predecessors, and so he judged every separate stone, allowing none to keep their place without rendering some worthy reason, and when he had given to his shades their utmost intensity and his lights the fullest grace which they could attain, feeling the correctness of his main lines, and that therein nothing further could be achieved, yet when he came to clothe his building with the last robe of loveliness of which it was capable, then still more unrestrainedly did he seek for inspiration from the teachings of nature, and by entwining many a fair plant in the dark hollows of his mouldings, or clustering around some spreading capital, showed how sincerely and dearly he loved her. His *life* was in his work, he followed it because he loved it, and engaging him by day, and at night mingling with his rest, this all-pervading spirit ot love and zeal is to be observed not in him alone, but in those who followed his directions and carried out his projects. Nor can we disbelieve or doubt this, when we stand before some wondrous carving in which neither labor, nor time, nor skill has been spared, where the leaves are bent and waving, and full of life, and are arranged not in fantastic and unmeaning scrolls, or issuing from the tails of impossible monsters, but in everything obedient to the laws of Nature and placed as she would have placed them. Nor has anything good ever been accomplished in architecture but that which has been done in *love*, and in this lies much of the difference between the works of the present and of past ages. There is many a village church of olden time plain and simple, which yet possesses more power and vitality and can move our hearts to a far higher admiration than many a more costly modern work. And why? In the former case the men who built that church loved the forms into which they moulded its stones, they chose and thought about them, and the fruits of that love and zeal—who knows not how many hearts have been awed into silence, and how many, by the works of these men, have been lifted up in praise? But in the latter case love did not guide the choice so much as fashion, and forms were chosen not because they were beautiful, but because they had been used before, selected in obedience to precedent.

Let those answer to the fruits of that love and zeal who know what it is to gaze in silent admiration at those fair vaulted roofs, with their lines of beauty knit together by the flowers of the field, or, as they tread the darkening cloister, indulge in strange and deep thoughts, in which the deepness of its shade mingles: or those who love those quiet rows of holy saints, their hands as in benediction raised, each in his appointed niche, standing so peacefully on some glorious portal, whose height is lifted up towards the clouds and fashioned with wondrous power. Let *all* who have loved the works of these men answer,—all that numerous and ardent crowd, which within its ranks contains princes and peasants, old men and children, rich and poor philosophers and poets, every rank and every degree.

If the students of architecture in the present day would turn to their work with love and zeal, loving their art if not with the devotion of M. Angelo, yet with a fervent and warm affection, feeling pride in being permitted to follow it, and pursuing it with all the zeal and energy of which they are capable, sparing no labor and remitting no endeavor to attain as high a proficiency in and as thorough a knowledge of it as possible; we should see rise before us crowd after crowd of dwellings that would still more enhance the value of home, such as men would delight to occupy, and from which would continually proceed men better and wiser. Towering far above would be public buildings, in whose walls the history of nations would be written, but better still would there be many a glorious edifice, rich in all that beauty, loveliness, and wealth can give, with vaulted roofs, lifted far into the quiet air, and their thin fair spires rising higher and higher still, typical of that religion to the service of which the building is dedicated.

Thus architecture is not the child of archæology, but the offspring of it, and thus art, in so far as it expresses the spirit of the time in which it is produced, and the architect that has imbibed the true and living principles of his art feels himself forced onward by the physical, moral, religious and social requirements of his countrymen, the necessities of the body and the needs of the spirit, which are served by the architect, and served by perfect harmony.

From Photographic Notes.

PHOTOGRAPHS OF THE MOON.

We have alluded, on one or two occasions, to some photographs of the Moon, which were exhibited by Mr. Warren de la Rue, at the last meeting of the Astronomical Society. The following account of what took place at the meeting, appeared in the *Athenæum*, of the 12th of December:—

"At the close of the Meeting of the Astronomical Society, on November 13th, Mr. Warren de la Rue exhibited a great variety of beautiful photographs of the moon, several of which he placed at the disposal of the Fellows of the Society. He also made some remarks on the application of Photography to recording the appearances of the heavens, and more particularly of those presented by the moon and the larger planets. Mr. Bond, of Cambridge, in the United States, was the first, he believed, who obtained a photographic impression, by means of the telescope, of the lunar surface. At a subsequent period, in the year 1852, Mr. De la Rue applied the collodion, assisted by Mr. Thornthwaite, and obtained an excellent image of the moon; and he had the honor of exhibiting it to the Society, and of describing the apparatus by which he obtained it. It is difficult to follow the moon's motion in any telescope, without the aid of a clockwork driver; nevertheless, by means of a sliding plate-holder in the place of the ordinary eye-piece, he was able to do so, by viewing the image through the collodion film. The particular form of apparatus employed he had the pleasure of describing at that period to the Society. Mr. De la Rue soon relinquished the pursuit of lunar photography, because it required two enthusiasts; one to uncover the mouth of the telescope, and one to follow the moon's apparent motion; and it was not easy to find a friend always disposed to wait up for hours, night after night, probably without obtaining any result. He therefore resolved to discontinue his photographic experiments till he had applied a clock-motion to his telescope. This he has done during the present year, and he has taken the earliest opportunity of resuming his experiments. The first results Mr. De la Rue obtained were similar to those described in 1852, and were produced by employing collodion, and obtaining positive images of the moon. He was very successful from the onset, and had been enabled to distribute a few enlarged copies of a photograph obtained on the 7th of September. There were also copies of it on the table for the use of the members then present. More recently Mr. De la Rue has been induced to make experiments in the production of negative collodion pictures, for two reasons: first, because they admitted of more easy multiplication, and secondly, because the image is much finer in grain. In the positive pictures the precipitation of the silver is in larger particles than in the negatives. The paper copies before the Society were derived from a positive picture, which in the telescope, was obtained in five seconds. When this was procured he was unable to obtain a good negative in less than 14 seconds. However, his friend Mr. Howlett lately put him in the way of making negative collodion very sensitive, and he obtained negative impressions in ten seconds. Since this, by paying particular attention to the state of the bath, he had been very successful in still reducing the time of exposure, and had produced pictures, not only of the lunar surface, but also of Jupiter, in from three to seven seconds. The photographs of Jupiter show his belts remarkably well. The beauty of the photographs exhibited of the moon, he thought it would be admitted, gave great promise that at a future period photography will be considered as the only correct means of mapping down the lunar surface. When we shall be able to obtain collodion finer in grain and still more sensitive, it will supersede hand-drawing altogether; and even now the results obtained are much more accurate than anything hitherto done by mapping or hand-drawing. It is nearly impossible, by micrometical measurement, to lay down all the details of the moon, and much, after a sort of triangulation, has to be filled up by eye. The work is too laborious; and the famous map of Beer & Mudler, wonderfully accurate as it is, does not fulfil the conditions of absolute accuracy in all the minute points of details.

"The Astronomer Royal expressed his feeling that a step of very great importance had been made, of which, either as regards the self-delineation of clusters of stars, nebulæ, and planets, or as regards the self-registration of observations, it is impossible at present to estimate the value.

"The most cordial thanks of Astronomers are due to Mr. Bond, and to the professional amateurs, Messrs. Whipple & Black, by whose perseverance this object has been obtained."

THE DRY COLLODION PROCESS.

BY CHARLES A. LONG.

Before describing in detail the manipulations of the process on Dry Collodion plates, it will be necessary to say a few words on the materials and apparatus to be employed, and also to give an account of the means of preparing the various solutions used in the process. First,

THE COLLODION.

This being the principal material we have to use, we must exercise great care in the selection of a sample that possesses all the characteristics which fit it for a dry process. We must reject all samples that possess great tenacity and contractile power: the Collodion must not be too thick, and it must flow evenly over the plate, and not set in ridges. The best condition for the Iodized Collodion is that known as *powdery*, that is, being spread on the plate and partially dry, it cannot be removed as a film, but crumbles up on being pressed by the finger in its passage across the plate; in fact, such a condition would arise from using gun cotton prepared with acids at a high temperature.

The following formula will be found to answer most admirably:—

Gun cotton	60 grains.
Absolute alcohol	5 ounces.
Sulphuric Æther, sp. gr. ·730	15 ounces.

The cotton is to be shaken up with the mixture of alcohol and æther, and when dissolved, the bottle containing it must be stood aside, in order that any undissolved particles of cotton may subside. The clear liquid may then be decanted into a clean bottle for use.

It will be as well to test the quality of the Collodion thus prepared before coating any number of plates with it, for, although the above proportions are very excellent, some little latitude must be allowed for the different degrees of solubility of the various samples of cotton used from time to time. The film, when spread on the glass plate and partially dry, should not be capable of being removed in the form of a skin, but should give before the finger and crumble up on its being rubbed across the plate.

Should any difficulty, however, occur, it would be better to obtain a sample of the Collodion made by an experienced hand, in order that a fair trial may be given to the process. If the Collodion be too contractile it will give rise to blisters in the film, and will wash off the plate during development.

The Iodizing Solution that I have found to give the best results in this process is made in the manner following:—

Absolute alcohol	8 ounces.
Iodide of cadmium	64 grains.
Iodide of ammonium	64 grains.

The iodides are to be dissolved by agitation in the alcohol, and the resulting solution is to be carefully filtered, and preserved in a well-stoppered bottle.

The Iodizing Collodion consists of—

Iodizing solution	2 drachms.	1 ounce.
Plain collodion	6 "	

The Collodion should always be iodized at least twelve hours before it is required; this interval allows any insoluble matters either from the iodizing solution or from the Collodion itself to fall to the bottom, and enables the operator to pour off all the clear solution into a perfectly clean bottle for use.

Next in importance to the Iodized Collodion comes

THE PRESERVATIVE SOLUTION.

Some care is required in the preparation of this solution, in order that it may be clear and bright when finished, and not contain particles that would be deposited in its passage over the Collodion film when being used. The chief precaution to be observed is *not to allow it to boil too rapidly, and not to conduct the operation over too fierce a fire;* attention to this will prevent many failures, and ensure a solution in every way suited for the process.

Take 200 grains of the best transparent gelatine, cut into small shreds, and throw it into a pipkin in which has been previously placed 10 ounces of distilled water; set this on a slow fire, or over a lamp, until the gelatine is completely melted; then weigh out 100 grains of pure citric acid and dissolve it in two ounces of distilled water; add this to the solution of gelatine, stirring it during the addition with a glass rod. The solution in the pipkin is now to be gently boiled for about 15 minutes: remove it from the fire, and add sufficient distilled water to make up the bulk of liquid to 12 ounces. When quite cold, the liquid in the pipkin is to be filtered through two thicknesses of pure white blotting-paper into a bottle perfectly dry and clean. We now add to every 12 ounces of filtered preservative solution, 1 ounce of alcohol, of the specific gravity of ·840.

The solution thus prepared is ready for use, and should be of a pale amber color, without any signs of insoluble particles floating in it; should any appear after it has been prepared for some days, a second filtration will remove them, and render the liquid again bright and clear.

It will be found better to prepare this solution only in the quantity indicated above, unless the consumption be large, for although it will keep good for a month or more, my experience points to the fact, that the most successful results follow the use of Preservative Solution freshly prepared.

THE NITRATE OF SILVER BATH.

The bath for rendering the plates sensitive does not differ from that recommended for taking negatives with wet collodion. The formula for its preparation may not be out of place, however, and may assist those whose knowledge of the matter is not perfect.

Nitrate of silver (fused)	1¼ ounces.
Distilled water	10 "
Iodide of cadmium	3 grains.

Dissolve the nitrate of silver in the water and then add the iodide of cadmium; thoroughly agitate the mixture for five or ten minutes, then add ½ ounce of alcohol, sp. gr. ·840, and 10 ounces of distilled water; further agitation, and subsequent filtration through two thicknesses of white bibulous paper, will put us in possession of a negative bath. The nitrate of silver being fused, and consequently, pure and neutral, and as it is essential to obtain clean pictures that the bath should be slightly acid in its reaction, we find it necessary to add 5 or 6 minims or drops of PURE glacial acetic acid to a bath of 20 ounces, in order that the above condition may obtain.

THE DEVELOPING SOLUTION

Is very simple in its nature, being merely a saturated solution of gallic acid in distilled water, to which has been added a small proportion of alcohol of sp. gr. ·840.

The exact formula is as follows:—

Distilled water	20 ounces.
Alcohol, sp. gr. ·840	1 ounce.
Gallic acid	½ ounce.

The gallic acid will not be entirely dissolved, but that left at the bottom of the bottle will ensure the solution being saturated; it is better not to filter the developing solution until it is required for use, as it is preferable to allow it to stand over an excess of gallic acid, than for it to be withdrawn after a slight agitation with the crystals; it is a great error to suppose that we obtain a saturated solution of gallic acid by merely agitating the crystals with water for a few moments.

The developing solution prepared as above directed, will keep good and in working order for some weeks, but when it becomes of a dark color, it would be safer to reject it and prepare a fresh quantity than to run the risk of a failure from an impure and imperfect developing agent.

NITRATE OF SILVER SOLUTION,

For adding to the gallic acid during development, is composed of

Fused nitrate of silver	30 grains.
Distilled water	1 ounce.

THE FIXING SOLUTION

Consists of a solution of hyposulphite of soda in water, (filtered), in the following proportion:—

Hyposulphite of soda in crystals	8 ounces.
Rain or filtered water	20 ounces.

The APPARATUS, &c. required in the Dry Collodion process is of the most simple kind, and consist of the following items:—

Glass plates.
Pneumatic plate holders.
Plate holder, for cleaning the plates.
Glass or porcelain dishes.
Glass or gutta percha dipping bath and dipper.
Silver hook, for lifting plates.
Levelling stand.
Measures, 1, 2, and 4 ounce.
Glass funnels.
Wash leather.
Some clean cloths and broad camel's hair brush.
Cotton wool.
Bibulous paper.
The chemicals are—
Nitrate of silver (fused).
Glacial acetic acid.
Iodized collodion (dry).
Gelatine.
Citric acid.
Alcohol.
Sulphuric æther.
Gallic acid.
Hyposulphite of soda.
Iodide of cadmium.
Benzoin varnish.

In the above list we presume that the operator is in possession of a suitable camera and lens, and the usual adjuncts of camera tripod, &c. &c. These should all be of the best kind, otherwise it will be impossible to obtain good results.

THE MANIPULATION.

The process of obtaining a picture on Dry Collodion plates is in itself a most simple and easy matter, but there are one or two precautions that appear necessary to ensure success, that cannot be lightly neglected. In the first place, it is absolutely certain, that if we want a clean and bright picture, we must have a plate perfectly free from all extraneous matters, such as soap, grease, &c. Various plans for cleaning the glass plate have been proposed, all more or less successful, but in most of them there is one great fault, namely, that of using a powder, as tripoli, rottenstone, &c, to rub off the dirt with. Now we find that in practice this will not answer, from the almost impossibility of getting rid of the floating particles of the powder when the plate is rendered slightly electrical by rubbing, and as each of these particles if it become enveloped in the Collodion film, would produce a spot on the finished picture, we find it necessary to search in another direction for a detergent for the glass plate to which this objection would not apply. One soon presents itself in the form of *old waste Collodion*—this spread on the glass plate and rubbed off again with cotton wool, makes the best and most perfect cleanser hitherto proposed, without any of the objections usually appended to other materials used for the same purpose.

The next precaution necessary to be observed, is, that all the solutions should be perfectly bright and clear; they should be absolutely free from floating particles of any kind. This is essential, as it is impossible to obtain clean pictures without attention to it, the floating bodies in the solution settle on the plate, and form so many nuclei, around which, in the development of the picture, the silver is deposited in an opaque mass, forming spots and blemishes on the surface of the plate.

There is one precaution that cannot be dispensed with, and that is, to be sure that the chemicals employed are of absolute purity; without this, success is very problematical, and vexation and disgust the sure reward of its neglect.

The process may for convenience be divided into the following stages:—

1.—Cleaning the plate.
2.—Coating it with collodion.
3.—Rendering the plate sensitive.
4 —Applying the preservative solution.
5.—Exposure in the camera.
6.—Development of the picture.
7.—Fixing the developed image.
8.—Varnishing the finished negative.

CLEANING THE PLATE.

The glass plate is first to be thoroughly washed with an abundance of water and dried on clean cloths; it is then to be placed in the plate holder, and have poured over its upper side a small quantity of old Collodion. Now take a tuft of cotton wool and rub the Collodion all over the plate, giving the hand a circular motion at the time: keep rubbing until the Collodion is very nearly dry, then turn the plate in the holder and repeat the same treatment with the opposite side; then lean the plate thus treated against a wall, while another, or any number are put through this stage. When a sufficient number have been so far cleaned, the plate holder is to be carefully wiped and the first plate—the edges of which have also been carefully wiped with a *clean* cloth—is to be replaced, and treated with a smart rubbing with a wash leather, the operator at intervals gently breathing on the plate. Both sides of the plate being cleaned in this way, it may be removed, after again wiping the edges carefully, to the plate box, to await the subsequent steps of the process. Plates cleaned in this manner should look perfectly transparent, and free from any marks of the cloth or leather, and when breathed upon should condense the moisture of the breath in one uniform degree over the whole surface. If patches of uneven condensation appear, a repetition of the process must be had recourse to.

The plate being clean, we proceed to the next step,

COATING THE PLATE.

Lay a piece of clean blotting paper on the table, larger than the plate we are about to use; place the clean plate on this, and then bring the pneumatic plate holder to bear on the centre of the glass, making sure that it has laid hold firmly. We then raise the plate with the left hand, and bring the surface upwards which was previously on the blotting paper; it will no doubt be found that small particles of dust have attached themselves to the plate, these must be removed by a broad and soft camel's hair brush.

The collodion is then to be poured on, and the superfluous quantity returned to the bottle from one of the corners of the plate. It does not matter which of the corners is used for this purpose, that which is most convenient to the operator assuming the preference. If the collodion should have a tendency to set in ridges across the plate, a rocking motion, while the delivery corner is in the mouth of the bottle, may be given to it, still keeping the plate in a vertical plane. This will restore the film to perfect evenness and freedom from irregularity of any sort. The plate should be held in the vertical position for a few moments before being placed on the dipper to undergo the next operation of

RENDERING THE PLATE SENSITIVE.

The plate being placed, coated side outwards, on the dipper, is to be plunged without hesitation into the nitrate of silver bath. This must be done without stopping, otherwise a line across the plate will indicate, on development, the position of the plate in the bath at the time this stoppage took place; so that if we were to immerse the plate by a series of jerks, we should have as a result, so many bands of unequal development in the finished picture; showing the importance of plunging the plate into the bath without any stoppage during its descent.

When the plate has rested for half a minute in the bath, it may be withdrawn, and quickly reimmersed. This washing must be continued at intervals, until the greasy appearance goes off, generally for the space of two minutes, when the plate is to be taken out of the bath and placed with its lower edge on a pad of blotting paper, in an inclined position. A fragment of blotting paper is then to be used to absorb the moisture from the back of the plate, and a pneumatic plate holder—which should only be used for this purpose—is applied to it to form a support while

APPLYING THE PRESERVATIVE SOLUTION.

Taking the plate in the left hand by means of the pneumatic holder, incline it slightly; then having poured into a perfectly clean measure rather more of the preservative solution than is necessary to cover the plate twice,* pour half of it along the upper edge in such a manner, that a wave of the solution may flow uniformly from one end of the plate to the other, allow this to flow off into the waste pan or sink, and then bring the plate to the horizontal position, and pour on the remainder of the preservative solution, four times at least, allowing it to flow back into the measure from each corner in succession, in order that the whole plate may be brought uniformly under its influence. The plate is to be again placed on a piece of clean blotting paper, and its back once more wiped with a fragment of blotting or papier Joseph, in order to remove any of the preservative solution that may have run from the surface to the underside in the previous operation. The plate thus preserved is to be reared on a piece of blotting paper with its face against the wall until dry, and is then to be stowed away in a plate box, perfectly light-tight to await the

EXPOSURE IN THE CAMERA.

Collodion plates preserved as above directed, will keep perfectly good and sensitive for 6 months at least; and from the appearance of the developed image on a plate that has been kept that time, I see at present no reason why, if preserved from the damp, they would not keep indefinitely. In my experiments, I have never found the least difference in sensitiveness, whether the plate be used within a few hours of the time of its preparation, or has been kept for months; until, however, we have had more experience in the matter, it would be safer not to rely on plates more than six months old.

The time of exposure in the camera, of course varies in this process, under the same circumstances as it does with the wet Collodion; but I have found it as a general rule, that it is better to give the plate a full exposure than to fall into the opposite extreme: that is to say, it is preferable to expose the plate sufficient time for the deepest shadows to make an impression than to close the dark slide at an earlier period, the mode of development allowing considerable latitude in this particular. With a 3-inch single lens, 16-inch focus, with a ½-inch stop, the usual time for a bright landscape will be about 5 minutes; this of course is merely an approximation to the time of exposure, the exact time can only be arrived at by experience. I do not think I can do better than follow the plan adopted in my "Practical Photography," of giving instances of under and over exposure, as a means of educating the tyro in the appearances that result from these conditions of the plate.

If the exposure has been of too short duration, the image will come out under the developing solution with difficulty; and after a continued immersion in it will only present the highlights, the deep shadows not being represented, or if so, in so faint a manner as to be useless in the picture.

An over exposed plate, when treated with the developing solution, will almost immediately give indications of the picture, and in a few minutes, the whole of the picture, *deep shadows and all*, will come out in unnatural force; on looking through the picture thus produced, we shall observe a great flatness in it, there is a want of contrast between the various parts, and although by continuing the development we might obtain a tolerably intense negative, the resulting picture would be flat, meagre, and unsatisfactory: on the contrary, a plate that has been exposed for the correct time, will comport itself very differently under development from the foregoing.

The sky and high lights will first appear, then the half-tones, and lastly, the parts of the picture that were in deep shadow will show themselves; this effect should take place in about 5 minutes from the time of immersion in the developing bath: a picture that comes out sooner than this, is, as a general rule, over exposed; and one that is much after the 5 minutes before it makes its appearance, may be considered as under exposed. We trust that the above instances may be of service in indicating the average time required for an exposure of the plate, but we must ask the reader not to take the figures given as actual values, but merely as very close approximations to the truth. We will imagine the plate to have been properly exposed, and proceed to

THE DEVELOPMENT OF THE PICTURE.

It is not necessary that the picture should be developed immediately after exposure in the camera; any time that is convenient to the operator may intervene between the processes, provided the aggregate time before and after exposure does not exceed the limits of keeping power of the plate.

The development of the picture may be conducted in two ways, either by immersing the plate in baths or dishes, or by placing it on the levelling stand and treating it with the solutions, in their proper order, as detailed below. Each plan possesses certain advantages, but it is of little consequence which one is followed. Perhaps there is less danger of the film washing off if the plate be treated on the levelling stand, and on the other side with large plates it is more difficult to cover them evenly with the developing solution than it is simply to immerse them in a pan of solution. We say to the reader, try both ways, and make your own selection.

The plate on being removed from the camera is placed face upwards in a porcelain or glass dish of a convenient size (not too large), and sufficient distilled water is to be poured over it to cover the surface thoroughly—this is for the purpose of

* A plate, 9 inches by 7, takes about 1 ounce of solution.

softening the preservative solution, and must be allowed to remain on the plate for five minutes; the plate is then to be lifted in and out of the water by means of the silver hook. This done, remove the plate to a perfectly clean dish, and pour carefully over it the developing solution, composed of

Saturated solution of gallic acid................8 ounces.
Solution of nitrate of silver....................2 drams.

THOROUGHLY MIXED.

In a few minutes the picture will begin to make its appearance, and will gradually unfold its details under the influence of the developer, until the whole of them are apparent; on raising the plate, however, when this stage of development is reached, and viewing it by transmitted light, the picture will appear weak and poor; we must now remove the plate from the bath, and add 2 drachms more of the nitrate silver solution, and having thoroughly mixed it with the gallic acid, we return the partially developed plate, which in the course of a few minutes will have acquired a great amount of intensity,—the exact degree can be regulated by the time of immersion: when the picture appears sufficiently intense, it is to be removed from the developing dish, and a gentle stream of water is poured over it, in order to remove any adhering developing solution, and stop all further reducing action on it.

During the whole time of the development, the gallic acid should remain quite clear; it will become slightly discolored before the end of the development, but it ought not at any time to become muddy, or it will deposit a sort of sandy sediment on the surface of the plate, which cannot be removed by subsequent washing.

The usual time occupied in the development of a successful picture is from 20 to 30 minutes, it might be developed much quicker by using pyrogallic acid, but at present I give the preference to the developer I have described, as I believe it to be more certain, and more under the control of the operator than the pyrogallic acid; and further, as it is not necessary to watch the development all the time it is going on, there can be very little saving of time in the more rapid method of bringing out the latent picture.

The picture being washed free from the adhering developing solution, is to be placed on the levelling stand, and subjected to the seventh part of the process.

FIXING THE DEVELOPED IMAGE.

This is accomplished by pouring over the surface of the plate sufficient solution of hyposulphite of soda to thoroughly cover it, this will dissolve out the unaltered iodide of silver, and give us a clear and bright picture, in which the deep shadows should be as transparent as the glass itself, and the high lights as dense as a piece of metal, the intermediate tones assuming their proper positions according to the intensity of the light that was concerned in their formation.

When the whole of the yellow iodide of silver is removed, the fixing solution may be thrown off, and the plate must be treated with an abundance of water; too much cannot well be given at this stage, as the hyposulphite adheres with great tenacity to the plate, even after a good washing. The back of the plate must be washed as well as the front, for I have found that a neglect of this precaution has ruined many a fine negative; the hyposulphite remaining at the back finding its way by capillary attraction to the surface, and once there, its destructive qualities are sure, sooner or later, to render themselves evident.

The picture being thoroughly washed, and either dried spontaneously or by the fire, has only to be covered with a film of varnish. And now comes the last operation, of

VARNISHING THE FINISHED NEGATIVE.

Benzoin varnish is the best coating that can be given to a Collodion negative. It resists the action of pieces of grit; it does not crack; and above all, it does not, like amber varnish, split off the picture on the slightest friction.

The application of this varnish is a very simple matter. The negative is to be again placed on a pneumatic plate holder, and the varnish is to be poured on to the surface in precisely the same manner as the Collodion was at the commencement of the process, the superfluous quantity being returned to the bottle: in a few moments the varnish will be quite dry and hard, and the plate may be handled with perfect safety.

I may mention, as a precaution, in varnishing the plate, that it is better to perform that operation in a still atmosphere; as the solvent of the gum being chloroform and very volatile, if it were conducted in a current of air, there might be some difficulty in obtaining an even coating to the picture.

In concluding this description of a process, which is at once simple and certain, I would ask the patient attention of those who may do me the honor of repeating my experiments. I have endeavored to render the details of the process as intelligible as possible, and if I have succeeded in advancing the art of Photography only one step by so doing, I consider that it is an ample return for hours and days spent in anxious thought and laborious experiment.

ON TAKING CLOUDS WITH LANDSCAPES.

To the Editor of Photographic Notes.

Sir,—Many photographic pictures have a very cold, sombre, and unartistic appearance, because they lack those beautiful representations of clouds, which add so much to good engravings; and this is especially noticeable in those landscapes which have a very distant or a level horizon. This defect, I am happy to say, may be easily prevented by the very simple contrivance described below, which I invented last spring, but have been unable to use much, because my photographic pursuits have been in abeyance. To photograph clouds with the landscape, it is of course only necessary to "screen" the sky, until the last second of the "exposure" for the landscape, then lift up the screen, so as to catch the clouds instantaneously, and promptly close the lens. Now this "screening" (or shading), may be done either *inside* the camera, as the late Mr. Archer used to do with his very ingenious apparatus, or it may be done *outside*, as follows: Take a piece of zinc, about as wide as the diameter of the lens, and twice as long, and clip one long side like a saw, so as to render it sharply serrated; then blacken it, to avoid any reflection of light on the lens, make two small holes in it, for the purpose of attaching strings or wires near each end. The next thing is to erect a "gallows," or a sort of "ship's yard," over the top of the lens, and hang the zinc shade to it, in front, by both strings or wires, with the "teeth" downwards, and adjust these teeth so that their shadow *slightly* overlaps the horizon of the picture on the ground glass. During the exposure, this screen is to be kept vibrating sideways, close to the opening of the lens; until the last moment or so, and then lifted quickly up, and the cap put on the lens. The result is, that the clouds are beautifully represented, and the shading of the screen is so softened off at the edge, that it is *practically* imperceptible, and this is effected, not only by the serrated edge of the screen, but also by the *parallel* rising and falling, caused by its swinging from *two* supports. Other adaptions of this contrivance, I may leave to the ingenuity of your readers.

John Rayner Hovell.

We think the following might be a better plan, than that suggested by Mr. Hovell:—First, use the slide with a plain glass in it, instead of the ground glass, and behind the plain glass put a sheet of tissue paper. Let this be the focusing screen, and trace the outline of the sky upon it, with a black lead pencil. Cut it out with a pair of scissors, and cut a piece of stout millboard to the same shape. Now place the millboard upright, at the bottom of the camera, close to the dark slide, and let there be a peg working through a hole at the bottom of the camera, with its end attached to the millboard. This being arranged, proceed to take the view, and during the exposure, displace the millboard up and down, and backwards and forwards a *very little*, until the last few seconds of the exposure; then let it fall down at the bottom of the camera, and allow the sky to produce its impression.

We have not tried the above plan, but think it likely, that with a little clever management, it might be found to answer. The lens should be a view-lens, with a small stop in front.—[Ed. P. N.]

From the Photographic Notes.

BIRMINGHAM PHOTOGRAPHIC SOCIETY.

ORDINARY MEETING, JANUARY 26TH, 1858.

Mr. J. O. C. Phillips in the Chair. The minutes of the last Meeting having been read over and passed, some discussion took place on some business of the Society, and the Chairman then called upon Mr. T. Morris to read his paper, and show the manipulation of

BARNES'S DRY COLLODION PROCESS.

As I have nothing new of my own to lay before you this evening, it is my intention, in common justice to our author, to allow him to speak in his own language, whilst we endeavor to illustrate his process experimentally. Indeed I feel more anxious to do so as I hear from so many quarters that the process is a failure and unworkable, but these assertions can only have arisen from want of care in manipulation, or a want of honesty in giving it a fair trial. Like all other Photographic processes, it requires care and cleanliness. I may observe here that I have no more interest in the process of Mr. Barnes than any other process. On the publication of the first edition of his work, and some of his pictures, I was pleased with them, and satisfied, if they were produced by Dry Collodion, that the process was well worth the learning. I immediately tried it, and partially succeeded. I afterwards made Mr. Barnes' acquaintance; I found him a very straightforward communicative man, and an ardent lover of the art. Some of his pictures stand alone I believe at the present time. Our object, however, this evening is not to extol Mr. Barnes, or his pictures, or to interfere with the angry feelings that have arisen in some quarters, but to show you the *modus operandi*, as practised by him, and as faithfully given in the second edition of his Dry Collodion Process. We will, however, by your kind permission, read his preface, and save ourselves any further argument on the question, from which we shall turn to the more pleasing task of preparing a plate and obtaining a picture according to the directions contained in his little but good shilling's-worth.

Mr. Morris then read the preface to the second edition of Barnes' Dry Collodion Process, and then exhibited several pictures obtained by the process. He then proceeded to prepare several plates in the manner detailed in Mr. Barnes' pamphlet; first, with plain collodion only, and afterwards with albumen, as a support for the collodion. He then excited, washed, and dried the plate in Mr. B.'s ingenious drying box, and exposed and printed two stereoscopic pictures by gas-light. The simple and rapid method of procuring a limpid solution of albumen was very much admired. To make this, Mr. Morris took the whites of two eggs, making two ounces of albumen, and four ounces of distilled water, and after stirring these with a glass rod, for half a minutes he added about 30 drops of glacial acetic acid; upon stirring the mixture it becomes quite limpid; it is then filtered several times through ordinary filtering paper (the same piece should be used throughout, as the first filtration carries with it all the outside fibres of the filter), consequently by re-filtration, a clear solution is obtained; this is poured upon the plate-like collodion, and dried in the stove. The plate is then coated with collodion, excited, washed and dried in the ordinary way.

Mr. Morris then proceeded:—It is absolutely necessary to have the plates perfectly clean, the slightest particle of grease destroying the adhesion betwixt the glass and the albumen. I shall now expose these plates, one for twelve, the other for fifteen minutes, to the light of this argand gas burner. They are placed, as you see, in ordinary small pressure frames and a negative placed in front.

The exposure being now completed, I shall at once proceed to develop the pictures. For this purpose I use a mixture of pyro-gallic acid and gallic acid, made thus,—

Saturated Solution Gallic Acid	4 ozs.
Distilled Water	4 ozs.
Pyro-Gallic Acid	4 grs.
Acetic Acid	1 drm.

The plate is first dipped in the washing bath, then the above mixture is poured on and off several times. I then mix a few drops of a thirty-grain solution of nitrate of silver. The development will sometimes occupy a long time, but in this case probably we shall not be long.

[The two pictures took about twenty minutes in development, and were tolerably successful.]

I may here add that the chief use of the albumen appears to be to hold the collodion firmly on the plate; for instance, if you use a tough collodion, which will give an intense development on plain glass only, it will not unfrequently slip off the glass. Now the collodion seems so enter into combination with the albumen, and it will then bear a considerable amount of hard washing. The object of sometimes coating the surface of the film with albumen, is to preserve it from injury—the plates may then be carried in contact. After detailing other experiments, for which we must refer our readers to the pamphlet in question, Mr. Morris said, I have now endeavored, as briefly as possible, to give you the manipulations of this interesting process, and I can only add that it requires to be known to be admired and practised. (Cheers).

Mr. Osborn.—Although we must feel very grateful to Mr. Morris for the trouble he has taken, and the skill he has displayed this evening in demonstrating the Dry Process, for our special edification and amusement, I cannot allow the present opportunity to pass without another endeavor to place matters in their true light before you. Mr. Morris has read you the preface to Mr. Barnes' work, and without feeling any ill-will whatever to Mr. B. I must say that I consider his remarks and reflections upon Dr. Hill Norris unwarranted and uncalled-for. So far from Dr. Norris's process being a copy of Mr. Barnes', I contend that they are unlike in every respect, except in being dry. Let each take the honor due to him as an independent discoverer, and the public will recognize their claims. I *proved* on a former occasion, however, that Dr. Norris's process could not be a copy of the other, inasmuch as the Doctor published his first letter thirteen months prior to the issue of Mr. Barnes' pamphlet, and the letter containing his last improvements is dated May 6th, 1856, whereas Mr. Barnes' first edition bears date May, 1856. How can one be a copy of the other? With regard to the process we have seen manipulated to-night, I must say it appears to be too complicated and tedious for the amateur, and there are many things used of which I scarcely see the utility, such as camphor, which inevitably spoils the bath for the Wet Process; the acetic naptha, and others. I never had the curiosity to try the process, as I am perfectly satisfied with the one I have used (Dr. Norris's), the results from which are all that could be desired; and moreover, its great beauty is its extreme simplicity and the absence of all the paraphernalia which is so annoying to an amateur, at the same time it is almost certain in its results.

Mr. Johnstone.—I quite agree with Mr. Osborn. The main requisite to be sought for in any process, dry or wet, is simplicity. It appears to me that the process we have just seen is somewhat empirical, and that Mr. Barnes has introduced a variety of substances into his collodion, which, if not absolutely injurious, are yet quite useless, and for which he cannot give any sound reason. Now it appears that he has so far stretched the process as to fall back upon albumen as a support for the collodion. This is not new. Fox Talbot suggested it long since; and besides, if you are to complicate the process why not at once use the collodio-albumen, which is undoubtedly the most scientifically correct of any similar process now out. Albumen doubtless amalgamates with the collodion, and prevents its splitting or washing off, but if you use a proper condition of collodion, you may dispense with the albumen. Referring however to the collodio-albumen again, there is rather a remarkable phenomenon connected with it. While wet you may wipe off the whole of the image from the surface of the albumen, thus showing that the image is ON the surface, and not IN the body of the combined films. Many persons would ask, therefore, what is the use of the under stratum of collodion, &c.? In my opinion its greatest use is during the development of the image, as it is a sort of reservoir of latent force, which keeps up local action in all parts of the plate.

The CHAIRMAN. How long will the plates keep?

Mr. MORRIS. I believe, if properly prepared, there is no limit to their keeping qualities.

A MEMBER. But after exposure, as many plates will not keep long after exposure?

Mr. MORRIS. I am not prepared to say how long; but I have kept them a fortnight.

Mr. OSBORN. You will doubtless recollect the plate I exhibited at a previous meeting, kept a month before and a month after exposure, by Norris's process.

Mr. HART. It was a very satisfactory proof of the capabilities of the process.

Mr. JOHNSTONE. Plates by almost any dry or syrup process will keep well before exposure, but many fail afterwards, getting feebler according to the length of time that elapses between exposure and development. Now in Norris's process, owing to the total absence of free nitrate of silver, the plates will keep an indefinite time.

Mr. OSBORN. I think the presence of acetic acid in the film of some of the dry and moist processes has a great tendency to weaken the image after exposure.

After some further conversation, the Meeting closed, with a vote of thanks to Mr. Morris for his able and interesting paper and experiments.

From Photographic Notes.

M. PETZVAL'S NEW LENS.

The following is a translation of a letter from M. Voightlander to M. Lacan, on the subject of M. Petzval's new lens:—

"I have seen an article in *La Lumiere*, of November 14th, 1857, in which it is stated that M. Petzval, of Veinna, has invented and constructed a new lens for photography.

"Having, by chance, obtained one of these instruments, I perceived immediately that this so-called new lens is no other than one which I constructed seventeen years ago, according to the formula of Professor Petzval, at the same time that I brought out my well-known double lens, the success of which has been sufficiently established.

"I have therefore addressed to the Academy of Vienna a memorial, in which I have proved that the lens in question is not based on any new principle, nor on any other curves than those which I adopted seventeen years ago on M. Petzval's calculations, and the formulæ of which are still in my possession.

"My object in writing you this letter is simply to state that this instrument is not new, and that my appeal to the Academy of Vienna is for the purpose of establishing my right to it. I have sent, at the same time, to the Academy, four of these lenses, corresponding to the dimensions of my double lenses.

"I have also sent four of these lenses to my Paris correspondent, M. Delahaye,* who will be happy to give you all particulars with respect to them.

"As for the camera alluded to in your Journal, the arrangement is no doubt very ingenious, like everything else invented by M. Petzval, but I do not understand why so complicated a camera is necessary, since very fine results can be obtained with the lens in question, mounted in an ordinary camera.

(Signed) "VOIGHTLANDER,
"of Vienna and Brunswick."

* The address of M. N. B. Delahaye, is No. 15, Rue de Lancry, Paris.—[Ed P. N.]

From the London Art Journal.

PAUL VERONESE.

In one's peregrinations at Venice few things afford a livelier pleasure to the imagination than the suddenly lighting upon—what has now become a somewhat rare object there—a magnificent picture of Paul Veronese, deep in the recesses of some solitary palace or silent church. Your wanderings throughout the morning have, very likely, been along lonely quays, which seem expecting the slow encroachments of the sandy shoals opposite, rather than any other visitors; or you have been winding and turning through a labyrinth of narrow canals, between mouldering palaces, which, in their desertion or degradation, remind you continually and mournfully of the great ones of the past,—a race that seems gone for ever. You would fain summon up some lively image of them; but no, it seems as if the worthies of ancient Greece and Rome had not passed away more utterly. Nevertheless, your fancy still wanders in quest of them, as with eyes bent steadfastly on the ground, you proceed up some whitewashed nave or trumpery-tarnished choir or other, when, all at once, looking up, you see them vividly before you, in breathing light and sunshine, fixed—firmly fixed—by the enchantments of Paul Veronese's pencil. There they are, in lovely splendor, lighting up that obscure and dull interior like the precious hues found deep in the cup of some exteriorly unattractive humble flower, or like its golden stamina themselves—genuine Veniors and Morosinis, most evidently! and the fair ladies of the laugune with them, in the very bloom and heyday of their life, and, moreover, richly adorned with the courtly pomp and quaint finery of their age, such as reminds one not a little here and there of similar things which their contemporary, our own Queen Elizabeth, was wont to look round upon, over her starched lace ruff. Titian's comparatively temperate gravity is here succeded by far lighter and more lavish splendor. With Veronese the blooming and handsome blonde young Dogaressa, who adores the Madonna, or personates St. Catherine, or Esther, wears more gorgeous brocade: she nets and *pagodas* up her flaxen curls with gold thread or pearls; she bends her charms with a more courtly and self-conscious dignity, amidst the very handsome ecclesiastics, cavaliers, and senators, who dispose themselves around her with an equally stately and aristocratic port. And how brilliantly does this painter here commemorate that love of show and pageantry which was so prominently characteristic of Venice during his days, and especially during that part of them when she enjoyed her thirty years of rest after the peace of Cambray, and shortly afterwards, her crowning period of triumph and prolonged festivity after the great victory of Lepanto! These were her evening glories, illustriously attended by the radiant setting of her highest Art; for Paul Veronese was the last of her great triad of painters, and his school, notwithstanding its own intrinsic cheerfulness and festive splendor, derives something even of a deep and pathetic interest from its being the last true and really great one of Italy. Whilst all her other schools were sunk low in mannerism, and unconsciously caricaturing those mightiest painters who had recently passed away from her, the true, noble nature, and splendor, and lusty life in Paul Veronese, looked like a fresh new vernal dayspring of Art, rather than the last full glories of its setting, soon to fade for ever.

Our theme is welcome to us, for Paul Veronese, one of the most magnificent of painters, is sometimes a truly delightful one. He had not, it is true, so powerful an imagination or such depth of insight and feeling as Titian, or such daring conceptions and versatility as Tintoretto; but confined himself more than even they did to painting the persons and the passing adornments around him. He did not, for instance, as Titian sometimes would, forget his own times to realise the most glowing visions of Ovidian or Catullian poetry, but remained especially the painter of that which was most handsome, stately, picturesque, and magnificent of his own age; grouping such objects, indeed, into splendid tableaux of mythological and sacred subjects; but chiefly urged to this, no doubt, by the expediency of ministering to that demand for immense allegorical and church pictures, which had become a leading fashion of the day. Keenly delighting in, and thoroughly satisfied with, the things about him, Paulo Caliari troubled his head but little or not at all with the peculiarities of any former age, or with the reviving classicality of his own days. The substantial charms, and even the splendid brocaded farthingales of the ladies Moncenigo and Vendramini, were far more fascinating in his eyes than any thinly ideal notions, such as faintly glimmered through *his* brain touching Europa, St. Catherine, or Pharaoh's daughter; and, therefore, he very frankly and gallantly substituted the former for the latter in his pictures of mythological and saintly subjects. And even with regard to the objects of his own time, he did not, it must be admitted, look with so close and refined a discrimination as Titian into the intellects of princes, senators, captains, and scholars, or upon the pensive yet luxurious tenderness of ripe sunset-tressed Venetian beauties. Yet had the cheerful Veronese a truly dignified and noble conception of life; nor, though his magnificent superficiality—that is to say, his fine appreciation of picturesque and imposing lines, and of every delicate modulation of light and colors—tempts him too often to neglect expression, and (his besetting fault) his stately grace frequently degenerates into self-conscious affectation and pomposity, are his noblest works by any means wanting in pathetic, exalted, spirit-stirring poetical conceptions; and in coloring and a glorious power of the brush he can scarcely be said to be surpassed by any one. He excels pre-eminently in his own true noontide brightness—his *argentine* delicacy—suffusing and harmonising sometimes a whole garden-royal of beautiful variegated hues; and he shines, also, in an aristocratic dignity and magnificence which render him *par excellence*, the painter of the splendor and living nobleness and handsomeness of Venice in the times of Famagosta and Lepanto, when the noble blood yet mantled high in her veins, and before she sank far down into those depths of effeminate vice and profligacy which made her, in the words of the sympathetic poet,—

"The revel of the earth—the masque of Italy."

With this painter the true greatness of Italian Art finally set at Venice.* It threw a gleam, in its dying hour, of a rare cheerfulness and delicacy of splendor on the terraces of the wonderful City of the Sea, such as were built by Sansovino, and his friend Sammichieli, where her stately nobles were assembled in all their wealthy pomp and keen lusty enjoyment of life, yet assuredly condescending to no unseemly mirth or levity the while; inhaling the Adriatic breeze in their hour of calm relaxation,—or celebrating with festivity some great triumph of the Republic,—or bending in pious thankfulness before the Madonna. What a flood of silvery radiance, bright as at noon-day, or anon of *fair* golden warmth—like an *April* sunset, when the sky emulates the primroses and the cowslips in hue, as the autumnal heavens in the evening vie harmoniously with the roseate leafage—lighted up that multitudinous bravery of brocaded robes and broidered doublets, and turbans of barbarian guests—the holiday array of Portia and all her suitors brought to sup forgivingly together at Bassanio's wedding feast.† It suffused statliest porticos and loggias, soaring and shining in the background aerially, like sunny ivory, adorned with flowery trees from Nicosia and Alexandretta, from Ormuz and from Ind, and companies of handsome, noble, and yet brighter faces—an assembly and a pageant, indeed such as was soon afterwards to vanish away from the earth, and leave no other record of itself except these invaluable ones, which this magnificent painter has bequeathed us.

Of course I have my eyes now chiefly on one of Paul's "Suppers;" especially I have it on his "Marriage at Cana," at Dresden—a picture far finer, by the bye, in color and execution than the vast composition on the same subject in the Paris Louvre. You there encounter a numerous company of bright and handsome faces with keen, intelligent looks, sparkling with life and health, and a cheerful consciousness of existence. But if haply a stranger to such works, you are very much surprised, by and bye, to discover all at once the Saviour seated in the midst of them, scarcely distinguished from the rest, and to find out that these pompous Gradenigos and Grimanis are ministering to no less than Him, and being the personal observers of his first miracles were too much a matter of daily occurrence to excite any undignified degree of surprise. This discovery of sacred circumstances involves an anachronism which used to disconcert the more matter-of-fact observers exceedingly, and in former days I have seen them turn away almost immediately with evident signs of slight esteem for productions so preposterously inerudite. And, indeed, it might perhaps be wished that Veronese had confined himself entirely to the representation of his own times, instead of thus just coasting and touching only, as it were, at Scripture events. But then, as we have said, his subjects were prescribed for him by the general fashion of the age, and others too would have been at variance with its tastes and purposes. And if we have not here religious works of the most imaginative and ideal kind, we have at all events an invaluable thing—very noble and genuine authentic earth. And however startling at first Veronese's anachronisms, who would willingly spare these genuine illustrations of a bygone time, so remarkable for historical interest, magnificence, picturesqueness, and, as it here seems, also for living beauty itself? Who would part with these aristocratic sea-captains, who lost Cyprus, it is true, but heroically, and revenged themselves on the Ottomite, at Lepanto, divinely? Who would dispense with these grave and venerable senators, and these swarthy turbaned strollers of the Piazzetta, freshly arrived from the ports of Mahomet or Selim, and invited, as no doubt important business connections of the noble merchant-host, to share his great marriage festival. They must be genuine saints indeed for whom one would readily exchange or barter them, nothing much short of Raphæl's—certainly not those cold reminiscences of statues of Greek philosophers and Roman orators which were so long accepted as the orthodox kind of sanctities in the works of the later Italians, and of the very great, but too often erroneously antique Poussin. And how beautiful in this and other pictures are Paul's wide range and tuneful variety of colors! Sometimes he gives you, as it were, quite a *dance* of them, in which they recur at intervals like the same notes in a melody; and such is the noble manner and high consummate mastery of this painter that in *his* hands the mere accessories and finery become really quite grand and poetical objects, vehicles for exquisite hues and lines, and for the freest, lightest, and most graceful precision of touch that ever animated canvas.

* It is true that Tintoretto survived him six years, and died at the age of eighty-two; but Paul Veronese, who was the younger man by sixteen years, *came* after Tintoretto, and consequently may be called the last of the great Venetians. After him there were many painters in Italy of eminent talents, at the head of whom may be placed Domenichino, Guido, and the Caracci, but even *these* eclectics, admirable as their works sometimes are, cannot be called *great* painters in the high sense in which the religious idealists were, or those noble poetical "naturalists," the Venetians, of whom P. Veronese was the last great representative.

† A captivating subject for a picture! One would like very much to see it painted, something on P. Veronese's principles, on a scale of about 14 feet wide by 8 high. What a goodly assemblage of Venetian faces there ought to be at the supper table!—Antonia standing up conspicuously to pledge Shylock, on whose finger Jessica is tenderly replacing his "tourquoise," which Lorenzo has recovered for her. The Prince of Aragon and his suite, though guests, retain something of their Spanish stiffness and pride; but the Prince of Morocco, howbeit also a disappointed suitor, is generously bent on laying at Portia's feet all the wedding presents he intended for her on the event of his success; and, consequently, his swarthy attendants are bearing along the terrace in procession the stuffs, the gems, the tropical animals, the gazelles, the monkeys, and the beauteous birds he had brought across the seas for the Princess-elect of Morocco. Other men are landing more such treasures from the barque on the Grand Canal below, beyond which rise several of the finest Venetian palaces in a line, all tender in the softly luminous air. But who have we amongst us to paint all this with the requisite nobleness of beauty and temperate harmony of splendid coloring? Surprisingly clever bits of accessories we might have; picturesque costumes, not altogether unworthy of Mabuse or Van Eyck in force and particularity, however inferior in purity of painting. Unimpeachable silks, and satins, and parrots, and monkeys, we might revel in; but where, for the present, could we hope to find Bassanio, and Portia, and the Moroccose Prince, and the warm transparent Venetian air that unites and blends the whole in marriage ties (or rather tones, I ought to say) of genial harmony?

And still finer than that "Marriage at Cana,"—I think even finer,—is the companion picture, at Dresden, of the "Adoration by the Magi." The venerable Magus kneeling, in his long gold brocade robe (on which Veronese's pencil has played with such easy and graceful precision), supported by kneeling pages, looks like some doge of Venice in his mantle of state. But oh! the barbaric picturesqueness and grave dignity of those two swarthy turbaned figures who, seen in profile, are solemnly approaching after them in this long processional picture, having journeyed across their far deserts with offerings for the Infant Saviour! Caliari, perhaps—at least I cannot help fancying so—copied them from the emissaries, or agas, of Sultan Selim, or of some Moorish bey who came in his time with precious offerings from the east, or south for *Venice*, and, landing at the Molo, proceeded along the Piazzetta amidst acclamations from crowded quays and balconies, beauty-embellished. Their presence is even as a fine chapter in old Marco Polo, which tells us of the far-off glories of Kublai Khan. Magnificent as Venice herself, and every way worthy of adorning the Sala del Maggoir Consiglio of the conquerors and explorers of so much of the magnificent East—the devout pilgrims to the remotest shrines of Mammon, far within the golden gates of Sunrise. One imagines this picture as in its original place, in a hall of sombrely superb ornate Cinque-cento, traversed by flitting waves of golden-light, reflected from the sunshine on the Grand Canal outside, admitted down a window-divan, or platform, between the richest old Byzantine capitals, or Arab-Gothic traceries.

And beside this is yet another Veronese, in which my lady the Dogaressa, taking her recreation on the shady banks of the Brenta, or Tagliamento, with her pet dwarf and guard of halberdiers, is being presented by the ladies of her suit with a little foundling, which they have just picked up amongst the reeds of the river. The only irrationality with regard to this picture is the startling name—"The discovery of Moses!"

Such were our ante-Venice notions concerning Paul Veronese, inspired first and most warmly by those two pictures at Dresden (which I still think he very rarely equalled), and confirmed by *one* or *two* amongst his injured and faded works at Paris, and still more strengthened by several very beauteous argentine visions of courtly elegance and handsomeness, seen but too hastily in that scarcely rivalled collection of Venetian pictures in the Vienna Belvidere. But at Venice, until we went to St. Sebastian's and the Ducal Palace, most of his works which we met with there disappointed us, and tended somewhat to chill our admiration for his genius. In many of them, without making sufficient amends by any very remarkable display of technical power, he is cold and ostentatious in expression to a degree that renders him altogether unattractive; and in not a few other instances, even his color is strangely dull and disagreeable—heavy greys and dull opaque reds unpleasantly prevailing, especially in those works which he executed towards the close of his career, when the splendor and delicacy of his feeling seem to have become considerably impaired. Few amongst his numerous works in the Academy are highly interesting; by far the finest being his grand ostentatious altar-piece from San Zaccaria,—the vigorously animated and somewhat attitudinizing figures in which must have originally presented a very notable contrast to the Bellini there. The Madonna standing on an altar is some beautiful and majestic high-bred lady of Venice, and the handsome richly attired priest (some prelatic saint or other) who bends forward at her feet, and looks round in an effective posture, seems one well fitted for the stateliest church business. The freedom and full broad manner of the picture, and the brilliant though most tender color, are altogether superb. In these respects it is surely one of the finest of pictures. Another work of Veronese, which especially should not be missed, is a "Marriage of St. Catherine," which, notwithstanding the coldness and insipidity of the expression, the exquisite lightness and tenderness of the handling the chief altar-piece of the church of the same name, in and delicate brilliancy of the hues, lend a peculiar interest. But excepting these two pictures, and the one at the Palace of the Pisani a S. Polo, we did not find in our Venetian rambles any pictures by Paul Veronese worth running much out of our way to see, until we came to St. Sebastian's, and the halls of the Ducal Palace, to the first of which places we will now without further delay repair.

It is just by the south-west corner of the city, in a dull and thinly populated quarter, where the general shabbiness of the buildings, as well as of the outside of the church itself, is strikingly contrasted by the magnificence of that which follows. At the same time the previous year I happened to be in our own Lake District; and I well recollect a discovery of similarly secluded splendor, then made in the midst of a somewhat rude and humble landscape, which, even at the moment, reminded me of the impression entertained on entering this very Church of San 'Bastiano on a former visit, when comparing the richness of the gilded roofs, and sumptuous paintings by Paul Veronese with the meanness of the exterior, and the neglect and dulness of the neighborhood through which we had just threaded our way. And now, on a second visit to Venice, and a renewed acquaintance with the spot, the self-same comparison occurred again; and the inside of the Venetian church reminded me with a reciprocal and equal force of the splendid and luminous hues which we saw that bright and happy day the year before, gleaming and flitting along in the depths of the Westmoreland brook, and appearing far more beauteous and more *regal* (if I may use such a word), because contrasted with the barren, stony, and somewhat impoverished character of that little branch of the mountain valley through which it takes its course. How well I remember it—how well! Immediately beneath us, where the sun shone on the stream, its stony bed was alone displayed, brightened, not hidden, by the invisible water, which heightened its hue to a rich warm umbery splendor, travelled over by a wavering network of light reflected from the viewless fitting crystalline current above. A little aloof, and where the shadows fell, *there* the blue of the sky, and the cool reflections of the trembling boughs prevailed; and the snowy light of passing clouds glimmered away in a silvery aerial contrast, and blending with the warm transparent richness nearer. Will it be deemed strange that this should remind me of the great silvery colorist, Paul Veronese, and, especially (having regard to the humble landscape) of the first rich shining of the interior of San 'Bastiano, as contrasted with the shabbiness outside? Indeed, such was the beauty of the colors and of the light in the nameless little brook, that they might really, I think, have set Veronese sighing for an hour on the feebleness of the resources of Art, and have made him for the moment believe that his own processions, and long-flowing streams of festal and triumphant splendor were, after all, but flimsily magnificent, but coarsely gay. And a little below, this same stream, after suddenly leaping down a few feet with a bright silver laugh, and then soon becoming as quiet and placid as ever, displayed a more luxuriant beauty in the vegetation which appeared within her clear glassy seclusion. Long subaqueous grasses of various greens (bright and olive) here lay prone under the swift smooth-flowing current, waving with its wave, like fish who hesitate in their course; and there was one rich train of them, of tawny crimson, with yellow flowers on it, like a stealthy imperfect gleaming of a Naiad's tresses florally wreathed; just such colors and ornaments as one of those great Venetian painters would have liked to give to the hair of a Lombardy water nymph introduced by him into some fine patriotic public-spirited allegory. Indeed his magnificent powers might have been well employed for a week at least in striving to give some true notion of the multitudinous graceful wavy forms and harmoniously splendid hues which appeared that brilliant morning within the humble confines of the mountain rivulet.

And now, hoping to be pardoned this little excursion up the Westmoreland vale, let us return to the Venetian church, only stopping briefly at Verona on our way, in order that we may there contemplate for a few moments the youthful Caliari at the outset of his career, before accompanying him to the spot where first victorious over neglect and poverty he obtained his earliest considerable employment. He was but little encouraged in his native city on the first manifestations of his genius. A school of numerous artists already existed around him deriving much of their knowledge from the study of the Venetians, but not without their separate and independent characteristics, since they adopted livelier expressions, and a lighter manner of painting, and evinced a still greater fondness for classical mythology and poetical pomp and pageantry, which they introduced in rich and fanciful abundance in the decoration of villas and palaces—tastes derived in considerable measure from the influence of Andrea Mantegna, and, no doubt, in their turn communicating themselves to Paul, and thus in no slight degree accounting for some of his predilections. At the time of his first appearance, Batista del Moro, Il Brusasorci, and Paolo Farinato, the three most distinguished of the Veronese artists were invited by the Cardinal Ercole Gonzaga to exhibit each of them an altar-piece as competitors in the Cathedral at Mantua. But with them came an unknown young aspirant, and, according to Ridolfi, his picture was the best. Fashion, however, thought otherwise. As ever, enamoured of fame, not excellence, she adhered exclusively to the three established artists, and young Caliari, notwithstanding his utmost endeavors, found himself rapidly sinking to penury. So he packed up his colors and went off to Vicenza, and thence after a while proceeded to Venice. There, applying himself to the improvement of his coloring by studying Titian and Tintoretto, and to the development of some of his other powers by working from the engravings of Parmigiano and of Durer, and from casts after the antique, he made such progress as soon drew general attention, and procured him the commission to paint the Sacristy of this church. Here, accordingly, on the ceiling, he executed fine recumbent figures of the four Evangelists, with the Coronation of the Virgin in the middle between them. They are not like his subsequent works, and of course have not that consummate freedom which he could only gain by practice; but they are noble and beautiful figures; in their refined and more ideal dignity and grace reminding one of the Parma lunettes, of Parmigiano and Correggio, rather than of Veronese; and in this showing the germs of a power which it was perhaps a pity not to cultivate further. The ceiling of the church itself, painted some time after, though still early in his career, displays, on the other hand, his own peculiar characteristics in almost their full perfection. The arches of the nave, too, once glowed with his frescoes; but, alas! they are now nearly obliterated. Amidst dingy obscurity and white spots of naked plaster, only a few vestiges of some very noble heads remain, as if time and decay themselves respected them. But his several alter-pieces, and paintings on the wings of the organ, and magnificent pictures hanging on the walls, still retain much of their brightness; so that what with their lively beauty, and the splendor of the roof, the whole interior seems but his precious though much-decaying mausoleum; and his bust seems indeed to repeat the old epitaph:—"My ashes are beneath; but my spirit yet breathes and shines everywhere around you."

To whose declarations it might be also added, that his works are often memorials of pious liberality, since in dealing with religious fraternities he was wont to adorn their altars and refectories with pictures, for a price little more than the cost of materials—a fact which might well be remembered by an epithet in his epitaph.

His most delicious production here is a small Madonna and Child, exquisitely painted, in a tender silvery gray tone. In a Crucifixion near it, Paul's naturalistic tendencies descend somewhat lower than is common with him. The Madonna, though *veritably* fainting, is evidently some coarse low-born Italian woman, and so also is the female who uncovers her head and opens her drapery for air. The Magdalen standing above them with upturned glistening eye, and profuse dishevelled golden auburn hair, is a vivid remembrance of Titian's well-known Magdalen. As commonly in Venetian "Crucifixions," the Saviour is entirely weak in expression and character: neither patience nor suffering, nor death being depicted, but mere ordinary composure. One of the painter's most considerable works is his large picture in the choir, of Saint Sebastian encouraging his converts Marcus and Marcellianus, who, as they are being led forth to martyrdom, hold back from fear and momentary doubt. It is a crowded composition of many figures, full of Rubens-inspiring splendor, vigor, and life. Saint Sebastian, a manly cavalier in the armor of Veronese's times, with a somewhat stern and careworn expression, rebukes his two disciples as he hurries forward, pointing to heaven, and exhorting them to follow him. Of those whom he thus addresses, one already recovering himself, gazes at him with tenderness, and reviving faith; but the other, with an irresolute troubled look (admirably expressed) turns towards his dumb mother, who is imploring him with gestures to remain. A blind and venerable father seconds her entreaties, supported by other relatives of the different sexes and ages, who throng, for the purpose, an elevated terrace on which the event is taking place; whilst numbers of by-standers, clinging to pillars and crowding the balustrades above, look on more calmly. Ladies, however, are not wanting in the principal group, who kneeling around, do not forget in that exciting moment, to assume a conspicuous elegance of posture, and to bear in mind that amongst the spectators, some may have leisure enough to admire them, and the tasteful adjustments of their drapery; and even the little gaily doubleted boys they hold, seem to have quite a precocious turn for the same courtly gracefulness. Thus we have here again something of that affectation and self-consciousness display, a fondness for which was the besetting bane of this great victor of the brush; but in other respects the picture is very admirable. It has more vehemence and action than is usual with the painter; and the coloring and painting are extremely vigorous and brilliant: perhaps the former in parts is somewhat gaudy, too parrot-like variegated, too much like a society of conversazione of macaws, in its sudden and numerous contrasts; but the restorer has evidently been here so hard at work, his thick coarse paint so manifestly bestreaks the transparent purities of the original in almost every part, that we should pause before attributing any defect of this kind to Paul Veronese himself.

The companion picture opposite, "St. Sebastian on the Rack," is opposed in other respects, being one of the feeblest shadowings forth of the painter's hand; a collection of ugly inanimate figures, tricked out in the most unsightly of those eccentricities of costume in which he was but too prone to indulge; a poor caricature of his manner by himself. Several of his other pictures here, abounding in very high merit, we must for want of space reluctantly pass over, but we may not leave the church without pausing for a few moments to call the most marked attention to the paintings on the ceiling of the nave, since they are the most delightful things here—and to be numbered amongst the most precious ornaments that the Adriatic Queen still retains in her broken, half-unjewelled diadem. They are small pictures illustrative of the story of Esther, in which Caliari's own peculiar romantic magnificence and grace of fancy are displayed with charming effect. In one, Ahasuerus is represented as crowning the chosen maiden, who kneels before him with courtly grace—her green dress contrasting splendidly with the shadowy glow of red color all about the king and his royal state. He bends over her like a shadowy tiger-lily over a verdurous plat of lawn; and dusky knights are gleaming around them. The simple and most picturesque composition, and light and shade, are excellent; and the *sotto in su*, or ascending perspective, in this and the companion pictures, by means of which the figures seem to stand vertically away from the spectator who eyes them from beneath, is managed with consummate skill. In the next gilded oval two horses, represented in this way, are boldly pacing and trampling forth over you, one with a serene king, and the other with a darkly-shining warrior on his back; the royal barb being held with muscular stateliness by a vigorous man who comes before on foot. Two tiers of balconies, one over the other, overhang them, descending into the soft blue sky, and crowded with ladies and other animated spectators, who hail the procession below, and are seen quite from beneath with the utmost boldness and truth of perspective. In these fine inventions Paul has shown himself the very Ariosto of the brush; and his pencil, like the enchanted lance of the

Knight of the Silver Panoply (in a certain fiction of my own, which has not yet issued forth from my brain), opens for us some delightful visions of the halls and castle-courts of old Romance.

Precious vestiges! yet shining amidst damp and decay, like the last flowers of some lonely spot which was formerly a king's plaisaunce, but is now a neglected wilderness, choked with rank grass and weeds! even as were those gardens of the Peruvian Incas, when closed up and left to perpetual solitude after their deaths. Beautiful as these pictures still are, very few of the tourists seem to think them worth a steady glance. Whilst we were there, they just came and went again in frequent succession, as if it were a relief to have done with so much more of the burdensome obligation of sight-seeing.

Our next object must be to repair to the Palace of the Pisani a San Polo, to see that most celebrated picture by Paul Veronese, which has acquired much additional interest since the time of our visit, from the circumstance of our Government having given something more than £14,000 for it. Our course through the labyrinth or net-work of narrow courts took us, on the first occasion, I well remember, across the Exchange by the Rialto, where our attention was arrested for a moment by a pawnbroker's auction going on in that old scene of the bargainings of princely merchants and disposals of wealth-laden argosies. Old women, seated on chairs in a row, were handing from one to another the articles under the hammer—linen-irons, kettles, blankets, and pipkins, utensils from the kitchen, and sometimes, also, from the upper apartments, with countenances grave and deliberate as those of judges—*sic transit gloria Veneticæ*, truly! The ratings which Shylock bore on this spot are well avenged. The Pisani Palace, on which we at length issued forth, looked almost like one of the deserted ones, as if left very much in the hands of the sullen domestic who had to open the shutters, and show us what was inside. We were admitted into two handsome saloons, in the Louis Quatorze style, with painted ceilings and mirrors in flowery gilt panellings. The first of these apartments has no less than nine glass chandeliers to illumine it; the second, *our* picture—the "Alexander receiving the suppliant family of Darius," one of the painter's most characteristic and important works. On one side, a group of handsome and noble cavaliers stands in profile on a terrace; and on the other, several ladies are kneeling to them on the steps. But it is not Sisygambis and Statira, Alexander and Hephæstion—no, not a bit of it. Some noble Venetian ladies and gentlemen (the Signor Pisani, for whom the picture was painted, and his family and personal friends) are here disposing themselves into a grand and most picturesque tableau of a great event in ancient history, the greatness of which they look as if they could themselves into a grand and most picturesque tableau of a great event in ancient history, the greatness of which they look as if they could themselves rival on occasion, they seem so noble and so dignified. There is, as usual, very little indeed in the costume, and nothing in the faces to carry your fancy away from Venice; but the result is not a whit the less interesting for that; the conquerors not the less look like conquerors, indeed, benign and stately; and the ladies, with their fair hair braided with pearls, their brocaded farthingales and somewhat broad boddice-disdaining Venetian charms (scarcely less stately though suppliants), are pretty much, no doubt, like those whom the Dalmatian pirates ran away with in Venice's romantic morning hour, but very soon lost again, with all their own lives, when the Doge Candiano and the fierce and fell bridegrooms swiftly overtook them in the lagune of Caorlo, and made them, every man, pay the fatal penalty of the astounding outrage. In the picture, these members of the aristocracy, not merely of Venice, but of human nature, have their dignity, as is usual with the painter, enhanced by contrast with swarthy barbaric figures of inferior race, and lap-dogs, a dwarf, and a monkey: indeed, no large work of his seems altogether complete without some such specimens of his favorite foils. The arrangement of the colors, and light and shade, is also according to his favorite and highly characteristic plan, consisting of powerful and widely-varied hues overspreading the large groups in the foreground, suffused altogether with aerial tenderness and light. It is, verily and indeed, a strikingly similar composition of chiar'oscuro and color to one which we admired in nature, the morning before, whilst looking towards the Ducal Palace from the Canal Orfano—with this chief difference, that instead of "Dieciotto," our glowing gondolier, we have Alexander; instead of my somewhat gaily-colored wife, Statira; in lieu of the shadowy orange and green of the lazy fishing fleet in the middle distance, some obscurer figures of very similar tints; and, finally, in place of the distant light-suffused arcades and piazzas of the Signory, we have here some stately arches and colonades of ancient Roman architecture, not much less tender and bright of hue and tone. Thus, in gilding about in a gondola, it is not difficult to conceive whence the Venetian painters must have derived some of their favorite ideas; and certainly, on bearing in mind to what perpetual picturesqueness, splendor, and beauty they were habituated—in what a very atmosphere of them they lived, and breathed, and had their being, one's wonder at their triumphs, if not one's admiration, is a good deal lessened.

With regard to the expression of the figures in this picture, it will not be overlooked that the suppliants exhibit nice varieties and gradations of it, such as are highly suitable to their different ages and characters. Sisygambis, despoiled of confidence in fortune and in the generosity of man, seeks pity with anxious, distrustful eyes; but Statira, less shaken by thoughtful experiences, looks forward more gently and hopefully. To ascend in this interesting scale of youthfulness, the eldest daughter, a courtly young lady of fourteen, still holds in her hand the crown which she may wear no longer. She kneels, indeed, but with a stiff, proud air. She does not yet understand why a daughter of Darius should pay homage to any one. Her little brother, on the other hand, has, far less royally, sought security in his grandam's arms, and seems to feel that he has found it there; but his yet younger sister, the youngest of the family here seen, still lives unmoved and all apart, in the simplicity of childhood. She seems, instinctively, to have much of the family pride too, but not enough experience to appreciate her present position; and so she looks with animation towards her pet spaniels, rather angrily, it would seem, for Ponto and Dash, brought to add obsequiously their homage to that of the rest, are refractory in the hands of the slaves, and she is evidently not pleased with their management of them.

Goethe alludes with warm approbation to this truthful and happy gradation of expression. Mr. Ruskin, I find, in a letter to the *Times*, considers this the finest of all Veronese's works.*

* He says it is more highly finished than the "Marriage at Cana" in the Louvre. From this reference, and from his saying, in another place, that the painter is "gloriously represented by the two great pictures in the Louvre," it is clear he has a very high opinion of the Louvre "Marriage at Cana." Yet it certainly by no means gloriously represents Paul Veronese's powers of execution, or, in its present state, his color. Highly to be respected as are the artistic resources and energy exhibited in that vast picture, it were a great injustice to the painter to accept it as a specimen of his best work; and this undistinguishing allusion to it I cannot help considering as another instance of Mr. Ruskin's careless, flyaway manner of settling things, or else as a judgment furnishing an additional reason for suspecting that he does not in reality know what good painting is; for, otherwise, would he not rather have been anxious to guard his readers against forming an estimate of one of his most favorite painters by such a comparatively stiff, feeble, and heavy specimen of his handicraft as this? No doubt the picture has suffered deplorably from the destructive damps of the Seine, and still more from the periodic re-daubings to which the Louvre pictures have unhappily been subjected so long. The faces, especially, abound with coarse touches of dirty grey and bricky-red, as if the wine, by-the-by, were taking effect. These, of course, are not of Veronese's laying on, and more than the chilliness and heaviness of so much of the rest are his; but it must be added, that a general stiffness and constraint are observable both in the design and execution, and that many of the heads are absolutely poor in character, and wooden in look and posture. These remarks (humbly offered) may be of some slight use in tending to prevent the disparagement of the painter by those who end their knowledge of him in the Louvre. The Veroneses there are, indeed, for the most part, uninteresting on general grounds, and now, furthermore, faded and flat. But one most vigorous, brilliant, and admirable work by him there is in that collection, at all events—the little picture (No. 100) of the Madonna and Child with St. Benedict, &c. Look well at that, and compare it with the "Marriage of Cana," and then you will see that the latter, now, at any rate, "gloriously represents" Veronese in nothing but composition and general arrangement.

MORNING.

Negative by WHIPPLE & BLACK, from a Bas Relief by Thorwaldsen.

It is undoubtedly, in general conception, an admirable specimen of his talents; but to the best of my judgment, decidedly inferior in brilliant beauty and delicacy of color and execution, to many of his productions. Compared with many of them, the color is somewhat rusty and coarse; and the execution, though solid and forcible, is for the most part hard and heavy for Veronese, if indeed the whole is by his hand, which may well be doubted. The heads especially are not well painted. In the works wrought in happier moments, what a beautiful—what a peerless, light, crisp touch he has!—light as the fall of a rose-leaf, or the momentary settling of a butterfly, but, withal, of the most perfect precision, and showing consummate intelligence with regard to the form and character of the thing portrayed.

A delightful tradition is there respecting this picture, to the effect that Paul Veronese, having received much hospitality and kindness during a long illness whilst on a visit to the Pisani family, at their country seat, secretly painted it after his recovery, in a space of eight and thirty days, and left it rolled up under his bed, as a present to his host,—an act of the heart (if the fact be so, which one would willingly believe) scarcely less splendid than the picture itself is of his head.

ON THE PERMANENCE OF PHOTOGRAPHIC PRINTS.

III.

It will be observed that prints, when immersed in the toning bath pass through several tints of color—no matter what the composition of the solution may be. First we have a light lemon yellow, or a light yellow ochre, passing through several shades to a deep brown, from which it changes to purple, which may be deepened to an intense black, if the printing, and toning solution, are sufficiently strong. If the print is continued in the solution after it has attained the black, the process of change in color is reversed, and it again goes through the same series of colors, from black to yellow, and it may be suffered to remain until not a trace of the picture is left.

Now this fully proves that there is a certain point to be attained in the toning of a print where perfect fixation is obtained; to go beyond, or fall short of this point, destruction of the picture is sure to follow. This point is a delicate one in most instances, and it requires a good perception of color in the manipulator to decide it in all cases. This point is the purple stage. Some solutions work up to this stage very slowly and give it with great intensity, as in the gold bath, after Moulton's formula, while others give it quickly and of various tints and strengths. Occasionally it is perceptible for a very brief period, in which case it is necessary to be expeditious in removing the prints from the bath, or they will enter the destructive stage before their removal can be accomplished. This purple stage is even perceptible in pictures toned to the brown- (or umber) color, seeming simply to cover the surface of the print as a perfectly transparent film. It remains but an instant, the print quickly passing to a decided brown, and from that to the lighter shades as before described. In fact, the change is so rapid in some new baths, that it is dangerous to take the eye off the print in its passage from the first brown to the purple tint.

As we remarked last month, the rapidity or slowness of toning depends greatly upon the temperature, being accelerated by heat and retarded by cold, and it should be the object of the photographer to keep the solution at as even a temperature—say 60°—as possible. Sulphurous acid is evolved much slower, and the print is more manageable, at this temperature.

For the last few months we have made our toning baths of chloride of lead and silver only. The results are before our readers in our illustrations. Each month we have modified them, and we think we are safe in the opinion that prints toned to the proper degree in any of those solutions are permanent. The addition of the acetic acid is a decided improvement. The prints are much clearer, and the details of the picture better and more easily preserved. In order to produce a black print by the lead process, acetate of lead should be added to the bath so as to make it predominate over the chloride of sodium used in the formation of the chloride of lead; or a larger quantity of chloride of silver may be used. Care should be taken in adding the acetic acid not to get too much, as an excess will turn the solution milky, and as a consequence give a milky, vapid appearance to the print. This milkiness may be distinguished from that produced by a want of hyposulphite of soda in the solution, by having an etherial bluish tinge, whereas that produced from the other cause is of a chalky appearance. It may be filtered off, but the picture will still want clearness; the better plan, therefore, is to add chloride of lead solution until it disappears. As the solution gradually becomes neutral by use—from which it passes into an alkaline state—it becomes necessary to occasionally add acetic acid to keep it up to the right toning quality. The time for adding the acid can be determined by the appearance of the prints; or by the use of the litmus paper. In the first instance, the first change of the print is to a lemon color, looking weak and dull, and a difficulty—and at times an impossibility—of passing a brickey brown color.

Our reasons for believing that the lead is superior to the gold bath in permanency is, that the gold bath requires so much longer time to produce the required result, that the print becomes so thoroughly saturated with hyposulphite of soda, it is quite impossible to work it all out; or if submitted to washing sufficiently long to get rid of it, the texture of the paper is destroyed to such a degree that the beauty of the picture is gone. A gold bath to be used successfully, both as to color and permanence, must be much stronger than is generally used; not less than fifteen grains pure chloride of gold to the ounce of hypo solution; and then assurance of perfect fixation can be had by the addition of a few grains of acetate (not chloride) of lead—say two or three grains to the ounce. This solution will tone, usually, in ten minutes, the unchanged silver being worked out much sooner.

We have now arrived at a stage in the printing and toning of positive photographs, when it is possible to produce any of the desired colors, without resorting to those dangerous acids and alkalies which have been so long, and are now, used by English and French photographers. If we desire deep blacks, acetate of lead and acetic acid are to be used in proportions to suit the required taste; lighter shades of color being produced by the addition of chloride of sodium to the toning bath and lemon juice to the salting bath, or nitrate of silver solution. Our present number will exhibit the difference of color produced by these modifications, the portrait being the result of an acetate of lead toning bath, and a salting solution without lemon juice; while the print of "Morning" was salted with the same solution with lemon juice added, the proofs in the latter instance being printed a very little lighter.

The theory that the strength of the salting solution should be in proportion to that of the nitrate of silver, is not proverbially correct. Were it possible always to obtain paper perfectly uniform in weight, texture and size, it might hold good; but as this cannot be, the best rule is, that the strength of the salting should be in proportion to the thickness and closeness of the paper. With the paper we now use, we find 200 grains of salt to 1 gallon of water, to give the best results, with the same amount of nitrate of silver we used with a salting solution of 180 grains for Saxe paper. When we used Marion paper, we found 90 grains to work best.

From this it follows that the manipulator must be constantly on the alert to modify his printing formulas to suit the *nature of the paper* to be worked. The sizing of the paper also modifies the color of the print.

Another point to be observed in order to obtain certain results. The color and tone of the positive is in a measure dependant upon the negative. This may seem strange to some, but it is nevertheless true. It is not possible to obtain black prints from some negatives, while others permit of any color or shade of color.

From what we have said on this subject we arrive at these facts, to establish the certainty of permanence in photograph positive proofs:—

Weak baths will not produce strong colors without endangering the print.

The quicker the print can be toned to the required tint and the unchanged silver washed out, the more certain the fixation, and therefore a bath sufficiently strong to do this in from five to twenty minutes (the latter being the utmost extent we can go) should be used.

The point of certainty for the complete fixation of the print is the purple stage—no matter what may be its modified extent; all the solutions we have used, give this point to a greater or less degree—therefore prints should not be permitted to pass or fall short of it.

Warm solutions should never be used, owing to the rapidity with which they dissolve out the sizing and weaken the picture. They also destroy its brilliancy.

We also consider alkaline solutions more liable to fade than acid, unless the acidity is produced by any of those acids enumerated above as destructive agents. This opinion is not only derived from our own experience, but from examinations, at various periods, of the English and French photographs imported into this market. We find the English prints constantly fading, and the majority of M. Le Gray's; while those of Blanquart Evrard and Baldust do not change at all, at least so far as we have been able to discover, and we have seen several hundreds of the various styles. H. H. S.

From Photographic Notes.

ORTHOSCOPIC LENS.

Since we last had the pleasure of addressing our readers, we have paid a visit to the Exhibition of the Photographic Society, and called on most of the principal London Photographic firms to hear and see what was going on in Photogrophy. The subject which at this moment appears most to interest the trade is M. Petzval's new lens; and we have obtained some very valuable information with respect to this instrument from Mr. Ackland, who has just been to Vienna, and obtained full particulars of it from M. Petzval himself. The instrument is the same as that which Messrs. Knight advertise as the "Orthoscopic Lens" of Voigtlander. We saw one of these lenses at Messrs. Knight's, and obtained full particulars of the construction of it from Mr. Ackland. These particulars we should immediately lay before our readers, were it not that Mr. Ackland has promised to send us a communication for the next number, in which he will himself state all that he has learnt about the matter. In the meantime we hope to receive one of these lenses from Messrs. Knight for trial, and as soon as it arrives we shall take some negatives with it, and return them, with the lens, for examination by any one who may be interested in the matter. No patent has been taken out for the Orthoscopic Lens in England, and therefore any optician may copy the construction of it, and introduce it for sale, should it be found to answer; but it must be remembered that two lenses may be, *to all appearance*, identical, and yet one may be a good and the other a bad one. To copy a lens which has been constructed on an exact mathematical formula, without a knowledge of that formula, is an empirical proceeding which may frequently end in failure.

The Orthoscopic Lens is essentially a *view* lens. It would be impossible to construct a portrait lens on that principle. Its advantages are stated to be,—first, that it includes a wider angular field of view than the common view-lens; and secondly, that it gives a flatter field, with more equal illumination in every part. These are great advantages, and we shall be delighted to find that so much can be realized by this new arrangement of lenses, but we must confess that at present the arrangement does not appear to us to be at all calculated to do what has been stated of it. As a matter of theory, we cannot at present understand it; but, at the same time, we have great faith in such a man as M. Petzval; and Mr. Knight assures us that so far as he can judge from the image on the ground glass, the lens does all that has been said of it.

The following brief description of the "Orthoscopic Lens" must suffice for the present:—

There are two compound lenses. The front lens is large, and resembles that of Voigtlander's present portrait combination; but the focal length is shorter, and it is consequently thicker in the middle. It is formed by cementing together a double convex lens of crown glass, and a double concave lens of flint, and is placed with the convex side towards the object. The outer concave side of the flint is nearly plane. The posterior compound lens is formed of two, not cemented together, but merely touching at the edges. These lenses are much *smaller* than the front lens. The inner one is of flint, and double concave, the outer one (that is, the lens next the picture), is of crown, and meniscus, with its concave side next to the concave side of the flint, so that a wide space intervenes between them on their axis. The posterior compound lens is placed pretty close to the front lens, and is concave, the total thickness of glass at the edge being greater than that in the middle, so that it makes the focal length of the entire combination greater than that of the front lens; or, to speak mathematically, the focal length of the front lens is *negative*, that of the back lens *positive*; (the focal length of a lens being called *negative* when it is measured on the *opposite* side of the lens to the origin of light, and *positive* when measured on the *same* side).

The front lens do not allow whole pencils to reach their destination on their focussing screen. The oblique pencils are small, and pass excentrically through the front lens, and centrically through the back lens, against which a stop is placed. This construction would lead one to imagine that the curvature of the field would be approximately spherical, the centre of the sphere being that of the outer face of the lens next the picture; so that as regards flatness of field, the common view-lens would have the advantage. But this *prima facie* view of the matter may turn out to be incorrect. The common form of view-lens would also appear to give quite as equal illumination as the arrangement which we have described; but certainly, in point of orthoscopicity, or freedom from distortion, the new arrangement would have the advantage, for the same reason that a picture, taken with the small central part of a view-lens is more free from distortion than that taken with the same lens, and the stop at a distance in front of it.

But more of all this in our next number. We shall take the earliest opportunity of trying the Orthoscopic Lens, and if it answers, shall do our best to call attention to its merits.

From Photographic Notes.

PRINTING BY CARBON.

Some experiments in which we were engaged a few weeks ago, lead us to believe in the possibility of printing in carbon, by the following process:—

First,—Dip a sheet of blotting-paper in a mixture of bi-chromate of potass, albumen, and finely-ground charcoal; or blacken it (in the dark), with indian ink ground up with a solution of bi-chromate and gelatine, or albumen.

Next,—Dry the blackened paper, and expose it to light, under a negative.

Lastly,—Immerse it in water, which will more or less perfectly remove the black material from those parts where light has *not* acted, without disturbing those parts where light has acted, and thereby rendered it insoluble. In this way a print in black, and a sort of dirty white, may be produced. After which it is probable that immersion in an alkaline solution may clear up the lights sufficiently. This was the direction in which we were experimenting a few weeks ago, when some matters interfered to prevent our carrying the experiments any further.

LANCASTER, OHIO, April 4th, 1858.

THE CAUSE AND THE REMEDY.

H. H. SNELLING:—The leading article in the editorial department of the April number of your Journal strikes some severe and just blows at widely prevailing vices and follies among the Photographic fraternity of the United States, which cannot be too severely dealt with. I, however, think that you do not perhaps fully appreciate the cause of the disgraceful state of things which you have so plainly and ably set before us. In this country photography has degenerated into a trade, and every simpleton who has brains enough to carry him safely through the manipulations of taking an ordinary picture, immediately "*sets up shop*" and *dubs himself* artist. This has had the effect to disgust all who have really talent and ability, or true artistic taste, with the profession, or has prevented them from engaging in it. There is scarcely a town of a hundred inhabitants in the whole West that has not one or more of these *artists*, many of whom can scarcely spell "baker" correctly; and it is not much to be wondered at, that those who could add dignity to the art, and through it, additional fame to our country, stand aloof. In Europe it has been quite different. The earliest discoveries there were made by scientific men, and to this day they are foremost in the practice of the art. If there existed there the inclinations, it would be impossible for ordinary minds to cope with such great men. They have had, and will continue to have, from this cause, the almost exclusive field to themselves.

This difference in the class of individuals engaged in Photography will account fully for the mean-spirited niggardliness of which you complain here. An intelligent, really gifted man is almost necessarily a frank, liberal man, and a *genius* in whatever profession or pursuit, is constitutionally incapable of any littleness or meaness. Ignorance and incapacity, on the other hand, are often coupled with pompous and offensive pretention, and it has often amused me to witness with what an air some of these itinerant teachers you touch so severely, will enter a room to peddle their secrets, or extraordinary processes. Now, in proof of what I have written, have you or any one else ever known a man who possessed *real merit* to be engaged in any such business? And do you not find that those of your patrons who most freely impart what they do know, belong to the intelligent, intellectual, or scientific portion?

No, no! Your design is right, and your efforts deserving of all praise, but you do not aim your shafts in the right direction. Purge the profession of the ignorant, dishonest quacks, who not only disgrace it, but are the leeches that are sucking its life's blood, and you will soon see plenty of the right sort of men take hold of it. As it is, you will scarcely find men of superior attainments who will enter the arena, and pit themselves against your fifteen cent and twenty-five cent "*artists*." No man of talent will waste it in an unremunerative pursuit, when he can engage it upon one that, at the same time that it gives him a field in which to distinguish himself, will at least give him an income that will keep him above the necessity of loading himself with debt. With us, in all pursuits, nearly or remotely connected with *true art*, there is no widely diffused *true taste* to discriminate between the *real genius* and the *ass*, and the latter not unfrequently, when he "sets up his shingle" against the former, forces him to the wall, disgusts him with the pursuit, or drives him to something else.

The true artists—men of genius—are the proper *practitioners* of the Photographic Art, and in the hands of these, and the really scientific chemist, there is no limit to be put to the results which *might* be accomplished. In Europe it is now, and has been, in the hands of this class, and is there considered by the artist a most invaluable aid to his profession. Our artists, on the contrary, "turn up their noses" at it, as do our scientific men—I mean as a class—and for the reasons given above, and in my opinion, none other.

It would be the height of folly to try to row an iron kettle up Niagara Falls, with a mush stick for a paddle; and it will be equally hard to engage the co-operation of the proper material to advance the art of Photography in the United States until it is thoroughly purged of a class of men who disgrace and degrade it, and who can by no possibility ever develope a new idea connected with it. How this is to be done is a question difficult to answer, but if you bring about such a result, you will not only be a public benefactor, but will deserve, and no doubt receive, a crown of laurels.

Truly yours,

VENI MODO GUSTO.

From Galignanis' Messenger.

FURTHER EXPERIMENTS
On the Continuation of the Action of Light in the Dark.

BY M. NIEPCE DE ST. VICTOR.

We gave an account in November last, of a series of curious experiments communicated to the Academy of Sciences by M. Neipce de St. Victor, tending to shew that light can be stored up, as it were, like any other substance. M. Niepce has now sent in a second paper to the academy on this singular subject. Having stated that if a print, for example, be exposed to the sun for several hours, then taken into a dark room, and there covered with a sheet of sensible paper, an impression will be obtained through the sole action of the solar rays previously absorbed by the print; he varies the experiment by taking a sheet of paper which has been kept in the dark for several days, this he covers with a negative photographic impression, taken either on glass or paper, and then he exposes it to the sun. After a certain time, the length of which depends on the intensity of the light, the whole is taken back again into the dark; the negative photograph is taken off, and the sheet washed with a solution of nitrate of silver. In a very short time an impression appears, which, on being well rinsed with pure water, will become fixed. If, instead of operating on a common sheet of paper, it has been previously steeped in an aqueous solution of nitrate of uranium, and allowed to dry in the dark, the experiment will be performed much sooner; a quarter of an hour's insolation (exposure to the sun) will be sufficient, and the bath of nitrate of silver will instantly render the impression visible; to fix it, it need only be washed with pure water, in order to dissolve the salt of uranium which had been protected from the sun by the dark portions of the negative photograph. To give the impression a deeper tone, it may be washed with an acid solution of chloride of gold; or else, as soon as it has been exposed to the sun, steep it for a few minutes in a solution of bi-chloride of mercury, then rinse it with pure water, and lastly treat it with the nitrate of silver, until the lines have assumed an ebony tint; it must then be again rinsed with pure water. If immediately after withdrawing the paper from the action of the sun, a solution of the acid chloride of gold be substituted for the nitrate of silver, the image will instantly appear of a deep blue color, and may be fixed by washing it with pure water. Negative impressions may be obtained by exposing paper impregnated with nitrate of uranium to the action of light in the camera obscura; but the process being extremely slow, can only be applied to monuments. The impressions obtained with a salt of uranium subsequently treated with a salt either of gold, of silver, or of mercury, will resist a boiling solution of cyanide of potassium, and they can only be obliterated by aqua regia. If a solution of tartaric acid be substituted for the nitrate of uranium, the image will appear by the aid of nitrate of silver, but much more slowly, unless the temperature be raised to about 30 or 40 deg. cent. (86 to 104 Fahr.) If a figure be drawn on a sheet of pasteboard with a solution of nitrate of uranium or tartaric acid, then exposesd to the sun, and afterwards laid on a sheet of paper prepared with chloride of silver, the latter will receive the impression; in this experiment also the pasteboard acts solely by the light it has absorbed; the operation is quite as conclusive as if it were effected in a dark chamber, for the sensible sheet lies *under* the pasteboard, which is impervious to light, only it takes two or three hours to obtain the impression. But if a metal plate, heated to 50 deg. centigrade (122F.,) be laid on the pasteboard, a few minutes will suffice. If the lines of the drawing be very thick, the impression may be obtained at a distance of three millimetres (one-eighth of an inch). If a sheet of pasteboard, strongly impregnated with a solution of tartaric acid or nitrate of uranium, be exposed to the sun for a certain time, and the interior of a tin tube be afterwards lined with this pasteboard, the tube being afterwards hermetically closed and laid by for several months, the latter will, on being opened, impress the image of its orifice on a sheet of sensible paper. This will require at least 24 hours to accomplish; but if a few drops of water be let fall into the tube, in order slightly to moisten the pasteboard, and the temperature be raised to about 50 deg. cent. (122 Fahr.), the image of the orifice will be obtained in the course of a few minutes. After the first impression the pasteboard is exhausted, and the insolation must be repeated. M. Niepce makes mention of several substances which are all more or less impressionable, or, rather, more or less capable of absorbing light and re-emitting it as we have seen; the best are the citric and oxalic acids, the sulphate of alumina, the citrate of iron, iodides and bromides generally, the neutral tartrate of potash, lactic acid, and skins. Each of these substances has a maximum of intensity; they will retain the light they have absorbed for several days, and, unless they have undergone a chemical decomposition in the interval, as is the case with iodides and bromides, they may re-absorb light by a fresh insolation. Another curious feature is, that a substance that has absorbed light may communicate it in the dark to another substance, tartaric acid for example. The bichromate of potash, when exposed to the sun, loses its property of being soluble in water; the same occurs when it has been brought into communication in the dark with an isolated substance. The Academy of Sciences has referred M. Niepce's papers on this new and wonderful discovery to the committee appointed to award the Tremont prize for discoveries in the physical sciences.

ALBUMEN PRINTING PROCESS.

To the Editor of the Photographic Notes:

Dear Sir,—Your number of *Notes* for the 15th January, just come to hand, has induced me to write you anent some points or queries on printing positives on albumenized paper, to which method I frankly confess I have a great liking.

I may mention that I have toned my albumenized prints in a saturated solution of hyposulphate of soda and chloride of gold; and for greater permanence immersed them in a fresh solution of hyposulphate of soda, washing well, then immersing for half an hour in a solution of soda, ultimately allowing the print to lie for some hours in fresh water, while the tap keeps constantly changing, and now and then, during this period, dabbing the print on both sides well with clean water and sponge. Latterly, after keeping prints for a year or two, they have begun to spot here and there and show signs of decay.

Mr. Hardwich recommends to remove the size from positive prints. I have done so, and find my pictures not more permanent, if even so good, as when I allowed the size to remain. I hope to learn in your next number your opinion as to the use of soda or ammonia in removing size, also what time, with sponge and water constantly changing, a print should lie in the water?

In your last number, you give an extract from the letter of a correspondent, who states "he has adopted a new style of printing which is scientifically correct, and gives most brilliant proofs, with pure whites, on albumen paper, the color being nearly black, the picture is nearly all metallic gold or there can be no sulphur," &c.

May I, as one of many amateurs desirous of learning a really good mode of printing and fixing positive prints permanently on albumenized paper, solicit your correspondent to send his method of printing positives to you for insertion in the next number of the *Notes*. Delta.

[We doubt whether the permanence of prints is likely to be increased by fixing and toning them in strong hypo. Strong hypo is much more easily rendered milky, and acts much more energetically in sulphurating a print, than weak hypo. According to our experience a print may be completely fixed in ten minutes in a fresh bath of one part of hypo to twenty parts of water, and we consider it injudicious to leave a print too long in hypo, particularly when the solution is strong and has been used before. The only legitimate use of hypo is to remove the chloride of silver; and when a print is left too long in a strong hypo bath it appears much more likely to fade than when a weaker bath is employed. The only silver printing processes which, according to our experience, can be depended on for permanence, are the development processes on iodide or chloride of silver, and the sun-printing process in which the print is first toned with sel d'or and afterwards fixed with weak and fresh hypo. In the common printing process which you have described permanence is the exception and fading the rule. Immersion in an alkaline bath, or in hot water, to remove the size, appears to be worse than useless, and so does *excessive* washing to remove the hypo. We wish we could conscientiously record any other opinion.—Ed. P. N.]

From the Photographic Notes.

NEW STEREOSCOPE.

Mr. Salmon, optician, of No. 100 Fenchurch street, has just brought out a new form of stereoscope, which is an approximation to that described in No. 30 of this Journal. The lenses are large whole lenses, placed 2⅝ inches from centre to centre. Bye and bye, opticians will perhaps bring out the right thing, the mathematics of which we have given, and the theory of which stands unrefuted, and a reproach to all who now make, or sell the present form of stereoscope, in which everything is dwarfed to the dimensions of a little model, situated a couple of feet from the nose. We purchased one of Mr. Salmon's stereoscopes, and find it very good in some respects, but faulty in others; the square diaphragms, for instance, are placed too near together, so that a strip of black shadow overlaps or veils a portion of the picture on each side. In many respects it is a great improvement on the common form for viewing printed positives. Making things look larger and more distant, besides being very convenient in construction, *and a step in the right direction.* Bye and bye, we confidently predict, semi-lenses and prisms will be entirely given up, and whole lenses used, placed 2½ inches from centre to centre, the pictures being taken so as to suit this arrangement, in the manner described in our Journal. The refracting stereoscope will then be no longer a toy, but a scientific instrument, and the objects of the picture will be seen with the *natural* and true axial convergency of the eyes, which causes them to appear of their proper size, and at their proper distance. It is scarcely necessary to observe, that when whole lenses are used, placed at 2½ inches from centre to centre, the rule for taking and mounting the pictures, described in No. 30, must be rigorously attended to. We have tried this form of stereoscope, and it answers perfectly.

SUBSTITUTE FOR GROUND GLASS.

To the Editor of Photographic Notes:

Dear Sir,—Being in want of a focusing-glass a few days since to try a new camera, I hit upon the following expedient, which answers so well that I send it to you if you think it worth inserting:—It is simply to coat a plate of plain glass with collodion, and allow it to dry, then fix it in the focusing-frame, collodion-side next to lens.

Thomas Gulliver.

[An iodized plate has been frequently used as a substitute for ground glass, but plain collodion, *if good,* is too transparent. Spirit varnish applied to a *cold* plate, answers very tolerably.—Ed. P. N.]

OUR ILLUSTRATIONS.

I.—RALPH SMITH, ESQ.

Negative by J. B. Heywood.—H. H. Snelling Print.

II.—MORNING.

Negative by Whipple & Black; from a Bas-relief, by Thorwaldsen.

The characteristics of these pictures are marked and very good. The decided improvement in their quality over those of March and April, is entirely owing to the change from chloride of ammonium to chloride of sodium (common salt) for the salting solution.

The portrait of Mr. Smith is very excellent, and we give it as a fine specimen of an excellent artist.

The print of "Morning" is from one of a series of subjects in Bas-relief, by the celebrated sculptor Thorwaldsen, whose name has become a household word throughout the world. In our next we shall give "Night," and describe both of them as is most fitting they should be.

SALTING SOLUTION.

The portrait paper was salted with

Chloride sodium	200 grs.
Gelatine	200 "
Water	1 gal.

"Morning" was salted in the same solution, with 20 drops lemon juice added.

The sensitizing solution, the ordinary ammonia, nitrate of silver

TONING AND FIXING SOLUTION.

Water	½ gal.
Chloride of lead solution, made from 640 grains acetate lead	½ gal.
Acetic acid, No. 8	2 fl. ozs.

Hypo. sufficient to keep the solution clear.

We have found this bath very uniform in its coloring properties the principal cause of different degrees of depth of color and shade being from printing. A very few of the portraits were printed by the April formulas. These are a little spotted. All the others are clear, clean, and fine.

RECOLLECTIONS AND JOTTINGS
Of a Photographic Tour, Undertaken During the Year 1856.

BY J. W. G. GUTCH, M.R.C.S.L.

"The glorious Sun
Stays in his course, and plays the Alchemist."—King John,

To the Editor of Photographic Notes:

Dear Sir—I know not if the following homely kind of epistle will be deemed of sufficient interest for you to make a note of, and yet I fancy that oftimes such memoranda and jottings of past experiences, prove of much more *practical* benefit to our brothers in the art, than the more elaborate or *theoretical* in the art; at all events they are very useful and acceptable to the beginner. I wish to send you a tolerably detailed account of my photographic proceedings during the last two years, and having met (I will not say with *invariable* success, for who is the photographer that can with truth say that), but having met with certainly more than the average success, and which I entirely attribute to the means employed, I am inclined to think that others may be induced to follow in my steps, and as I make it a rule to have no secrets, I do not at all see why they should not be equally, or perhaps even more successful, than I have been. From ill-health and lameness, I was on the point of giving up Photography, when, in the early part of 1856, I was shown, for the first time, an "Archer's Camera," which appeared to me so thoroughly to combine all that could be desired, and to obviate the very difficulties that had previously beset my path, in the form of tents, dark rooms, &c., that I at once purchased one, and have never repented my bargain; nay, I will say more, that I have never done any good photographs with any other camera that I am unable to do with the Archer; and I have now had some fifteen or sixteen years experience in the art, and have tried very many of the multitudinous forms that are offered to the public.

For out-of-door, or field-work, it appears to me to combine *every possible requirement* that the photographer can possibly desire; it is portable; the tripod stand, which is quite peculiar in construction is decidedly the firmest and steadiest of any kind yet offered; it is readily adjusted, lengthened, or shortened, at will; the camera is quickly unpacked, mounted, and as readily undone; it is wonderfully steady, even in windy weather; it contains ample chemicals for a fortnight's work; two watertight baths, viz., one nitrate bath and one water bath, one box for twelve plates, focusing glass, &c., &c.; and when out, *every process is carried on within it, readily* and without any inconvenience; viz., the coating the plate with collodion, exciting the plate in the nitrate bath, exposing and developing it, and, if you please, clearing off the iodide of silver with the hypo. or cyanide; thus, in fact, with the exception of varnishing, producing a negative ready for the copying-frame. To do this comfortably, I calculate takes, on an average, half an hour on each picture; but then how great an advantage this mode has over the old plan, or the other one hundred and fifty contrivances for oxymel plates, sugar plates, dry plates, albumenized plates, &c. You immediately, in the Archer camera *see* if you have succeeded in taking a good negative, and if not, of course proceed to go over again the same ground; not as I have many and many a time done, come home, after many and many a long ride, and found all my day's work abortive, and after all my trouble and expense failed to obtain one picture; with an Archer's camera, it is only of course a matter of time, should the first attempt fail, under any ordinary circumstances, and with all in working order, the failures come very rarely indeed, and fine pictures are the rule; another great advantage is, you may, up to the size of the bath, use *any* size of glass, as no chassis is employed, thus doing away with the *necessity* for the glass being *accurately cut* to suit the exact size of the frame in which it is to rest; and this is a very great advantage, as I have often found, in my various journeyings.

In my camera I can do portraits or views from one inch up to nine inches, with equal facility, and no change of frame or any other adaptation, but of the most simple kind; and now, after this laudatory preface, (perhaps too much so, you will exclaim, though in sober truth, I have not in any way exaggerated or over-praised it), I will go through the whole routine of my operations, and that as briefly as I can, though with every good intention of not taking up more of your columns than I can help, to describe on paper the operations; but to be understood will necessarily entail a somewhat lengthy epistle.

Glass.—I use the St. Helen Company's flattened sheet glass, and for pieces 9x8 I pay 12s, per gross, or a penny a piece. I used to employ the more expensive kinds, and tried even the plate, and not finding the increased beauty of the negative at all equivalent to the increased expense, I abandoned it, and have no cause to regret the course I have, for two years, steadily persevered in.

Cleaning the Glass.—Equal parts of liquid ammonia and spirits of wine, thickened with common chalk to the consistency of cream, rubbed over the glass, on both sides, and when dry rubbed off with one leather, and polished, when about to use it, with a second; this plan I have never found to fail.

I carry the plate with me, (generally a dozen), when cut, in a small bag, made of American cloth, with a handle, and buttoned cover.

Coating the Plate, and just a word or two on the various kinds of plate-holders. Having tried them nearly all, I have, during the last year, contented myself with one, consisting of two circles, the lower, or under one, of gutta-percha, and stiff, the upper one being a little larger, and lying on it, of india-rubber, and pliable. It is *not* pneumatic, or very adhesive, but with most ordinary care and a very little use quite sufficiently so to answer every purpose;—the pneumatic ones are all very nice, so long as they *keep in order;* but I think all must have discovered that the period of time that they are pneumatic is but short, and then they become worse than useless. Messrs. Horne & Thornthwaite have just brought out a new holder, but I have not seen it. To proceed then;—In calm, still, fine weather, I frequently coat my plate in the open air, and if any air be stirring in my camera, my two arms being passed through the two sleeves at the side, and my head being covered over, with the focusing apron, and a small window at the top of the camera, covered with yellow oil silk to give me light, and the back of the camera open, I readily perform that part of the manipulation.

Exciting the Plate.—I make my bath according to the following formula:—

. Into a 20-ounce stoppered bottle put nitrate of silver, 1 ounce; distilled water, 2 ounces; dissolve. Iodide of potassium, 4 grs.; distilled water, 1 drm.; dissolve. Mix these two solutions; the drecipitate iodide of silver thus formed, is, by shaking, entirely dissolved. Now add fourteen ounces of distilled water, when the excess of iodide of silver is again thrown down, but in such a finely denuded state as to render the complete saturation of the bath, with iodide of silver, perfect. This I generally leave for the night; and in the morning filter it into my bath, where it remains all the year, and very rarely wants any change being made, except of course from time to time renewing it with a 30-grain solution of nitrate of silver as it evaporates or is wasted; I have never yet, in a single instance, added *either acid or alkali*, or *ever tested* for acidity or alkalinity. The bath is one that you purchase with the camera, and is a very economical one, it consists of a wooden case, lined on the inside with glass, narrower (I mean the back and front closer together) at the bottom than at the top, and *just wide* enough to admit the dipper and plate, keeping the former carefully sliding on the back of the bath; it fits into a linen bag on the floor of the camera, and is kept slightly inclined, to obviate the risk of rubbing the plate in putting it in or drawing it out. I use the ordinary crystallized nitrate of silver, which I obtain from Simpson and Maule, at 3*s*. 8*d*. the ounce; I tried the fused, which is rather dearer, and I fancied the bath did not work so well. Before exciting my plate I shut up the back part of my camera, which, in place of the usual sliding groove for the chassis and focusing glass, has only a door hinged at the bottom and folding or dropping down; at the top of this door is an opening large enough to see through, and having a slidding shutter inside, which is most readily opened or shut by the arms from the inside, thus easily rendering the camera, before withdrawing the face covered by the focusing hood, perfectly light-tight, and having thus done, I cover my head with the focusing apron, pass my arms through the sleeves, open the lid of my nitrate bath, which is made water-tight, with two brass screws and a double layer of thick India-rubber cemented on the lid, and pass the plate steadily down, shut the lid, and open the camera. I now proceed to

Focus.—This is done entirely from the inside, the lens being fixed, and thus saving much weight and also the expense of the rack work. There is a light frame traversing the interior of the camera and sliding in two grooves on either side with a bar of wood at the bottom, and several small bits of gutta-percha let into it and notched; on this rests the focusing glass; it is confined and kept in its upright position by a bar of wood, hinged on one side, and moving in a slit on the other; the loose end descending, rests on the one corner of the top of the glass, and holds it firmly; the frame is drawn backwards and forwards until the right focus is obtained, and then a peg of wood is withdrawn and fixed so that the frame can be pushed forwards to its original position, close to the lens, but cannot be drawn back, or from the lens, further than to the peg of wood, which marks the exact place where the best focus was obtained; all this time the plate is of course in the bath; I generally leave it four minutes; I invariably use some collodion which I find *constant* in its qualities, and good. I obtain it from Messrs. Taylor and Brothers, in Vere Street, Oxford Street, and can conscientiously recommend it in the strongest terms, from two years continued use of it. I now replace the frame of ground glass in a small groove that carries it in the inside of the camera, replace my collodion bottle in the little tray which *always* remains under the camera, and on either side of the lens, fill a small glass half-full, say half an ounce, with the developing mixture (the formula for which I will give later), withdraw my arms from the sleeves, close the back of the camera, close the little shutter, which can be done *out*side as well as *in*, and open the small shutter at the roof or top of the camera, thus admitting yellow light; finally shut the *sliding* shutter or lid of the lens, (very preferable, in my opinion, to any form of *cap*) It is more quickly closed, and no chance of falling off or getting bruised and out of order: and all is now ready for exposing the plate; to do this I again introduce my arms through the sleeves, place the hood over my head and shoulders; from the inside open the back window, and by the aid of yellow light withdraw the excited plate carefully from the bath, drain for a few seconds, and then place it in the focusing frame; I then draw the frame and glass towards me, the frame having been previously *pushed from* me into its place to give room for the hands, &c , in the camera, and having satisfied myself that it is well "home," and resting against the peg, thereby insuring its being in exactly the right focus, I, from the inside, shut the slide, admitting the yellow light, and thus test at once the *light-tightness* of the camera, the smallest pencil of rays being then visible; shut from the inside the small shutter at the back and withdraw my arms, and, opening the lens, expose the plate. The time for this part of the operation, I need not say, must vary according to circumstances. I have, during the summer of last year, left my plate as long as twenty minutes, and with marked success; a very beautiful negative of a window in Conway Castle, was the result; I have also taken most excellent ones in about thirty seconds; but I always prefer *over* than *under*-exposing. I now shut the lens, re-introduce my arms through the sleeves, from the inside open the slide at the top, for admitting the yellow light, also, from the inside, open the window at the back, the hood of course being on my head and shoulders, and pushing the focusing frame back into its place, I take out the glass turning it on its corner, and thus bringing the collodion surface towards me, place it in the dipper, and redip it into the nitrate bath, for an instant only, withdraw it, well drain it, place it on the holder, (which I keep in my left hand, and the glass with the developing fluid in my right), and proceed to pour it rapidly and *evenly* over the plate, taking care to commence at the *top* of the plate as it comes out of the nitrate bath; till I adopted this plan I constantly had my pictures disfigured by those unsightly stains, so much dreaded and so well known to all new beginners. I now pour off and on until, by holding the plate up and *under* the yellow window, I consider the development has been pushed far enough; I then drain for the last time, and opening the lid of a bath which fits in front of the nitrate bath, also in a linen bag, and is filled with plain water, or water with a little common salt, I drop the plate in with a wooden dipper, and shutting the lid I am able, with safety, to admit the light by unclosing the back of the camera; I leave it in this bath for two or three minutes, and then can bring it out into broad daylight, and if satisfied with the result place it in the plate box.

The developing mixture that I find answers very well, is composed of—

Pyrogallic acid	4 grains.
Glacial acetic acid	1 drachm.
Spirits of wine	1 "
Water	3 ounces.

In summer rather more acetic acid.

I always carry a good supply of ready-*weighed* Pyrogallic in my pocket-book, and wrapped up in a small bit of oiled silk, they will keep good for a long time—months; the spirits of wine and glacial acetic acid are *always* in the tray inside my camera, which contains bottles in the following order:

Mixed collodion	7 ounces.
Glacial acetic acid	2 "
Spirits of wine	2 "
Developing fluid	6 "

and a division for the small glass, for holding it and pinning it on. The plate-box, which is also part and parcel of this most ingeniously constructed camera, is calculated to hold eight or a dozen plates; it opens at the front and top, and the glasses are placed and confined in a groove at the *bottom*, either side being free, and the grooves cut as close as possible to each other; they are prevented from touching each other, by the groove at the bottom, and by a small piece of gutta-percha, with a groove in its edge, being placed on the glass, at the top. I generally lay loose a duster, or piece of rag, on the back of the plate, thus securing it from motion, shut the side and top lid, and in this way, I have carried a dozen plates over the roughest of roads, and for hundreds of miles uninjured; I generally clean them after I return home, though of course this can be done readily enough on the spot, if you can obtain a sufficient supply of water to give the plate the necessary washing; I always use the cyanide, using the same over and over again, only occasionally adding a lump or two, as it gets weak and ineffective. It now only remains to dry the plate and varnish it. I accomplish the former thus: two small strips of wood, notched, say a foot long, and placed at their extremities in two upright end pieces; I rest the negatives, angle fashion, between the two long slips, and leave them to dry spontaneously; when dry, I varnish with some French varnish, made and procurable at 1s. 6d per bottle, at Mr. Gaudin's, Snow Hill, London, with which I have no fault to find. It is hard and very quickly dried; it requires the plate to be heated before pouring it on, and dried by the fire or in the sun afterwards. Having now succeeded in getting a satisfactory negative, the next duty is to carefully preserve it, and to do this, I first place it on a sheet of writing paper, cut to the *length* of the glass, and fold this over it, labelling the outside with one of the adhesive druggist's labels, that you can buy by the hundred, ready gummed, and of any size. I take six negatives, and laying them one on the other, place them in a small calico or brown-holland bag, and again label with the contents; four of such bags, also labelled on the edge, fit into a divided box, which is made to contain one hundred and fifty plates, standing edgeways. They travel in this way perfectly safe, as I can testify from my boxes having been thousands of miles, by sea and land, railway and coach, waggon, and many other conveyances, and no accident or breakage of any kind, ever having occurred. I have now with me, in two boxes, three hundred good negatives, the result of the last two years' work, and all perfect and uninjured, although some have been copied hundreds of times, and all have travelled hundreds of miles.

Having obtained the negative, the next operation, and concluding one, is to prove its goodness, by copying it on paper, and this I shall now proceed to describe; and here again I am indebted to the ingenuity of Mr. Archer, in the copying frame, which is of the simplest kind, and much lighter, much cheaper, and equally efficacious, with all the complicated and expensive ones, sold in the shops, possessing to any one travelling, a great objection, from their *weight* as well as bulk. Archer's frame may be made by any common carpenter for 1s. 6d. It is a light frame of wood, rabitted to carry the glass, with a hinged back, *thicker at the hinge* part than the front. Over the glass is placed the negative, then the paper, then three or four folds of thick flannel or drugget, and the back is then shut and confined with two wooden buttons, taking care that the padding is sufficiently tight to cause the necessary and due pressure. With four of these frames, and *four* hands, we last year copied 2,800 photographs $7\frac{1}{2}$x$8\frac{1}{2}$.

The Paper.—I use Marion's paper, and prefer, of his various kinds, the *thin* ammonium salted, (this is of course all ready for the nitrate bath), or the plain *thick*, which I prepare thus: salt first by *brushing* (the form of brush I will shortly describe), over with solution of muriate of ammonia, five grains to the ounce of water, and half a grain of iodide of potassium. Hang up to dry, and excite by the ammonio-nitrate process, two drachms of nitrate of silver, to the ounce of water; precipitate by the liquour ammonia, dropping it in till the precipitate is re-dissolved, and fill up to two ounces with water; brush this also over the previously prepared salted paper, and hang up; and moving about from place to place, as we have been now for two years, I find my bag that holds my camera in travelling, a most convenient dark room for drying my paper, without any chance of spoiling furniture, and conveniently in every way answering the purpose. The brush I use is thus made: six *swan's*-quill camel's-hair pencils are placed as close to each other as they will lie, on a piece of softened gutta-percha, which forms the handle, and securely fastened by laying a soft piece of gutta-percha *over* the quills; you thus have a broad and convenient brush, and which can be readily renewed at will.

The ammonium salted paper is excited in a glass tray, fitted into an outer wooden one, for the purpose of travelling, and containing ten ounces of a 60-grain solution of nitrate of silver, and float each sheet for five minutes.

Fixing Solution.—I have two hypo baths, the first, made thus, is of course the toning bath:

Hypo-sulphite	$2\frac{1}{2}$ ounces.
Chloride of gold	6 grains.
Common salt	2 scruples.
Nitrate of silver	1 drachm.
Water	1 pint.

dissolve the nitrate in 2 ounces of water, add the common salt, stir well together. I allow the precipitate which forms to subside, pour away the upper clear fluid, and fill up again with water; allow to subside, and again pour off three separate times, then add, to the precipitate 18 ounces of water and the hypo-sulphite of soda, and stir well together until dissolved; lastly, add the chloride of gold, previously dissolved in the remaining two ounces of distilled water.

FIXING SOLUTION.

Hypo-sulphite of soda	3 ounces.
Water	1 pint.

Into this I now immerse the print, leaving it until the whites become pure, and the color of the picture is such as I desire. I then withdraw it and wash it with many waters, leaving it for 48 hours, and during that time, treating it twice with boiling water, poured on each print; I then dry between blotting paper, and placing it under a screw press, it is ready for mounting.

One other memorandum, and I shall conclude this dry portion of my epistle, but still I hope it will not be found an unprofitable one, at least to the beginner, and possibly to the student more advanced in his fascinating art. I attach my pictures to the *wastes*, with gum, dissolved in vinegar, which keeps good for any time, slightly touching the edges *only*, and I have never, in a single instance, found this solution to *stain* or *spot* the many thousands that I have had to prepare. I get my *wastes* (quarto ones), from Woolley, in Holborn, who charges 8s the hundred for them. In describing the above manipulations, I very possibly may not have made myself as intelligible as I could have wished; but if any difficulty should arise in the mind of the reader, and he will address a line to me, directed to No. 9, Upper Victoria Place, Clifton, I will, with pleasure, give him the fullest benefit of my experience, and any explanation that he may desire.

Having thus finished the *dry* descriptive part of the story, I will, if permitted, add a few remarks and jottings, touching the localities visited, and journeyings made, during a two years' pilgrimage, performed mainly in search of health; and as an occupation is, with me, as much a necessity as any medicine for the body, I made choice of photography, as one in every way answering my desires, nor have I been in any way disappointed in my expectations.

(*To be continued.*)

SIR WILLIAM ROSS.—We lament to learn the very serious illness of this estimable gentleman and accomplished artist: there are few men living whose loss will be more severely felt by a large circle of friends, who respect and regard him with feelings more than commonly warm.

From Photographic Notes.

ON PRINTING BY DEVELOPMENT.

In No. 42 of this Journal,* I gave the formula for a method of printing by development, without a toning bath, promising to resume the subject on an early occasion, and discuss more minutely the various points indicated in the formula. This promise I shall endeavor to fulfil in the present article.

In the First Operation the paper is *immersed* in a solution of salt and water, to which some lemon juice is added.

The quantity of salt, by weight, to the ounce of fluid, should be about one-fourth that of the nitrate of silver to the ounce of fluid in the nitrate bath. The relation between the strength of the salt and silver baths is a very important point. The effect of too much salt in proportion to the silver is this;—on floating a piece of paper, strongly salted, on a comparatively weak nitrate bath, the chloride of silver formed does not adhere to the paper, but lies like a powder on the surface, or comes off in the bath; and when the paper is exposed to light it is either very insensitive, and will not darken to a color deeper than a pale grey, or it darkens very unequally, in patches, some parts being brown and vigorous, and others pale and grey. When the sensitive paper is in a proper condition, there is sufficient excess of free nitrate of silver to fasten the chloride to the paper, and also to produce an evenly rich brown or purple tint, by a short exposure to sunshine. The nitrate bath gets weaker in silver with every chlorided paper that is floated upon it, therefore, after a time, the effects due to the disproportionate strength of the salt bath are produced. By sufficiently strengthening the nitrate bath these effects disappear.

On the other hand, if the silver bath is too strong for the salt bath, that is to say, if the silver bath remains at 30-grains to the ounce of water, while the salt is diminished, say from 7 to 2 grains to the ounce of water, the sensitiveness of the paper is diminished, and a longer exposure is necessary in order to produce a visible picture of the required strength. The color is redder than when the proper quantity of salt is used, and the development gives a comparatively poor thin picture, which is deficient in material. If the paper is salted in the usual way, in a seven or eight grain bath, and then excited on a very strong silver bath, containing, say 120 grains to the ounce of water, the sensitiveness of the paper is not increased, but rather diminished, and the intensity of the visible picture, produced in a given time, is rather less than when the usual proportions are observed; but the development proceeds with great rapidity, and produces very black, or green-black tones, of considerable vigor and opacity.

When the salt and silver baths are both strengthened in the same proportion, that is to say, to 30-grains of salt and 120 grains of silver to the ounce, the paper is rendered more sensitive, the development proceeds more rapidly, the finished picture exhibits increased opacity, and the finer details of the shadows are liable to be buried amidst a mass of densely precipitated material.

When a very dense negative is to be printed, the quantity of salt should be diminished, and the time of exposure must be increased. This will lessen the force of contrasts in the positive, and bring out the details in the high lights.

When the negative is uniformly thin and deficient in density, abounding with half-tone and fine details, with but little force of contrasts, rather more salt should be used, and a shorter exposure given. Say, instead of seven grains of salt and 30 grains of silver to the ounce of water, 12 grains of salt and 45 of silver.

The object of adding lemon-juice to the salt bath, and immersing the papers in it, is to completely neutralize any free alkali which the paper may contain, or to increase its acidity, so as to preserve the purity of the lights, and prevent the formation either of an insoluble compound within the pores, or a red deposit on the back, produced by the decomposition of the developer, which often happens in those parts when a sufficient excess of acid is not present to prevent it. The quantity of lemon juice which should be added to the bath will depend upon the kind of paper used. Some English papers are sized with alum, and have a feeble acid reaction, while some foreign papers contain caustic potass and sulphide of sodium, and have an alkaline reaction. The latter kinds of paper require more lemon juice and longer immersion than the former. It is a better plan to acidify the paper by adding acid to the salt bath, than to increase the acid in the nitrate bath.

The acidified salt bath will not keep for many days. The lemon juice becomes decomposed by keeping. When done with, the bath should be thrown away. It is better to use lemon juice than citric acid, because the former contains a mucilage which is capable of combining with oxide of silver, and increasing the vigor of the proof.

With respect to the different chlorides which may be substituted for salt. The color of the print appears to be affected, to some extent, by the particular chloride used; but I cannot tabulate the results correctly at present, and shall therefore defer offering any remarks on this part of the subject until I have made an exact series of experiments. Chloride of sodium appears to be, on the whole, a very good chloride to employ. I am inclined to think chloride of ammonium not so good, because the nitrate of ammonia formed in the nitrate bath is an unstable salt, which allows the ammonia to escape, and the nitric acid to be set free, in the bath; and also because nitrate of ammonia being a solvent of oxide of silver, its presence in the nitrate bath may interfere with that peculiar action which takes place between the nitrate of silver and the lemon juice, and gives surface-vigor to the print. Papers salted with chloride of barium, or excited on a nitrate bath containing nitrate of baryta, seem to give proofs of a peculiar plum-color, when the nitrate of silver is not much in excess.

When lemon juice is added to the salt bath and nitrate bath, there is no necessity for adding gelatine, or serum of milk, or any similar organic substance to the salt bath. The print is quite as sharp and vigorous without as with these substances. Serum of milk contains organic salts, which appear to add greatly to the density of the precipitate. For this reason it should be used with caution in negative papers, as its effect is to lessen the sensitiveness, and interfere with the half-tones, at the same time that it renders the blacks very opaque.

The sharpest prints are obtained on the finest foreign papers, with the hardest texture and smoothest surface. The most artistic prints, as regards general effect and color, are obtained on Hollingsworth's thin paper. The *common* Whatman's paper is coarse, woolly, and nearly worthless for photographic purposes.

Salted papers would no doubt keep without spoiling for a long time *in a dry place*; but lemon juice is prone to decomposition, and salt to attract moisture, which favors decomposition.

The reader must not suppose the use of lemon juice in this process to be empirical, or of questionable utility. The difficulty in every printing process on plain paper is to obtain surface-vigor. Paper is a rough absorbent substance, and the metallic precipitate which forms a picture on such a surface is very liable, when dry, to exhibit a mealy appearance, just as dry colors do before they are mixed with oil or some organic cement. The silver which forms the shadows of a print must be combined with organic matter, or it has a dry powdery appearance, devoid of richness and vigor. I have tried a great variety of different methods of increasing the surface-vigor of a print without having recourse to albumen, and by far the best plan I know of at present is to employ lemon juice (not citric acid), in the way recommended.

So far as surface-vigor and *fineness* are concerned, it is quite immaterial whether a paper is immersed or floated on the salt bath; but if immersed it becomes more thoroughly saturated with acid, and therefore more likely to keep clean during development. The effect of acid in preserving a mixture of gallo-nitrate from decomposition is shown by first mixing gallic acid and *neutral* nitrate of silver, in a test tube, and then adding citric

* See Photographic and Fine Art Journal, p. 119.

acid, and noting the difference. In the former case decomposition begins at once; in the latter the mixture keeps clean for a considerable time.

The equivalent of chloride of sodium is 60, and of nitrate of silver 170. If, therefore, a 10-oz. bath, containing 60 grains of chloride of sodium, were added to a 10-ounce bath containing 170 grains of nitrate of silver, the whole of the chlorine in one bath would unite with the whole of the silver in the other, and form chloride of silver, and no free nitrate of silver would remain. In the same way, if a sheet of paper were first floated on the salt both and dried, and then on the silver bath and dried, it follows, if we suppose the paper to be equally absorbent, and to imbibe an equal quantity of each solution (which would not however be strictly correct), that the quantity of salt in the paper would be exactly decomposed by the quantity of nitrate of silver imbibed, and that chloride of silver, without any excess of free nitrate, would be deposited on the paper. It follows, therefore, that the nitrate bath should be much stronger in silver than the quantity indicated by a comparison of its equivalent with that of chloride of sodium. That is to say, instead of taking the proportion of 17 grains of nitrate of silver to 6 grains of salt, about 30 grains of nitrate to 8 of salt would be better.

The Nitrate Bath.—The proportions are about 30 grains of nitrate of silver and 8 minims of lemon juice to the ounce of distilled water. Fused nitrate of silver answers extremely well, and gives more vigorous prints than nitrate of silver which smells strongly of nitric acid. But if nitrate of silver, adulterated with nitrate of potassa, be fused, the latter salt parts with oxygen and becomes converted into nitrite of potassa; this decomposes nitrate of silver and forms nitr*ate* of potassa and nitr*ite* of silver. Fused nitrate of silver should therefore be pure, for there is nothing worse in a bath than nitr*ite* of silver, and nothing more certain to produce fog and discoloration. The only remedy for such an evil is to add nitric acid to the bath, then to exactly neutralize it with carbonate of soda, and afterwards to add the lemon juice.

On first adding lemon juice to the nitrate bath a small quantity of a pale yellowish substance, probably citrate of silver, is formed, but this is immediately dissolved by stirring with a glass rod. A slight cloudiness is also produced, which is removed by filtering through cotton wool. If a pin is dipped into the bath, the bath is certain to become blackened in a few hours, and this tinge cannot be removed by filtering.

The nitrate bath acts best when first made. It gradually gets out of order by use, but adding more silver and lemon juice, together with a little citrate of soda, restores it to a tolerably good condition. The best way to ensure absolute uniformity in the prints is to apply the nitrate with a Buckle's brush, instead of floating the paper on a bath. The exciting solution is then always in the same state. The want of uniformity in printing, no doubt depends greatly on the variable state of the nitrate bath. When the bath is out of order the print does not begin to develop of a fiery tint, as it ought to do, but of a brownish olive tint, which passes eventually to a disagreeable olive black.

Filtering the nitrate bath through animal charcoal, or keeping it in a bottle shaken up occasionally with kaolin, and decanted for use, keeps it always pure and clean, but it rather injures that peculiar quality of the bath which produces fiery-red pictures in the early stage of the development. This quality appears to depend upon the presence of an organic compound of silver held in solution by the nitrate, and when this peculiar combination is disturbed, the bath gives but indifferent pictures as regards tone and artistic qualities.

But whatever the defects of the nitrate bath may be, and however difficult it may be perfectly to understand and remedy them, they may be completely avoided by applying fresh solution to every print by means of a brush.

After the print has been excited it is hung up to dry. Chloride of silver is not dissolved, like iodide of silver, by a concentrated solution of nitrate, and therefore the full excess of nitrate in the paper may be allowed to dry in it. The use of this is two-fold, as will be explained when I come to the theory of the process. When reddish tints are preferred to black, the excess of nitrate of silver should be removed by blotting paper; but this plan appears to injure the definition, and the continuity of the shades. A better plan would be to float the print on a second bath, say of 5 grains of nitrate to the ounce, and then hang it up to dry. The print will then be of a beautiful reddish purple or plum color, instead of black; but certainly less able to withstand destructive influences.

Citric is a much more powerful acid than acetic, for it contains a much greater excess of oxygen; and for the same reason tartaric is a much more powerful acid than citric. About one grain of citric acid appears to be equivalent *in Photography*, to a scruple of glacial acetic acid. Lemon juice contains about one-twentieth part of citric acid; therefore equal quantities, by measure, of lemon juice and glacial acetic acid, produce about equal effects in photography.

Citric acid belongs to the same class of acids as gallic. It is a feebly reducing agent, and a pyro-acid may be formed from it. Citrate of silver is darkened by exposure to light, and a red organic sub-salt of the metal formed. All these red organic compounds of silver are capable of being intensified more easily, and to a greater degree, by decomposing gallo-nitrate, than the grey metallic substance produced when organic matter is not present, as in the case of a collodion positive. This red portion of the image is less permanent than the black precipitate which is thrown down upon it by the developer.

The Development.—The developer is made by adding four grains of gallic acid to the ounce of distilled water, shaking up well, and using in the course of half an hour or so.

When the print is laid into a tray, and the gallic acid poured in, the nitrate of silver in the paper is dissolved, and mixes with the gallic acid, forming gallo-nitrate of silver. This is the true developer, and not gallic acid. The way in which it acts in intensifying (or developing) the already faintly visible picture, will be explained when I come to discuss the theory of the process.

The gallo-nitrate gives a tint, exactly resembling that of India paper, to the lights of the proof, and the longer the paper is in contact with it the stronger this tint becomes. When not too strong it is extremely beautiful, and a great improvement to the picture. I am not able to explain why it is produced or what is its chemical composition; neither the silver bath, nor gallic acid alone will produce it; but it is formed on a piece of unsized paper, left for half an hour immersed in gallo-nitrate. It appears to be either an organic compound of sub-oxide of silver with lignine and oxydized gallic acid; or of sub-oxide of silver with lignine alone.

The development should begin with a fiery red tint and pass gradually to a black. The black deposit is but little affected by the fixing bath, but the red part of the image is reduced in intensity and *toned* if the print is left too long in it.

The development should not be stopped too soon, for it is the black substance produced in the last stage of the process which gives vigor and permanence to the print. This black material appears to be more nearly metallic silver, and less complex and easily decomposed than the red material at first produced, in which organic matter evidently plays a more important part.

A long exposure and short development gives a red picture, resembling in its properties a sun-print. A short exposure and long development gives a black picture entirely different in its composition and properties from a sun-print, and considerably more permanent, and better able to resist destructive tests.

Fixing, &c.—As soon as the print is developed it is well washed in water, and then placed in a solution of fresh hyposulphite of soda, containing 5 per cent of the salt.

The object of this hypo-bath is simply to dissolve the chloride of silver, and prevent the light from acting any further upon the print. If any other solvent could be substituted, it would probably be an improvement. Cyanide of potassium acts too energetically on the organic part of the image; and ammonia darkens the picture all over by decomposing the trace of gallo-nitrate left in the paper; but if the gallo-nitrate could be first removed by any substance, ammonia might afterwards be employed. I am engaged in some experiments in this direction, which will be described if they lead to anything valuable.

As soon as the chloride is dissolved by the hypo, the print should be removed, and well washed, and the hypo thrown away. The print is no sooner placed in hypo than a peculiar sulphurous smell is emitted by the bath, which indicates the presence of that destructive agent which has ruined so many thousands of fine photographs. From that instant this destructive agent commences his work by toning the red organic part of the image, at the same time that the chloride is being dissolved out. The print should not remain in this villanous bath an instant longer than is necessary for the complete removal of the chloride of silver. This may take from ten to twenty minutes. At the end of that time the bath is generally very slightly milky, and is then in a highly active and wicked state, as far as toning goes. The more thoroughly the print is washed before putting it into hypo the better, but it is impossible altogether to avoid bringing about this dangerous condition of the bath, and when the hypo is stronger the evil is increased in proportion. Those photographers who place an *unwashed* sun-print, having but feeble powers of resistance, in a *strong* hypo bath, which has been used in a similar way (no matter whether gold be present or not), are taking the very means, of all others, most likely to cause the fading of the proof.

If the print is left in the hypo bath for two or three days, or hung up without being washed, it fades to a greenish yellow tint. No argentine photograph will bear this treatment without being destroyed. It is important then to wash the print well, in order to remove every trace of hypo that may cling to the paper. The best way of doing this is to lay the print at the bottom of a dish, and pump upon it, first on one side then on the other, several times. Then press it between dry cloths, and let it soak for a couple of hours in fresh water. Lastly, press it again between cloths, and hang it up to dry. I am now of opinion that long soaking and excessive washing is a bad plan. Energetic treatment *at first* is what is wanted, and not long soaking in water, which is more likely to do harm by getting up, or confirming a tendency to fade in the insoluble organic image, than to do good by removing any supposed last traces of soluble hypo from the paper.

But although I have admitted that a developed print *can* be destroyed, or *may* fade through injudicious treatment, I must not be misunderstood. I have for years advocated the permanence of developed prints, and every years' experience strengthens my conviction on this point. But the term "permanent" is relative, and not absolute. Nothing in nature is *absolutely* permanent. Printers' ink and Indian ink may both be considered permanent, and yet both can at once be destroyed by chlorine, and converted into chloro-carbonic acid, and other compounds. By the permanence of developed prints, I mean that the material of the image is more stable, in consequence of being less organic and more metallic, than that of a sun-print, as well as existing in much greater quantity; and that when both are submitted together to the same destructive bath, the fully developed print, or a calotype negative, will withstand with impunity, for several hours, an action capable of utterly destroying a dozen sun-prints in succession. I once entirely destroyed a sun-print by half an hour's immersion in a bath which produced no appreciable effect in 12 hours upon a developed print. The metallic character of the image produced by development may be easily proved, by drying an unvarnished collodion negative, and rubbing it lightly with a piece of leather. The picture is then, to all appearance, burnished metallic silver. I do not assert that it is actually pure metallic silver, because carbon may be present in small quantity, just as steel is a carbide of iron; but I do assert that all experience goes to prove that this dense metallic image is less likely to fade into a yellow transparent substance than the thin organic compound produced by the direct action of light, and which mere contact with a hot finger will change in a single day from brown to yellow.

It now remains for me to discuss the theory of this printing process, and to go thoroughly into the chemistry of it. But this will occupy many pages, and I must defer it for the present. I have great hopes of being able to put this matter in a clear and satisfactory light, by arguments founded on experiment.

There is also a great deal to be said about the quality of developed prints, as compared with those by the direct process.

For the Photographic & Fine Art Journal.

THE PAINTER vs. THE PHOTOGRAPHER.

PHILADELPHIA, March 30th, 1858.

MR. EDITOR:—In the "Personal and Art Intelligence" of your April number you have uttered several "sharp-pointed" remarks upon the Heliographic Art and its practitioners in this country, which must be conceded to be only too true, and "pity 'tis they *are* true." That in the Heliographic body at large there is too little of "that high tone of character," as well as comprehensive and various culture and accomplishment which we *naturally* associate with art, has been the burden of many a complaint on my part, which have appeared in your pages. I cannot take to myself the fault of having hitherto withheld my views from your readers; and should conditions favor, I may occasionally continue my contributions. My present communication will consist of a few miscellaneous remarks on general topics; and

1st. A word upon a view quite common with recent writers on Art, and, it may be presumed, with artists and connoisseurs. They insist that in *portrait* at least the Heliographer can never rival the portrait-painter of genius, and that the productions of the former must ever be merely *mechanical* affairs in comparison with those of the latter; and the reason they allege is, that while the sun-painter can but *literally transcribe* the aspect of the face and figure at one indivisible point of time, the pencil-painter can, at repeated sittings, penetrate beyond the subject's exterior, and perhaps find within higher elements, than appear at all times, if *ever*, externally, and thus put upon his canvass a higher, nobler, better expression.

Now in this view there is much truth, if you suppose the Heliographer to be (as too many are) a merely *mechanical copyist*, and nothing else, without that penetrative genius which can *detect* spiritual expression, and without that magnetism, the circumambiant atmosphere of genius, which can, through the medium of conversation, looks and gestures, as also by simple *presence*, so enkindle the sitter, that in his face and form his highest and most genial expression shall appear. I would fain ask whether the face and form of a man or woman, when these are completely permeated and overflowing with finest enthusiasm, caused by some noblest thought or most heroic achievement, do not constitute a canvass, luminous with a loftier, worthier, more spiritual expression, than any artificial canvas inscribed with the pencil marks of even the rarest of created geniuses? The former expression is by "Nature's own sweet and cunning hand laid on" a tablet which her own hand had constructed; the latter is a product of human agency upon a tablet of human workmanship. Which, think you, is likely to be the superior?

The determining question then is, whether the sitter, at the moment of taking by the sun-pencil, can, by any means, put himself, or be put, into that glow of thought and feeling which shall make his outer man radiant with the light within?

Certainly there is nothing in the necessarily *unstirring*, and therefore somewhat *constrained* position afront of the camera to arouse, or aid in arousing, the genial excitement desired, but much rather to *repress* it. Ordinarily, then, the sitter cannot be relied on for *self-magnetization* up to the proper point. The result wished for must be *initiated*, if not wholly produced, by the artist himself; that is, the artist, by the interest of his conversation, by the impress of his manner and genial aspect, and finally, by that influence of his mere personal presence, which, for want of other terms, we style its *magnetism*, must awaken in his subject that mood of spirit, which shall shine through the fleshly enclosure, as his best of expression.

This, to be sure, is an ominous requirement for the operant, and assigns him a task not easy of execution.' So be it. Will any one say *how else* the problem can be solved?

The portrait-painter can have generally as many sittings with his subject as he pleases—can see and study the latter under many various moods—has time to range over numerous diversities of topics, and thus find by experiment what best answers the purpose of *exciting* his subject; the latter, meanwhile, not being constrained to a *stirless* attitude, but allowed to consult his ease. If, then, he has veritable genius, he has ample opportunity of detecting and representing the expression required.

The case with the Heliographer is almost wholly the reverse of all this. He has but little time to confer with his subject *prior* to the operation, and the operation itself is nearly *instantaneous*. *How*, then, shall he (if at all) overcome these disadvantages, and awaken in his subject the best expression?

In future communications I may endeavor to give the ablest solution in my power of this problem. There are many items to be considered as regards this matter. The whole subject is well nigh literally, new, and untried. For, in all the Heliographic treatises I have examined, I cannot recall *three* pages that deal *directly* with it. Having made it a special study, I would fain hope I may present something both useful and interesting upon it.

For the present I will close with a single suggestion, which is, that to accomplish the end in question requires of the oper ant *genius*—genius both theoretic and practical—and that nothing else will even *begin* to suffice.

And the time will come—sooner, too, than most persons suspect—when every Heliographic establishment which hopes to succeed, must have in its service an artist of genius and accomplishment, who shall confine himself to handling the camera; having been thoroughly trained to a knowledge and an application of all its capabilities, and to the production of its best and amplest results. M. A. Root.

ACCOUNT OF A PHOTOGRAPHIC TOUR FROM JERSEY TO THE PYRENEES.

To the Editor of Photographic Notes:

Dear Sir,—You asked me before I left Jersey, to write and give you an account of my journey to this place, and as all accounts of photographic rambles in search of the picturesque are full of interest to me, I take it for granted that the Editor of the *Photographic Notes*, and his subscribers, have the same feeling, and I will now endeavor to give you such information as I should be glad to receive, were I now meditating such a tour as I have just accomplished.

Notwithstanding all your entreaties to the contrary, joined together with your abuse of the waxed paper process, it is the one I have determined to adopt while moving from place to place as when stationary, and in a moderately cool climate, I should give the preference to the Calotype process, which for landscape portraiture, stands unrivalled. I lay stress upon the difference of the two processes, as adapted to the photographer while travelling and when stationary, as the one process obliges you to engage a dark room, which the other does not, and in most places this is a thing which cannot always be found; heat too, that would effect the Calotype process to a serious extent, will have no such effect on the waxed paper. In some of the large hotels in the principal towns which photographers are in the habit of frequenting, the very sound of photography is synonymous with that of dirt, so I go upon the principle that "fortune favors the brave," (say nothing about it) take my rooms and work in them as I like. In one hotel my camera was seen, and when I went into my room at night, I found, by the towels and toilet covers, unmistakeable traces of there having been a worker of the same art before me, and as I had no desire to receive the credit due to him, I suggested that as I had all the necessary dying materials with me, I could apply them myself, if I wished to do so, on fresh towels and covers—they were immediately changed, but I was told "they were quite clean until they had been used by a Monsieur Anglais."

I am quite convinced, by every days' experience, of one thing, and that is, that glass is quite out of the question for this country. Had I been working collodion I should not have had one negative to show twenty miles from the place at which it was taken. In the waxed-paper process, I sensitize my paper in my own room just before going to bed; if the following day should not be fine, I am still ready for the first fine hours that should come, though I may have to wait for it for three or four days. I develop at night, and when the negative is fully out, wash it well and leave it in clean water till the following morning. I then clean the dishes thoroughly, put them by, and excite fresh paper for the next day, place it when finished in the dark slides, clean the dishes and put them by, and then make all ready for fixing the negatives just developed, by the first dawn of daylight. As soon as this appears, I get up and immerse the negatives in the hypo bath, take to my bed again for half an hour; when it is time to get up, I examine the pictures, and if finished, wash them thoroughly. There is little satisfaction in taking unfixed negatives about with one, as their delicacy and fineness of detail are invariably lost by doing so, and if I am unable to wash the picture thoroughly before leaving the place at which it was taken, I manage to do so at the next place at which I stay.

It is very easy for photographers at home to give advice to those about to travel, to do so with as small an amount of chemicals, &c. as possible, and to trust to being able to meet with fresh supplies abroad; but it is a widely different thing to find oneself in a place where nothing appertaining to photography can be obtained nearer than London or Paris Let me advise no one to go abroad without a sufficient stock of all requisites to last him till he is quite certain to arrive at some place where he is sure to meet with what he requires,—to take with him one extra focusing-glass, which can be easily packed in one of the dishes, and to avoid papier-maché, as he would porcelain dishes, they will bear no rough usage, are apt to crack at the corners, and in this state it is quite impossible to clean them. I recommended their use in the *Notes*, some months since, but I was captivated with their appearance, and had not given them a sufficient trial to test them fairly. I am in hopes that before long we shall be able to dispense with glacial acetic acid. I see Mr. Kinnear has mentioned the substitution of citric or tartaric acid in its stead. Both of these I have used, but not having hit upon the proper quantity, have consequently failed. The citric acid I used in different quantities, from 8 to 16 grains, and came to the conclusion that paper prepared with it, did not keep clean so long as that prepared with glacial acetic acid, while it required a longer exposure in the camera.

I took with me a new camera, by Ottewill, with a Ross's lens for pictures 10 by 12, along with a sufficient quantity of waxed iodized paper to last me till I got to this place. Some of the paper I took with me, I had prepared according to Long's formula, using the iodide and bromide of cadmium with milk. The paper, thus prepared, costs considerably more than that prepared with the potassium; but I think the negative is rather more delicate, and has much less appearance of granulation in the skies, while the general texture of it is more solid and vigorous. I am now busy preparing a stock of paper for a tour through Spain and the Pyrenees, an account of which you shall have, should I live to accomplish it. Almost every photographer has his own formula for iodizing paper, which, in his own hands, may give better results, than those of other people. In each batch of fresh paper I prepare, I use less and less of the bromide of potassium, and am inclined to think that it would be better to discard it altogether. I have long since followed Dr. Keith's example, and given up the use of the fluoride and cyanide, with all organic matter, and as you have lately seen many of the negatives taken on paper thus prepared, you will judge for yourself whether I am correct in my supposition. The paper is greatly improved by holding it before the fire, after it has been iodized, the granular appearance of the paper giving way to a fine clear close-looking texture.

I left Jersey on the 29th of October, for St. Maolo, where the Custom House officers made a great piece of work with some of my chemicals, and the camera completely puzzled them.

I had three or four pounds of hyposulphite of soda, very carefully wrapped up in several folds of paper, in my portmanteau, which I had placed there to be out of the way of every thing appertaining to photography, which they pounced upon, and away two officers went with it, I following, protesting that it was not tea, coffee, or even tobacco, each one of which it seems they were certain it must be; at last I got the parcel into my own hands, and opening it, offered to each of them a crystal to taste, which did not satisfy them in the least, and away I had to march with them, and it, to a superior officer, who pulled out a long paper, then a large book, and having looked over them most carefully for the words *Hyposulfite de Soude*, under the head *Acides*, he allowed me to take possession of the parcel once more; the only conclusion I could come to was, that he was no chemist, while his opinion of me seemed much more undefined. Then followed the examination of the chemical case, every bottle of which was regarded with strong suspicion, and held up to the light as though would tell some awful tale.

It was beginning to get dark, and I was the last in the room; the case in which my iodized papers were kept had still to be examined, but they were sick of photography and allowed it to pass unopened, much to my satisfaction. Had they examined it they would have done it no good, for the contents of the boxes were all turned out, and they had already broken for me a glass dish, which has obliged me to send to England for some Marine Glue, a thing unheard of wherever I have asked for it in this country.

As there is nothing picturesque in St. Malo, I left the following afternoon, sailing up the river Rance to Dinan; as soon as we arrived in this place, I saw there was some good subjects for pictures, and fixed upon the *Hotel de Bretagne*, as the proper resting place for a photographer, in consequence of its having an imposing-looking pump before the door. If any brother photographer should ever be induced to visit this Hotel, he will find it necessary to make a very strict bargain with "Mademoiselle," for if he does not do so he will find, on leaving, that if she is not "fair" she has the other attribute which is generally said to be its accompaniment. The hotel is, however, one of the best in that part of France, and has the advantage of being just out of the town, which is exceedingly dirty. The servants were never tired of carrying water and cleaning dishes, and the only thing they expected in return, was a sight of les *jolis tableaux*, with which they were in raptures. The weather was wretched, with the exception of a few hours on one or two days, during the week I stayed here, which however I made the most of, and took good negatives of all that was worth seeing. The Cathedral of "St. Sauveur," which is an interesting specimen of the romanesque style, is admirably situated for the photographer, having a fine open space before it, both on the East and West side. Close to it are some exceedingly picturesque old houses which no artist or photographer could pass by without an attempt to take away with him some slight memorial of. I was so pleased with them that I took three or four views of them from different points. I then went to Lehon, a small village about a mile from Dinan, where are the ruins of an old Abbey, which makes a pretty picture. The Canal is close to it, and there are some charming views on it. After finishing these subjects, I went on to Rennes, where, as there is nothing to induce one to pitch a camera, I passed on to Nantes. The west door of the Cathedral is magnificent, and I greatly regret that I could not stay to take it. There is little else in the town which would induce one to stay in it. The Cathedral itself, externally, with the exception of its noble entrance, is an unsightly building. My next halting place was Angers. In few continental tours will the photographer find a greater number of subjects for his camera than in this fine old city. The Cathedral of St. Maurice, has that drawback to its beauty which it holds in common with most churches of a similar kind, whether in England or in this country—that of being so closely hemmed in with houses as to render it impossible to take it in the camera except in parts; the West door is remarkable for the richness and good preservation of its sculptured figures. A fine view of its beautiful and elegant spires, (spoiled however, in a great measure, by an unsightly pavilion which connects them with each other) as seen towering far above a picturesque old street, making a good foreground and middle distance for a picture of faultless composition, is to be had from the river side. The tower of St. Aubin is a stately and imposing-looking old building, of which I got some excellent negatives; between it and the Cathedral are some exceedingly picturesque specimens of ancient domestic architecture, with which the streets of Angers abound. A Monsieur Lehon, a photographic artist, possesses a window which has a good view of one of these houses. I had been, on the previous evening, to a chemist's shop to purchase some distilled water, for which an exorbitant price was demanded; it happened that M. Lehon was in the shop at the time, and determined to find me out, which he did the next day, to offer me distilled water, the use of his dark room, and anything else I might require, with the assurance that the view from the window was *charmant*, so I sent my camera there, and took the view, as well as another view of the same subject from a better point. He had never seen a folding camera before, or any good paper negatives, with both of which he was in raptures. Photography is at a very low ebb throughout the whole of the North of France, with of course one or two bright exceptions here and there. I was in a photographic artist's room, late one evening, when it was quite dark; a knock at the door was soon followed by the entrance of half-a-dozen soldiers who came, *in full dress*, to have their portraits taken; the artist endeavored to explain to them that such portraits as he took could only be taken by daylight, and I doubt not that they went, as sure, to the next portrait gallery to try their fortunes there, for the general character of the portraits is such that might well lead them to suppose they had been taken at midnight.

The view from the Castle walls of the town of Angers, with the surrounding country, of which you have a fine expanded view, is very charming. It is necessary to obtain an especial order from the Colonel in command, before you can enter the walls of the Castle with the camera; but the view of the Cathedral from there is fine, and well worth any trouble to take. The Castle itself is as ugly and unsightly a pile of stones as could well be put together, and were its historical interest ten-fold greater than it is, we would be at a loss to conceive what any photographer, with an artist's eye, could see in it worth depicting, yet that such persons there are, I was gravely assured by a soldier, who told me that only a few weeks before that time "some English gentlemen had been photographing it."

Not far from the "Musèe" is the ruined Church of the "Toussaints," which would well repay the photographer had he an hour or two to devote to it. The morning I saw it was the commencement of the fair-week, and the town was so thronged with people that photography was out of the question. I congratulated myself therefore on having taken half-a-dozen good negatives while the town was, comparatively speaking, quiet, and went on to Tours. The Cathedral is one of the finest in the world, but the distance from which you can get from it, with the camera, is too short to allow you to get much more than its fine west door and window, the lamps which hang suspended in the air, by means of chains fastened to poles on each side of the street, spoil any picture when an artist's license, (such as no photographer can take out) cannot be used. I noticed a window in a house from which I thought a good and entire view of the west front might be obtained. The house had a garden before it, with a wall, at the top of which was a lamp which might have interfered with the view. I called on the gentleman who lived in it, and requested that he would allow me to take a picture from one of his windows but was most ungraciously denied, the reason alleged being that so many similar requests had been made, and the view so good, that he was obliged to say *No*, to every one who asked him. In return I sent my compliments to him and said that should he ever turn photographer I wished that he would never meet with such a refusal, and that it was very unlikely that he would do so. He so far relented as to say "if I would call next day (Sunday) with my camera, he would consider and see what could be done," to which message I vouchsafed no answer.

This is the only instance of incivility I have as yet met with, or indeed heard of, as occurring in France. The very sight of the camera in many places calls forth kindly feelings and attentions, and frequently I have been asked while taking pictures whether I have been to such and such a part of the town, that there was a beautiful view elsewhere, and that if I did not know the way they would take me there and find me a window and a dark room, for they all seem so far to understand our "black art" as to know that the latter of these things is required; even the beggar boys offer their services (and a merry cheerful set they are) without any appearance of interested motives, and in one or two places have proved most useful companions, taking upon themselves the airs of a commander-in-chief and ordering off any one, (no matter who), from approaching the front of the camera, or even walking before it at a distance, and only as a special mark of favor allowing them to pass behind it. The camera excites more curiosity in this country than in ours, but the French crowd are a better set than the same class in England, and you can do anything with them but shake them off. I next took negatives of the towers of St. Martin and Charlemagne, which are the only remains of a vast cathedral, dedicated to the Saint whose name the first of these towers still retains. From Tours I went to Portiers with four pieces of sensitized paper in the dark slides of my camera. It was market day, and the streets very crowded; the cathedral was under repair, and the only part of it worth taking was one mass of scaffolding. I was only able to get two views of the church of Notre Dame, which presents a remarkable example of the florid romanesque style in its west facade, which is nearly covered with sculpture from top to bottom; having finished this I went on to Angoulême, when I exposed the two remaining pieces of paper, the following morning getting two good views of the tower of the cathedral and the approach to it, and then on to Bordeaux. Here the weather was so cloudy and the atmosphere so thick and hazy that I attempted nothing in the way of photography, though the place is full of subjects and would nearly repay a fortnight's hard work with the camera. In fact had the weather been fine I doubt whether I should have been able to take any good pictures of those subjects which are most worth seeing, as the spirit of church restoration is so fast progressing that these buildings present little else to the eye than masses of scaffolding. From Bordeaux you pass through a most wretched and uninteresting looking country to Bayonne, where there is nothing to see. I went to Biaritz, with the idea of staying there a week, but found a stay of two hours quite sufficient. I had heard so much of this place and the fineness of the coast scenery that I was greatly disappointed to find there was nothing worth seeing with the exception of a grand view of the distant Pyrenees (too far off however to make a photographic picture); the coast is flat, the rocks being only a few feet high, others of them that the sea has surrounded are grotesque in shape and form, the coast of Jersey is infinitely superior to any part near Biaritz, and were it not that an Empress has chosen it as her occasional residence, one may be quite sure that its name would never have been so widely known as it now is. The next evening I was glad to find myself in Pau, where after taking rooms, &c., in some measure settled down for a time, wandered forth once more with my camera. The Pyrenees are too far off to give a good picture, and the only objects worth taking can be finished in a few days. I have taken them all, and for nothing better to do, am taking them all again on paper differently prepared, so as to test the capabilities of it more fairly. I am now longing for such weather as will permit me to get among the mountains.

In no part of any country in which I have been, is there such a fine light, with soft broad shadows, as in this part of France. The stillness of the atmosphere is extraordinary, as some negatives I have taken, in the room and elsewhere, of Lombardy poplar trees very clearly indicate. You might, I think, examine them with a microscope without detecting that there had been any movement among the finest and most delicate branches of these elegant trees. The sun is so bright and warm, (and this is the last week in December), that while basking in it on the river side, one is induced to envy the numerons people you see up to their waists, in it collecting of stones.

Great as is the trouble and annoyance of working collodion, when you have the certain prospect before you of breaking the negatives, still the charming subjects which collodion alone can take, have induced me to send to Paris for a supply of it. Should I be able to get some good negatives I shall print a number from them before leaving this place. The costumes—the oxen in the carts, their picturesque drivers, &c., would draw forth the pencil or the brush of any one who had an idea of art, how much more does it induce the photographer to bring his camera to bear on such objects, of which there have, as yet, been so few taken.

I fear I have trespassed very sadly on the space usually allowed to Correspondents in your valuable Journal. I have said a great deal about the process I work, and other matter, which I shall not have to repeat when I next write to you. Whether my letter will be much shorter must depend upon what I see and where I go. I trust to be able to take my camera to places as yet untrodden by the photographer, and to show you, on my return, that a paper process will give as much finish, and more artistic effect for landscape portraiture, than glass.

T. Melville Raven.

Maison Belle-vue, Pau.

From Photographic Notes.

COPYING TRANSPARENT PHOTOGRAPHS.

We have some remarks to offer on the subject of copying transparent photographs by transmitted light, which we consider very important.

In copying an engraving or paper print, the light portions are composed of an infinite number of bright points, each of which is the origin of a pencil of light which diverges from it, passes through the lens, and is refracted to a focus which is "conjugate" to the origin of the pencil. But if the lights of a picture to be copied are pure transparent glass, and not formed of an assemblage of bright origins of light, the case is vastly different; and we cannot suppose that the dark parts of the picture radiate pencils of darkness.

This being understood, let the reader consider what would happen if a transparent photograph were held between the copying lens and the sun;—that is to say, placed in a cylinder of luminous rays having parallel directions. It is evident that parallel rays would in this case pass through all the transparent parts of the photograph, and *come to a focus in the principal focus of the lens*, from which rays would again diverge.

Now, if the office of the condenser is simply to transform a cylindrical pencil of solar rays incident upon it, into a conical pencil, converging to a focus, an image of the sun will still be produced by rays passing through the transparent parts of the photograph.

It would appear, therefore, that some difficulties are likely to occur in copying a negative by solar light, transmitted through it in the way proposed by Messrs. Anthony, when the lights of the negative are *perfectly* transparent, and allow the light to pass through without being diffused.

In the case of the magic lantern, the condenser can be shown to have the property of scattering rays of light in all directions, *within a certain space*, and in this way of forming diverging pencils, whose origin is on the surface of the painted slide.

The best luminous background (so to speak) for a transparent photograph to be copied, is either the sky, or a white surface strongly illuminated. The consideration of how such a background would act in producing pencils of light which diverge from the picture, is very instructive and important. Let us suppose that a piece of blackened glass, has a single minute transparent hole in it;—the sky being on one side of the glass, and a lens on the other. It is evident that every part of the lens might receive a ray of light through the hole, from some portion of the sky, and that in this way the hole might become an origin of a diverging pencil of light covering the surface of the lens. Now the light portions of a transparent negative may be considered as made up of an infinite number of these minute holes, every one of which could become an origin of a divergent pencil; and therefore, when a transparent negative, with the sky as a background, is placed before a lens, an image of it would be formed in precisely the same way, as if it were an opaque paper print, illuminated from a source of light in front.

It would appear from these considerations, that the arrangement proposed by Messrs. Anthony, would be extremely likely to produce fog and a general darkening of the sensitive surface on which the copy is to be made; while the way to avoid such an evil would be, either to do away with the mirror and condenser, and use the sky as a background, or to introduce a semi-transparent screen between the picture to be copied and the source of light, in order that the light might be properly diffused.

If, in the Solar Camera of Messrs. Anthony, the lights of the picture to be copied are perfectly clear and transparent, they will not prevent the condenser from forming the "bright spark," or image of the sun on the front combination, and the rays which would be scattered by such an image would, we imagine, be nearly certain to fog and blacken a sensitive surface placed opposite to it.

These considerations are well worthy the attention of those who are about to employ copying cameras, or to practise Microphotography.—[Ed. P. N.]

CHEAP RECEPTACLE FOR THE NITRATE OF SILVER BATH.

To the Editor of the Liverpool Photographic Journal:

San Francisco, January 19th. 1858.

Sir—Having noticed several enquiries in the various *Photographic Journals* for information as to the best means of constructing an economical bath for the nitrate of silver solution that is not too readily liable to breakage, percolation, or other ills that baths are heirs to, I beg to offer to the photographic fraternity, my own solution of the problem, after having made numerous experiments to effect the desired object. I may state that I have had in constant use for six months, one that contains *two pounds* of silver salt, and receives a plate eighteen inches by twenty-one inches.

Take a board of Quebec yellow pine, three-quarters of an inch in thickness, and perfectly free from either large or small knots; having planed it perfectly smooth on both sides, cut two slips of the height of the required bath, and one of a length equal to the intended breadth—all three being of one width, which should be equal to the distance required between the front and back of the bath: these are to form the bottom and two end pieces; now cut the back and front pieces, and *screw* the whole carefully together, fitting them as closely as possible. Having dissolved shellac in alcohol to a consistence that will flow moderately well, pour some into the bath, and turn it about in every direction, in order to give it a good internal coating, pour out the superfluous solution, allow it to drain and dry perfectly; repeat this operation several times, until the coating is about a sixteenth of an inch in thickness; then apply a single external coat of the same varnish. Before using, insert a sheet of glass on the side nearest to the operator, for the dipper to slide against, and a slip at the inside of the bottom for it to strike upon in descending: this is to prevent chipping the varnish. I have found this bath a perfect one in every respect, and yet produced at a comparatively insignificant cost.

Yours very truly,
H. J. May.

The best portrait-tube to be used with the small sized Solar Camera, is the half-size, and with the large one, the two-thirds Harrison quick worker.

Personal & Art Intelligence.

— Our leading remarks in the last number, have called forth two excellent communications from two valuable correspondents. That of Mr. Root meets some of the objections urged against photographic portraiture, and we are assured that before he concludes the subject, he will most effectually demolish the old fogies who see nothing in the photographic art calculated to advance the taste of the people. Mr. Root is not only an eminent photographer but an excellent artist, and we venture to say, that there is no man connected with photography, who understands the principles of Fine Art and its requirements more thoroughly than himself.

Veni Modo Gusto's communication is intended as a reply to our strictures on the moral of photographic artists; but he only begins where we left off and continues the subject. The difference between us is in the method of effecting the same object. It was our intention to continue the subject this month, taking a portion of the same grounds he has gone over; but his article renders it superfluous, except on a few points.

In photography, as well as in all other arts, there is a higher Art which the class to which Veni Modo Gusto alludes can never reach; it can only be attained by the *genius*, and not by him without dilligence and severe study. The total eradication of the class that wallows in the mire of the lower grades of photography can never be accomplished, and we do not consider the effect would be of any avail in the direction pointed out by our correspondent. The man capable of the most lofty aspirations in the photographic art should not think of, much less attend to, the conduct of those beneath him in genius, reputation, and skill. The most beautiful localities on earth are more or less infested by fleas and mosquitoes, but whoever thought of entirely destroying them—to allay the pain of their sting, and by superior wisdom deprive them of their power to annoy, is the most we can do. True, we occasionally "smash" one who dares venture too far upon our rights, and it is only *then* that we are *obliged*, or have any *right* to take up arms against them. The photographic is not the only business infested by annoying vermin. Quacks and humbugs swarm in every profession, and in every manufacture as well as in every art, and so it will be till the millenium. No, it is not our purpose to destroy the miserable abortionists who swarm the photographic racks. They have their use in discovering to the people the difference between good and bad pictures. Our purpose is to elevate their minds—or as many of them as possible—above the grovelling nature they have brought into the art—to caution them against every evil that may beset their paths, to praise when they do well, to scold when they do not behave themselves. That the host who now infest the beautiful art will gradually grow less as more exalted minds enter the precincts of photography, until they become a glorious few, we believe, but that they ever will be totally extinct cannot be. Cheap ambrotypes—the lowest grade to which photography can fall—will always find customers, and these dabsters must be the men to furnish them, just as there *are* portrait painters who paint a life-size bust for *five* dollars.

It does not necessarily follow, that because quacks adopt an art or profession, that men of genius should abandon or become disgusted with it. By this very fact, the reasons for their entire devotion to it are multiplied; the incentives to action are increased. Every *true* artist who abandons the photographic art only makes room to be filled up by one of inferior grade. This is the point which we desire to impress upon the mind of the true photographer. The disaffection on the part of portrait painters, towards photography, is nothing like so great as formerly. A large number have been obliged to acknowledge its applicability in aid of Fine Art—the existing differences are hinted at by Mr. Root, when he says that the time must come when every first class photographer will employ an artist in his gallery—not as a manipulator in the detail of the business, or a mere colorist, but as a director of the camera. Here it is that true art must be made to bear upon photography. To deprive the photograph of its coldness and rigidity, requires something more than placing the sitter in a chair, fixing his head in a rest, and giving the patent instruction—"sit perfectly still, look into the camera, or at any object, wink as much as you please, but do not remove your eyes from the object first selected." Graceful positions, pleasant faces, bright eyes, character, must be shown by the photograph, and it requires the mind of a well educated, highly polished artist and gentleman to accomplish this.

There was a time when we entertained views similar to those advocated by Veni Modo Gusto, but we are now convinced we were in error. Instead of wishing to *drive* any one engaged in any branch of photography from the position he has assumed, we prefer to endeavor to educate him to the standard of true artist. Those who have the natural ability and intelligence to attain the elevation, and those who have the ambition above mere dollars and cents—no matter if they were born and brought up in a barn—will reach the goal of their desires, while the majority of those who cannot accomplish it will *retire*, and leave the field to those to whom it justly belongs.

To cast disrepute upon Photography simply because dabsters and tricksters are engaged in it, is no less utopian than the disgust some men proclaim against the religion of Christ, because of the backsliding of his ministers; or the number of black sheep in the fold.

— At the meeting of the American Institute of April 14th, the subject appointed for discussion was *Photography.* John Johnson, Esq., read a paper on the priority of daguerreotype portraiture; but he spoke so low we were unable to catch more than a word or two here and there. We understood him to claim the honor for Professor Wolcott and himself. He also exhibited and explained an enlarging camera, invented by himself several years ago; as also several impressions of an engraved daguerreotype. Other gentlemen discussed the claims of Professor Morse and Draper to the honor of having taken the first daguerreotype portrait.

Mr. Seely explained M. Pretsch's process of photographic engraving, at the request of one of the members. Several other unimportant matters were discussed, after which a resolution was passed directing the appointment of a committee to investigate the facts in relation to the first application of photography to portraiture.

The meeting was exceedingly interesting, and was intended as a precussor to the formation of a Photographic Society.

This subject, which we have so often urged upon the attention of the practical photographers of this country with so little effect, has been seriously entertained and discussed by the amateurs of New York, who have now become quite a large body, and we have every reason to believe that the organization of a society under the auspices of the American Institute, will be the immediate result.

— The contents of our present number is varied, entertaining and useful. The first, by Mr. J. Brown, is a beautifully written article on the "*Application of Photography to Art and Art Purposes, &c.*" It will well repay perusal, being calculated to raise the thoughts into the higher walks of Photographic Art.

Several articles have recently appeared on the photography of the Moon—attempts made by various European artists; but we do not think sufficient credit has been given to Mr. Whipple of Boston, for his part in the matter. There can be no doubt of his having been the first to try this difficult task and the first to accomplish it. All must remember the admiration his daguerreotypes of the Moon excited at the great World's Fair in London. He also accomplished the feat immediately upon the introduction of the collodion process, and his skill has been since frequently called in requisition by Professor Bond and others to the same end, and also to obtain photographs of other heavenly bodies. A beautiful series of photographs of the great eclipse of the sun in 1855 was taken at West Point. These photographs exhibited the eclipse in every one of its phases, and were most beautifully executed.

We present our readers with the entire process of Mr. Long for "*Dry Collodion Plates.*" This process has obtained precedence in England over all others, and we should judge that as a *preservative mixture* process, justly so. We believe, however, that ere long all preservative mixtures will be abandoned, and that a collodion will be presented which may be worked *wet* or *dry* with perfect success—and under any circumstances. The preservative mixtures complicate the process too much.

The method of taking clouds in landscapes is worth trying.

Mr. Barnes Dry Collodion Process is also given, and great success claimed for it; but all these preservative mixtures are undoubtedly destined to fall before a more simple method.

We give the conclusion of our remarks "*On the Permanence of Photographic Prints.*" It will be seen by comparing them with Mr. Sutton's directions in his article on "*Printing by Development,*" that our views are precisely similar, in fact, the only difference between us is in the quantity of hyposulphite of soda necessary to be used. We advocate a strong solution, sufficient to deprive the paper of the unchanged silver, and fix the print in the same space of time necessary to tone it, whereas he recommends a weak solution. This difference of opinion may belong to the different methods of washing, after toning, our prints being submitted to a strong stream of running water for sixteen hours, while he submits to a soaking in still water and to pressure between cloths. We now make our toning bath very strong and we find less difficulty in fixing, and lose fewer prints from overtoning than formerly, when we followed the old plan, simply because our printer's attention has to be placed upon the bath for a shorter period, and the prints are not suffered to remain beyond the required time from forgetfulness.

A review of the claims of the *Orthoscopic Lens*, which is commanding so much attention at present in Europe, is also given with a promise of further information. An experiment in printing by carbon, may be worth a trial and an endeavor for improvement with some of our photographers.

The remarkable experiments of M. Niepce de St. Victor are continued, and must excite the astonishment of any one connected with the art.

Mr. Gutsch's "*Recollections and Jottings,*" are highly interesting as well as exceedingly instructive; as is also the "*Account of a Photographic Tour to the Pyrenees.*"

Mr. Seebohm says,—"If you were to strengthen your salting solution to 250 grains, you will find it an improvement."

We have used various quantities in our printing, and adopt those that give the best results with the paper we use. He also says:—

"I use a new varnish for *glass* pictures—especially for negatives—it is superior to every other kind, it being *glass* itself—*soluble* glass (silicate of soda). It cannot be scratched or defaced; it does not alter the tone in the least, and when well put on, it is impossible to distinguish it from the glass plate itself."

Mr Seebohm further offers to send to all who will apply to him (Dayton, O.) the description of an enlarging camera, which he thinks superior to all others.

— Mr. Woodward writes—"The formula which you noticed in your last number I do not claim *altogether* as original, but I have modified and applied it to the solar camera in such a way as to make it capable of producing fine results, I think, without any chance of failure when carried out according to my instructions. I would publish it to *all*, but as it is adapted particularly to the solar camera, I have determined to send it to all who make use of that instrument. I am also working a process on canvas, which I have found to be useful when used with the solar camera. This I also send to such persons. I have never tried either of these processes, except with the solar camera, and cannot say if they could be used without it."

Those of our subscribers who have written to us on this subject, will, therefore, please address Mr. F. A. Woodward, Baltimore, Md. To those who use his solar camera he will give the processes, which we have reason to believe, from specimens we have seen, are very good.

— H. S. Brown writes—"Why do you not tell us how your view negatives are made? Some are very good, and some not so good; but we cannot tell much about them—not knowing whether they are made with albumen, collodio-albumen, dry collodion, or wet collodion. When you give us a view *do* say how the negatives can be made. By the way, I cannot find *either* process in full (I mean developing) in the Journal, so I am experimenting. Surely the enthusiasm of Mr. Normann has misled him, for I cannot obtain the results he claims from his *new negative process*; but I can give you a process I use, which is, in my hands, very successful. After the negative is developed, washed, and cleaned by soda, and washed again, if not deemed intense enough, or, if on trial, found not to print well in the light, after wetting it well, pour over it a strong solution of *sulphuret of potassa*, and keep it on till the negative is quite dark all over it. The appearance of the negative is very peculiar, and the result better, I think, than produced by most other methods of re-developing, and there is no danger of *injuring* the negative; no staining—no coming off the plate. I presume this is an old process to you and to most others, and I only mention it because I find it the best I have tried. Is the collodion you speak of as being good—when used dry—for sale?"

We do not give the formulas by which the negatives of our prints are made, because we do not know them ourself. All our negatives, thus far, have been contributed by our subscribers, and although we have repeatedly requested the favor of full descriptions in regard to them, we have failed to obtain any. We shall soon be in a position to make our own negatives. Our illustrations will then be made in every respect applicable to a Journal like ours, and we shall give formulas in full, together with every particular calculated to render them more interesting and useful. We have not yet attained that perfection in Photographic Journalism which we marked out for ourselves at the commencement; we never may be able to do so, but we shall reach as near it as possible, and it *shall not* be for want of trying if we fail. We give in the present number Mr. Long's and Mr. Barnes' processes in full. The collodion we have before mentioned is now on sale by Mr. Anthony, of this city. It requires no preservative mixture to keep it, and it may be used either wet or dry—one minute after exciting or one month—probably longer. It possesses high qualities, and we think is destined to do away with all preservative mixtures.

— John T. Williams writes—"You will find the article called *Sponifier* dissolved in water an excellent means of removing white and black varnish, and all other impurities from old glasses. It is rapid and economical—the same solution answering for an indefinite number of plates. Twenty-five cents' worth will last any gallery several years. I have fully tested it for eighteen months. Make the solution strong. To clean bottles encrusted with iron, use a small quantity of dilute sulphuric acid, and the hardest crust will disappear, as if by magic."

— We copy the following notices of two of our California friends from San Francisco papers. California is not far behind the Atlantic States.

A California Photographic Painting.—A great deal of attention has been lately drawn towards a beautiful work of art, the joint production of Messrs. T. A. Ayres, S. W. Shaw, and Silas Sellick, of this city. We refer to the painting of a golden haired child and a large white Newfoundland dog, (to be seen in the store of Mr. Thomas Young, 163 Clay Street,) and known as "The Two Friends." This picture is a sort of tripartite production, and reflects equal credit upon each of the artists. The idea of forming a combination of natural scenery and portrait painting is new, and now it has been successfully accomplished—the only wonder is that nobody has thought of it before. It is just as easy to have a beautiful landscape for the background of a picture as to gaze upon a vacant wall. The child sits upon a flowery bank, resting from his sports, and the huge dog, with the confidence of true friendship, lies by his side. Old gnarled trees, woodlands, and distant mountains, a placid river, and a quiet summer sky, with its tinted clouds, make up the rest. Taken as a whole, it is a delightful scene, and one finds new beauties in the design at every examination of it. The figures were first photographed by Mr. Sellick. Mr. Shaw, portrait painter, executed the coloring of them, and Mr. Ayres, the California landscape artist *par excellence*, completed the work with the natural scenery. The picture is thus in every respect a Californian production, and, if we mistake not, will greatly enhance the reputation of each of the artists engaged on it. It is well for us to cultivate the struggling cause of art in our young State, and show that we have aspirations and tastes beyond the mere race for dollars. Indeed, the patronage already flowing in upon our artists shows that we have those among us who can appreciate and support this ennobling profession. The efforts now being made by several of our citizens to establish a higher standard in the fine arts in California, deserves the encouragement of the wealthy and educated. The productions of our painters are beginning to make their mark here and to be mentioned abroad. The more of such men we have among us the better and more cultivated we shall become as a community. "I have ever found," says Tuckerman in some of his works, "in genuine artists a remarkable simplicity and truthfulness of character. There is a repose about them as of men who commune with something superior, and for whom the frivolous idols of the multitude have no attraction. They read so constantly the book of nature, that written lore is not so requisite for them. The human face, the waving bough, the flower and the cloud, the fantastic play of the smouldering embers, moonlight on a cornice, and the vast imagery of dreams, are full of teachings for them." We could place our hand upon one or two enthusiastic delvers at the easel and palate in this city, to whom these remarks so well apply that the lines might have been penned with special reference to them. A judicious criticism, or the praise of a true connoisseur, affords them as much pleasure as the comments of ignorant pretenders amuse them. They are wedded to their art, and pursue it with the fervor of true genius aspiring to excellence.

A New Feature in Photography.—Progress is the watchword, and among all the works of art, and among all professors, none are making greater progress than those who are now engaged in the Daguerrian Art, and among those who are now engaged in this art none are more enthusiastically at work to advance it than Vance & Co., at the principal office of Vance at San Francisco, and Vance & Co. at their new office at Sacramento, recently opened at Andrews' buildings, on J. Street. Vance & Co.'s new rooms now form one of the chief points of attraction in Sacramento (being after the style of Vance's fine rooms in this city). These artists have opened a splendid suit of *six rooms*, and prepared and furnished them in an appropriate and elegant style. These artists have discovered several new features in the process, and they are now taking magnificent life-like sizes; and as they hang on the walls, they appear like oil paintings of the highest finish.

We examined several photographs and ambrotypes of superior finish, among them we notice Senators Johnson, Bell, and Soule; Col. Whiting, Mr. Noonen, and Mr. Stanford, of Stanford Brothers, Col. Andrews (the owner of the block) and lady. The photograph of Mrs. A. is of superb style, being finished as an oil painting, and one of the finest pictures yet got out on this coast. The ladies' drawing-room and the show rooms are elegant. Mr. Davis, the gentlemanly proprietor, has done everything to make these rooms the first in the State. Mr. Weed, the working artist, is a devotee to his business, and all who wish to see true artistical work of the highest order, should improve the time to visit this gallery, as one most worthy their notice and patronage.

— We have received a little paper called the "*Ambrotype*," published at Parkersburg, Va., by A. C. Partridge. It is filled full of spicy *jeu des prits* on Ambrotype picture making.

— Messrs. Seely & Garbanati have just introduced two new articles of apparatus for photographers' use. One a folding camera stand, which can be done up into very small compass, and weighing only $6\frac{1}{2}$ pounds; can be carried with ease. The other is a self-adjusting chair head-rest; very convenient, and of decided utility.

— We are *particularly* obliged to the *few* who recently so *promptly* responded to our call upon them.

WINTER.

Negative by Whipple & Black, from a Bas Relief by Thorwaldsen.

From the London Art Journal.

COLORING STATUES.

BY JOHN BELL.

THIS question, as usually discussed, is a double one, of which the first consideration is, "Did the Greeks color their statues?" the second, "If they did, should we?" These, however, run so naturally into each other, that I shall make no effort to keep them distinct. In conclusion I purpose to submit a few remarks as to some modes in which I conceive that color may, a, at the present day, be advantageously associated with statues.

In 1836, a committee was appointed to examine whether any evidences of color remained on the Parthenaic marbls in the British Museum. The committee consisted of Mr. Hamilton, Sir Richard Westmacott, Sir Charles Eastlake, Dr. Faraday, Mr. Cockerell, Mr. Angell, Mr. Donaldson, and Mr. Sales. Before them the following evidence was adduced by Mr. Bracebridge, in a letter :—"In the winter of 1835-6, an excavation was made to the depth of twenty-five feet at the south-east angle of the Parthenon." There was discovered a great mass of architectural and sulptural refuse, and "and many pieces of marble," and among these, fragments of triglyphs, of fluted columns, and of statues, particularly a female head. "These last-mentioned fragment were painted with the brightest red, blue, and yellow, or rather, vermillion, ultramarine, and straw-color, which last may have faded in the earth. "These curious specimens are carefully preserved in the Acropolis, but much doubt is entertained of their retaining the brightness of their highly contrasted colors for any length." "The colors are laid on in thick coats" "The female face had the eyes and eyebrows painted." No mention, however, is made of any color, or remains of color, on the flesh.

As regards those sculptural remains from the same spot possessed by our Museum, the Report sums up in the following words :—"Upon consideration of all the facts in the preceding minutes, it appears to the committee that there remain no indications of color artificially applied upon the surface of the statues and bas-reliefs—that is, upon the historical sculpture : that according to Dr. Faraday's opinion, those portions of the morbles, which from the tone and surface might be supposed to be the result of color applied thereon, are the original surface of the marble, stained by the atmosphere, the presence of iron, in the marble, or by some such natural cause."

It was stated, however, by Mr. Sarti, who was then engaged in taking moulds of the whole series of the Parthenaic marbles, "that the whole surface of the marbles had been twice washed over with soap leys, subsequently to their having been moulded on former occasions, as that or some other strong acid is necessary for the purpose of removing the soap which is originally put on the surface, in order to facilitate the removal of the plaster mould from the original. Dr. Faraday was of opinion that this circumstance was of itself sufficient to have removed every vestige of color which might have existed originally on the surface of the marble"

The Report thus had left the question of coloring statues—as far as regards the Parthenaic remains in our possession—as it was, were it no for this appended note of the committee, relating to a fragment of the upper part of the head of Minerva, of which in thus speaks :—"This fragment alone may perhaps be considered as an exception to the previous statements, inasmuch as the hair appears to have a red tint, which becomes distinctly apparent on the application of water." In speaking of the Apollo in the Louvre, Quatremere de Quincey makes the same remark, only that in that case the tint extended almost all over the surface of the flesh, instead of the hair.

Now it is well known to sculptors that in the application of soap leys or soda to marble, which are efficacious in removing grease or any foreign substance or tint from the surface, that they sometimes leave a coloring effect of their own, and that after their use a faint ruddy tint is apt to arise on the surface of the marble, analogous to what would be produced by the use of a coat of vermillion, and then not thoroughly cleaning it off afterwards. As these preparations have been long used for cleaning marble, it therefore appears probable that their effect may occasionally have led to false conclusions. This effect of these preparations is not, however, of constant occurrence. The cause of this irregularity of action is a question for the chemist.

The Report on the Parthenaic marbles goes on to say—"But although the statues and bas-reliefs of the Parthenon—at least those portions of them preserved in the Elgin collection—do not afford any evidence of the use of color, yet there is a constant repetition of small circular holes in the horses' heads and manes, and in one hand of each reader, showing that there had been originally bridles to the horses, 'probably of metal.'" Similar holes for the purpose of affixing bracelets, buttons for the draperies, &c., are also to be observed in the fragments attributed to representations of Proserpine and the Hours, and one of the Fates. In the back of the Victory are holes for affixing her wings (of bronze gilt), and also in the head of Minerva, for attaching the helmet ; and, what is still more obnoxious to our ideas, the sockets of the eyes are hollow, for the reception of enamel or gems, which have fallen out or been removed. The ægis of the goddess in this pediment had also apparently some metal serpents attached to it by rivets. The above shows that although there may exist now no remains of color on the surface of these marbles, that their effect on their original condition was by no means monochrom.

It appears strange that we should have so little direct information, nay, even so little collateral literary illustration in regard to the practice of the Greeks in this respect, with whose life Art—especially Art connected with the temples—was so intimately entwined. That there were at the time explicit treatises on a subject of so much interest as the modes in which color was united to sculpture there can be no doubt; but unfortunately they are not among those which have come down to us. It the more behoves us to be careful of those remnants or information which we still possess.

The subject of painting statues is thus incidentally introduced (Plato de Repub. lib. iv.) in the following rejoinder of Socrates:—"Just as if," he says, "when painting statues, a person should blame us for not placing the most beautiful colors on the most beautiful parts of the figure—inasmuch as the eyes, the most beautiful parts, are not painted purple but black: we should answer him by saying, clever fellow, do not suppose we are to paint the eyes so beautifully that they should not appear to be eyes." Socrates was the son of a sculptor, and practised the art as a profession until he withdrew himself wholly to the subject of philosophy; and Plato lived in Athens, probably in intimacy with its great sculptors; and the world in the original, "*andrias*," without doubt signifies a statue, and not a picture on a flat surface, as has been sugested by some to whom the idea of painting statues was especially abhorrent. The passage evidently alludes to statues and the painting of them, and this about the time of Phidias, but it does not designate the class of statues, nor does it mention coloring the flesh. It is, however, the more to be remarked as it adverts to the imitation of nature in such works, in preference to mere decorative treatment, which there is good reason to believe extensively prevailed at that time, even, as we have seen, to the extent of putting gems and precious stones into the eyes. Taken in connection with other data on the subject of Greek Art, it would induce us to beware of the idea of Greek taste being absolutely fixed at any time on this subject, and would rather lead to the belief that various styles were followed in the association of color with sculptor.

It is evident that at this period there was a great demand for statues for various purposes and situations, and it is probable that they were finished in a great variety of ways: some, probably, fully painted, in imitation of nature, some half painted, and some not painted at all. Besides these modes there was one that evidently widely prevailed, in which variety of material, not hidden by paint, did the part of color. Such was indeed the activity of sculpture among the Greeks that all kinds of possible materials were pressed into the service. Besides marble, not only white but colored, they used all the metals with which they were acquainted; also the more durable woods; also amber, and all the gems of a manageable nature. These were sometimes used in combination and sometimes separately, and it is but natural to suppose, in cases where valuable material was used, that the true surfaces were not hidden by paint, where paint could not make them more beautiful or more precious; while we may well fancy that coarse stone or wood might be painted over even with a full opaque color, without detriment, in as far as such materials would not lose by such treatment: but it is difficult to conceive that a Greek, especially a Greek artist, thrillingly sensitive to everything beautiful in creation, would ever wholly conceal the poety of Parian marble by any artificial covering.

Pausanias, in his time, speaks of statues made of gypsum as being painted, or at any rate as being "ornamented with paint;" and the Æinætan statues, which are crude and archaic in character, had evidences of strong color when discovered. The habit also prevailed of dressing in highly decorated garments the figures of divinities, as is occasionally now with images on the continent. Altogether the association of color with statues among the ancient Greeks is certain; but there appears to be no evidence whatever in any of the passages that have come down to us, of the flesh of any first-class statue, in marble, of ancient Greek art having been colored, although Pausanias expressly describes a statue, of Bacchus, made of *wood*, which had all those portions not hidden by drapery painted vermillion.

Virgil, in the seventh eclogue, speaking of the statue of Diana, describes it as of marble with scarlet sandals; and, in an epigram, offers Venus a *marble* statue of Amor, the *wings* of which, he promises, shall be many-colored, and the *quiver* painted: but there is no mention made of the flesh. This, however, alludes to works either made at Rome or for Romans, and does not bear direct reference to the purest style of Greek art.

But the most remarkable of all the quotations brought to bear on this subject is a passage from Pliny (lib. xxxv. cap. 2), in which he says, speaking of Nicias, that Praxileles, when asked which of his marble works best satisfied him, replied, "Those which Nicias has had under his hands;" "so much," adds Pliny, "did he prize the finishing of Nicias"—"Tantem circumlitioni ejus tribuebat."

Nicias was an encaustic painter, and the finishing he gave was probably therefore only in wax, and the word "circumlitio" by no means necessarily implies the going all over the surface, although it frequently signifies polishing. It might also, however, allude to decorations about the principal parts of the statue, as the borders of the draperies, adjuncts, ornaments, base, &c.; for let it be remarked that, in this case as well as others, no reference is made directly to the flesh, which is the chief charm of both sculpture and painting, and to the adjustment of the various tints of which, had Nicias performed this office, Praxiteles would probably have specially alluded.

It is well known that the Greeks delighted in oiling their bodies at times of festivity; and it is possible that in this case, as well as in others, alluded to by Plutarch, the marble might have had a similar shining surface given it by the means of wax; but it would not require an accomplished painter to do this. As regards, indeed, the whole of this celebrated passage, on which so much stress is laid by the advocates of coloring statues, it seems very possible that it is only the record of a chance graceful expression from the lips of Praxiteles in regard to his friend Nicias, addressed to a third person, evidencing the sculptor's kind-heartedness and modesty of character in praising his friend at expense of himself. When a phrase is *ad captandum*, down it often goes in the record of time, however false may be the general impression it may convey, especially after the lapse of years. Even in cases when truthful in itself, it may be stretched far beyond the original intention, and lead to eventual conclusions quite erroneous.

The most ardent advocate of coloring statues could not, one would think, extend his faith to the fullest extent of the words of Praxiteles, or conceive that the excellence of his work really depended on the "circumlitio" of encaustic paint, however much or however little it may have been applied. No doubt if any adjuncts of color had been put on in bad taste, they would have had a very evil effect; and harm might by this method have been done much more easily than good could have been effected. Doubtless, also, whatever it was that was done by Nicias was well done, but that the intrinsic value of the work much depended on such additions, is a very different matter. The story thus appears to me to have arisen from a graceful and amiable expression of the sculptor, and to be valuable not so much in throwing any real light on the coloring of Greek statues, as in evidencing the friendly feeling existing between the artists.

Difference of treatment in statues would naturally arise from the difference of the situation in which they were to be placed When they were to stand alone, the sculptor would be comparatively left to himself, but in other cases, where his productions were but to form part of a whole, and especially where they were closely connected with architecture, it was requisite that the treatment of the statue should harmonize with the art with which it was combined. This may be well conceived, and led, doubtless, in connection with architecture, to the frequent introduction of variety of materials in one work, or of tinting parts of the material itself if uniform, even when the sculptor, as regarded his own art, would have preferred a simple surface. It is especially recorded of Phidias, that, although eventually overruled, he wished to have made his colossal Minerva, in the Parthenon, of marble, instead of in ivory and gold.

Temple Art, which formed the major portion of Art among the Greeks, was of course subservient to their creed; in this architecture and sculpture were usually reciprocal. Architecture subserved the precious statue of the divinity within, and sculpture in turn subserved the architecture in exterior decorations especially. Painting was applied to the surfaces of the work of both arts, either in spaces left free and flat on portions of the architecture for the purpose, or uniting together in one harmony the productions of the two sister muses, Architecture and Sculpture.

We are, I think, bound to admit this, as it is indicated not only by the evidences that remain, but by the principle of harmonious unity existing in Greek Art, viz., that, when color was introduced on the columns, capitals, mouldings, cornices, and other parts of the buildings, the same style was in degree carried into the sculptural decorations. This, however, offers no precedent for the introduction of color into the sculpture, when the associated members of architecture are left untouched, as has most strangely been done in some modern instances. Indeed, as may be remarked, such treatment is wholly at variance with the spirit of Greek Art, which aimed at unity.

Possessing in this country the inestimable relics of the sculpture of the Parthenon, one naturally recurs to the evidence, so near at hand, which they afford, that at any rate a monochrom effect in such enhancement of a building was not always adhered to; on which point the report of the committee on the Parthenaic marbles in the British Museum directly bears, inasmuch as it shows that metallic bridles and straps were affixed to the horses in the frieze, and that buttons, necklaces, and wings, were also affixed in metal, and by rivets, as also the helmet of Minerva; and even that the eyes of this figure had some foreign, probably brilliant, material introduced.

In accordance with this, that the architecture of the Parthenon was partly colored—as it were picked out with color in portions—there can be no doubt; but that it was more than so enhanced, and that the whole surface was coated over—which has been advanced by the most ultra of the polychromists, and which would point to a similar treatment in respect to the statues associated—we have every reason to disbelieve ; indeed, there is no evidence on which to found such a supposition.

The subject, however, of the coloring of Greek sculpture—so much of it having been closely associated with architecture—is so closely connected with the coloring of the architecture, as not to be comprehended without it. Mr. Penrose's dissertations on the more delicate contours of Greek architecture, especially of the Parthenon, are well known ; and there is a passage by this author, apropos of the discussion on the subject that took place in the Crystal Palace, so clear on this point that I cannot do better than quote it. "I have seen," he says, in speaking of the Parthenon, "no reason to alter my opinion that the surface of the marble played a considerable part in the general effect, and that it was not concealed with paint." "An extensive and careful examination of the Pentelic quarries by the order of King Otho has shown that large blocks, such as were used in Athens, were very rare indeed. The distance also from the city is considerable; whereas there are quarries on Mount Hymettus, at little more than one-third of the distance (and most convenient for carriage), which furnish immense masses of dove-colored marble (much prized, it would seem, by the Romans, Hor, ii. 18), and inferior in no respect but that of color to the Pantelic. It could therefore only have been the intrinsic beauty of the latter material that led to its employment by so practical a people as the Athenians. With respect to the use of outline traced with a sharp point as a provision for re-paintings, its absence from the Doric *echinus* [at the summit of the shaft] is at least conclusive that there was no ornament painted on that member; for on no part of the architecture would the difficulty of reproducing the pattern have been greater. But since these outlines are found indifferently both on small and large mouldings, it seems a sound conclusion which limits the painted ornaments to the parts so outlined." Mr. Penrose further states that he thinks that the surfaces which were unpainted and unornamented, were yet "tinged or stained in some manner to the proper tone." He merely, however, gives this as his opinion: he adds—"It is unreasonable to suppose that the ancients entirely concealed, or even materially altered in appearance, the general surface of the white marble, which they made a great point of obtaining whenever possible; but that no one whe has witnessed the painfully dazzling effect of fresh Pentelic marble, under the Athenian sun, will deny the artistic value of toning down the almost pure white of its polished surface, and the more so when considerable portions of the architecture were painted in the most positive colors."

This opinion of Mr. Penrose, from observations on the spot, has much weight, and appears to point not only to certain enhancements of color throughout the building and its decorations, but also to the whole surface of the marble itself, where not colored, being yet in some degree toned. Still, in the latter respect, it suggests no more than that the Athenians probably anticipated, by some slight stain or wash, that did not lessen the transparency of the material, the effect of time on the marble of their structures and of the sculpture—an idea in no degree abhorrent to modern views. Canova used to do the same thing, and tea, coffee, and rust water, and various other simple preparations, were tried by him and others for the same purpose.

From all the above, however, it does not appear probable that the Athenian could have done more than tone down in some degree the over-glittering effect of the fresh-hewn marble of his many temples, and more than pick out and enhance portions with positive color. These temples were chiefly on the height of the Acropolis, and, had they been covered with paint, would have lost that shining, celestial appearance which they must have had from the plain below, and to the returning mariner. The glistening of the marble in the sun must have made them look like true abodes of the gods,—an idea so in accordance with the fancy of the Athenian, that we may be sure the toning and painting of the exterior of the temples was not carried out to a degree to destroy this effect, but only to mellow it.

In the interior of the temples a larger portion of color was probably used, although the clear portion of the marble might not have been so tinged. Brighter contrasts were allowable where the direct light of day was absent. That is, the more the light was lessened by situation, and by other artificial means, the more painting was admissible as an adjunct to the architecture; and this is borne out by what scanty data on this point we possess with respect to the Parthenon. Thus it appears that there is no sign, as stated above, of any enhancement of paint on the *echinus* of the range of Doric columns that went all round the outside of the building, but that there is on the analogous caps and on the mouldings beneath the colonnade; and evidences remain of ornamental color to a still greater degree on the compartments of the ceiling within the building; where the light was still further modified.

In following this view as regards the sculpture connected with these several portions, we are led to the impression that, firstly, those sculptures which were on the outside, as those in the tympana and the metopes, were very little treated with color (which was probably confined to the polychronic effect obtained in portions by the variety of materials, a little gilding here and there, and the backgrounds being of a faint blue); that, secondly, that the frieze might be so somewhat more so, although the smaller scale of the parts, compared to the outside statues, would cause their appearing more decorated, even if they were done in a similar manner; and that, thirdly, the greatest degree of enhancement was reserved for the statues in the interior. The cruseo-elephantine statue of the Minerva, in the *penetralia*, was, as its name informs us, and as accounts specify, covered with ivory,—a material not superior to marble in imitation of flesh in itself, but far superior as a substance for receiving the enhancements of the most delicate color. We know that both the Jupiter at Elis, and the Minerva of the Parthenon, and various other cruseo-elephantine representations of divinities in temples, were elaborately decorated with painting on the robes and accessories, and although there may be no distinct evidence of the flesh being painted to imitate nature, even in these cases, yet I am inclined to think that such a practice, carried out at least in degree, affords the sole satisfactory explanation of the use of ivory at all in such works; and this, notwithstanding my belief that that the masterpieces of ancient Greek sculpture in *marble* were not in general colored at all, for which I shall submit my reasons when considering the accounts we have of the Venus of Cnidos by Praxiteles.

We may not like the idea, and nothing can be more unworthy than to bow down to precedent, but there is no absurdity or presumption in believing the Greeks to have been wrong in this point, as there is more than one way of accounting for such treatment of the statues of their divinities, besides that of its being the pure result of their artistic taste; but both the data extant and the principle perceptible in the gradations of their coloring reached in the building, from the exterior to the interior, lead to the idea that the divinity itself would be elaborated to the highest acme.

Ivory is certhinly not a more beautiful material for the imitation of flesh than marble,—less so, probably it will be admitted, than Parian marble; and the mere idea of greater expense, as showing more respect to the gods, cannot be received as a sufficient reason for its adoption, especially as it was a most perishable substance in the way it was applied. But marble is not a suitable material for tinting, and ivory is. Surely the latter must have been adopted by the Greeks for some especial and substantive reason. All the relations of the question appear to me to lead to the conclusion that these vast ivory idols, when covered with ivory, were so covered for the purpose of being tinted at least very nearly up to the hues of nature.

But even supposing that the natural tint of ivory were considered superior to that of marble for the representation of flesh, at any time it must have been to a very small degree preferred—not sufficient to counterbalance its perishing nature, and the extreme trouble and intricacy of its employment. That these were very great is shown by Müller in Division 312 of his well known work on Ancient Art. "In the studios of the ancients," he says, "with the tosentic art was also connected working in ivory, which it was a favorite practice throughout antiquity to combine with gold in statues, as well as in all sorts of furniture. The ancient received from India, but especially from Africa, elephants' teeth of considerable size, by the splitting and bending of which—a lost art, but which certainly existed in antiquity—they could obtain plates of from 12 to 20 inches in breadth. In executing a statue, then, after the surface of the model was distributed in such a way as it could best be reproduced in these plates, the individual portions were accurately represented by sawing, planing, and filing the ivory (this material is too elastic to be wrought with the chisel), and afterwards joined together especially by the aid of isinglass over a kernel of wood and metal rods. The holding together of the pieces of ivory, however, required incessant care; moistening with oil contributed most to their preservation. The gold which represented hair and drapery was embossed and fixed on in thin plates."

(To be continued.)

From the Photographic Notes.

FRENCH PHOTOGRAPHIC SOCIETY.

ORDINARY MEETING, DECEMBER 18TH, 1857.

The PRESIDENT read a letter from M. Migurski, of Odessa, which stated, that after having tried a great number of the common photographic methods, he had found them all more or less imperfect, but had succeeded to his satisfaction by a modified process of his own. He enclosed some specimens, which were greatly admired, and it was proposed that application should be made to him for the particulars of his process.

M. MIGURSKI's letter also stated that a number of photographers in Odessa, having obtained permission of the Emperor, were about to form a Photographic Society in that town.

M. CIVIALE, son of the celebrated Surgeon of that name, a member of the Institute, presented to the Society a series of views of the Pyrenees, from paper negatives. They were remarkably fine, and artistic. Everybody admired one view in particular of a Châlet, situated in a beaut'ful valley and overtopped by fir trees.

Some photographic copies of rare manuscripts in the Convent of Mount Athos, taken by M. LEVASTIANOFF, a Russian State Councellor, were also exhibited and excited much interest

M. FRANK DE VILLECHOLLES stated that in his hands a dry collodion process, in which the plates were simply washed after being excited, gave very satisfactory results.

M. PESME said that he had received some dry collodion plates from M. MONTREUIL, of Tonnerre, which he had exposed and developed several days after their preparation. The negatives turned out extremely good. These plates had been simply washed after removal from the nitrate bath, and dried. The only condition of success in their preparation was stated by M. MONTREUIL to be, that the collodion and bath should work well in the ordinary wet process. The exposure was about double of that required for wet collodion.

M. EDMOND BECQUEREL read a Paper and exhibited experimentally some processes for the production of photographs in colors. It does not appear that there was anything new in this communication, which was little more than a repetition of the Paper read before the Academy of Sciences, in January 31st, 1848. We shall return to this subject on a future occasion; although we wish it to be understood that we have no faith in the probability of the problem of reproducing objects in the natural colors ever receiving a satisfactory solution.

M. LEBORGNE described the negative Collodion Process, in which he adds a salt of lead to the silver bath. The particulars were given in our last Number.

M. VIELLE described a convenient form of tent for working the wet collodion process out of doors. From the description, this tent appears to resemble so closely that which we employ in our own photographic peregrinations, that we shall defer the description of it until we can find space fur a separate illustrated article

M. PAUL GAILLARD gave the recipe for a varnish for collodion negatives, which he said fulfilled completely all the necessary conditions of a good varnish. The formula is as follows:—

"Dissolve 10 parts of Benzoin in 100 parts of alcohol at 40° Beaumé (i. e. S. G. 817). Heat the glass before applying it."

M. RELANDIN exhibited a new form of dark slide for negatives. It was constructed on the same principle as that of Messrs. Marion, and contained two glasses separated by cardboards, being exceedingly light and portable.

From the Liverpool Photographic Journal.

HINTS FOR THE PRODUCTION Of Panoramic Negatives upon Collodion.

BY THE EDITOR.

In the number of *Photographic Notes*, published on the 15th Feb., is a paper by the Editor upon the construction of a camera intended for the special production of pictures embracing a very extended angle of vision. The idea as regards Daguerreotypes has been for many years practically applied by M. Marten, a French Photographer of some eminence, who constructed an instrument with a double combination lens so arranged as to perform a semi-revolution on its optical centre, almost identical in arrangement with that now suggested by the Editor of *Photographic Notes*, who in all probability borrowed that part of his proposed apparatus from M. Marten, together with the diaphragm for exposing a portion only of the plate at a time. We remember having seen M. Marten's instrument in the possession of a friend some half dozen years ago. The novelty, however, proposed by the present author is one of considerable ingenuity, though we fear it is not sufficiently exact to be successful; the difficulties in the in the way of impressing a collodion film upon glass, being far greater than performing the same operation upon a silvered metallic plate bent into a semi-cylindrical curve. The contrivance suggested of exposing only a small portion of the plate at a time, that portion being the contact part of a tangent to a circle whose radius is equal to the focal length of the lens, appears to be the most feasible plan of operation upon a plane surface; but as the part exposed, however, it may be limited in extent by the diaphragm employed in front of the plate, must still be a portion of a plane surface, it is manifest that the distance between the lens and the lateral portions exposed, and the lens and that in its direct axis must be slightly differing in extent, we fear that the necessary variation as each point comes successively into the axis, and subsequently towards the edge of the exposed part again, will produce an amount of indistinctness that will entirely annihilate the beauty of the hoped for results.

It would be no very easy task to print from a curved glass surface, even if it were possible to coat such a one with a film of collodion and excite it; but if these operations were accomplished, the development of such a plate would present still further difficulties. We have thought much upon this subject, and should only be too glad to find the notion thrown out work satisfactorily, as without any question the advantages gained by the negative being produced direct upon a plane surface would be sufficient to counterbalance almost any amount of trouble previously incurred. Should, however, the test of experiment prove unsatisfactory, we beg to offer the following hint to the gentleman who has already taken up the subject, with a hope that he may not too readily abandon this very praiseworthy attempt to further the interests of photography.

There is no doubt that upon a cylindrical surface, as for instance, upon the curved daguerreotype plate, the definition is sufficiently distinct for all practical purposes, consequently, it is to our means of presenting an excited collodion film in this form that we would direct attention. There is a species of textile fabric (a sort of leather cloth), which has a beautifully smooth and polished surface, used by ladies as a support to muslin when executing a kind of open fancy work for collars, trimmings, &c., and which has already been applied by some photographers as a base for collodion positives, which are capable of transmission by post. Similarly black leather has been employed.

We believe that the *modus operandi* is to attach the fabric employed to a plate of glass at the edges or corners by some adhesive varnish or other material, and then coat with the collodion, as if the glass alone formed the substratum, subsequently exciting and developing as usual. Now we propose that having arranged the focussing, &c., of the camera, we should employ a collodion film as above described, simply removing the pliable material from the glass *previously to exposure*, and arranged it for that purpose in a slide of the requisite form, which could be readily constructed, nor do we imagine that there would be any difficulty as to the transference or subsequent development and fixation.

After completing the operations described, it would be necessary to remove the film from the textile fabric or leather support, if we wish to have the advantage of printing from the negative produced; but if we content ourselves with a positive impression, this operation may be dispensed with,—only that the subjects of a landscape being reversed, as if seen by the aid of a looking-glass, materially detract from its value in our opinion.

What means have we, then for removing the film so as to use it for printing from? It appears to us that there are two courses open: the first, to make use of paper saturated with varnish, as suggested some years back, and described, and demonstrated at the London Photographic Society, by Sir William J. Newton, by which it would be necessary to print through the paper support, and then produce a reversed positive image; or better still, to adopt the plan patented by the late Mr. Frederick Scott Archer, the original inventor of the collodion process, and remove the collodion by means of a thin film of gutta-percha, itself formed by a solution of thin gum in benzole, being poured on to the finished collodion picture in the same manner as the collodion itself was manipulated. In this latter case the gutta-percha is sufficiently thin and transparent to print through with *very* slight reduction of the sharpness. In operating in this manner it would be necessary, before attempting to produce the film of gutta-percha, to attach the whole to a perfectly plane surface as at first; but we see no difficulty in doing so, as the picture must be completely finished and *dried* before it is fit for this operation, which may be performed at any convenient subsequent time.

We can speak practically as to the efficacy of the process for removing the films from the glass plate, and we do not perceive any serious obstacles to prevent our doing so with the fabrics suggested.

From the Liverpool Photographic Journal.

PHOTOGRAPHS OF THE ECLIPSE.

View Wortley, Leeds, March 19, 1858.

To the Editor of the Liverpool Photographic Journal:

Sir,—Enclosed I send you six photographs of the sun, five of them taken while that body was eclipsed on Monday the 15th, and one taken after the termination of the eclipse. They were taken by the collodio-albumen process instantaneously, or nearly so. The lens used was a meniscus, about 23 inches focus, with a stop one-sixteenth of an inch.

We had arranged beforehand so that we could put a prepared glass into the camera, and expose it at any time without looking into the camera; this was done by fixing sights upon the camera, so that when the sun was viewed through the sights its image fell nearly upon the centre of the prepared glass. By this arrangement we could expose it at any moment. It was fortunate as it happened that we had made this arrangement, as we could only catch a look at the sun at intervals through the clouds. Joseph Emsley.

From the Liverpool Photographic Journal.

ON SOME OF THE OPTICAL PRINCIPLES Involved in the Construction of Photographic Lenses.

BY T. GRUBB, M.R.I.A.

PART II.

Before entering upon the second part of my paper on the "Chemical Range," I may be permitted to make same observations having reference to the discussion which followed the reading of the first part. It seems the more desirable to do so, as, without a clear conception of what takes place in a single combination, no definite idea can be formed of what occurs in a more complex one.

I object to Mr. Ackland making me to say that "it is quite impossible that there can exist a longer chemical than visual range," not so much on account of of the expression being neither strictly correct, nor to be found in any paper, but because it tends to draw attention from that which it was the main object of my paper to prove, viz., that the "chemical range" was definite (or invariable), for a given aperture and focus, and that to assume the contrary involved an optical absurdity.

In reference to Mr. Ackland's statement that what I endeavor to prove "is particularly contradicted by the results of M. Petzval's investigations," I beg to observe that this statement subsequently repeated in a different form by another party), is incapable of proof, and has been put forward in both instances without even an attempt of the same.

That my paper is, as suggested by another party, "an epitome of all our past ideas," is, I submit, abundantly disproved by the different opinions expressed in the discussion which it elicited. Most willingly I admit that my paper contains nothing not long since known—the truths on which it is founded are as "old as the hills" we photograph; and to these gentlemen personally unknown to me, but not unknown as efficient members of other scientific socities, who have stood up in their defence, and in explanation of my paper, I cannot but feel grateful.

To the photographer I have suggested a practical test, and to the optician a mathematical one, of the soundness of what has been advanced; and anyone (such for instance, as Mr. Ackland), who has paid during some years considerable attention to the mathematical investigation of the subject, should be able, from a few minutes' consideration to the very simple formula I have given, either to discover it to be in fault, or failing so to do, be constrained to admit that it contained very strong evidence of my statement being correct.

I now propose to examine shortly the arguments advanced against the definiteness of the "chemical range."

1st objection. *Greater sharpness of the image on the collodion film than on the ground glass.*—This is only as should be expected. The ground glass is much rougher than the collodion film, is, therefore, not capable of affording as distinct an image; add to this, that a lens corrected for actinic rays is under-corrected for the visual image, and, what doubtless plays a more important part, viz., that while the nebulous light of the indistinct image is for the most part seen, that of the actinic image will, in a great measure, remain undeveloped on the film (a circumstance which accounts for some instantaneous pictures being far sharper than could otherwise be expected), and we have ample reason shown for the collodion picture being sharper than the visual.

2nd objection. *A certain modification of the view-lens, which appears to have caused much labor in its investigation—admitting the use of a large angular field, and having no definite focus, either visual or actinic.*—A friend, who had previously examined the series of pictures of the French Exposition, transmitted to the Dublin Royal Society a statement that not any portion of these was distinct.) Now the reasons given, in the former case, for the actinic image being more distinct than the visual, will also apply here, though not with equal force. By the way, should it be desired to construct such a lens, it is only necessary to assume a much greater depth of curvature for the first surface, and calculate the remaining curves in accordance. The same number of figures will suffice, and there is no precise limit; but, as we increase the depth of the first surface, we also increase in a high ratio the already large spherical aberration of the lens, until at length it (the lens) ceases to give a tolerably distinct image, even with a small aperture.

3rd objection, viz., *The results of Professor Petzval's investigations in a new photographic lens, and photographs taken by same, as exhibited and described at the last meeting.* Now I trust that nobody will suppose me guilty of an attempt to disparage the powers of this doubtless excellent lens if I say that it cannot do impossibilities. We have alread attained (thanks chiefly to the labors of Prof. Petzval) to combinations of four lenses, giving a *nearly* flat field, with large angular aperture and great distinctness; and the addition of two more lenses, though involving some objections, necessarily gives a power of further flattening the field—possibly of making it quite flat.

Now, having carefully noted the data given of this lens, and the description of its performances in the shape of photographs laid before the Society, I find but one instance in which there exists an apparent (not a real) cause for supposing the lens to porsess any peculiar powers as to the "chemical ran.e." That instance is the view of the Burgplatz, to which Herr Pretsch calls particular attention, as not to be so produced by any other lens; and the cnly reason I can see for this assumption, or that of Mr. Ackland, of this lens contradicting my theory in respect of the definiteness of the chemical range, is that there are two objects--one at 300 feet, the other at 150 feet—both rendered distinctly in the photograph.

Now "distinct" and "indistinct" must, in such cases, be considered as relative terms. Thus, that sharpness of outline which is demanded for fulfilling distinctness in a photograph of two and a half or three inches square (and where a magnifying power is almost invariably used for examining or viewing), can neither be transmiteed to paper, nor, if so transmitted, could it be generally appreciated in a picture of sixteen inches square. There is, therefore, a latitude, varying with circumstances, which if kept within, we say that the picture is distinct; and a simple calculation will show how far the view of the "Burgplatz" presents a difficulty in this respect, supposing the entire aperture ot the lens to have been employed.

The first step in the calculation is to find the conjugate foci of the lens for the farther and nearer objects—say for 300 and 150 feet, or 3600 and 1800 inches—the focus of the lens being twenty-six inches.

Let d' represent the greater distance, d'' the lesser, f the sidereal focus, f' the conjugate focus for d', and f' that of d'; then

$$\frac{1}{f'}=\left(\frac{1}{f}-\frac{1}{d'}\right)=\left(\frac{1}{26}-\frac{1}{3600}\right)=\frac{1}{26{\cdot}19}$$

$$\frac{1}{f''}=\left(\frac{1}{f}-\frac{1}{d''}\right)=\left(\frac{1}{26}-\frac{1}{1800}\right)=\frac{1}{26{\cdot}38}$$

The extreme difference of the foci of the more and less distant objects in the case before us is, therefore only 19-100ths of an inch; and by adjusting the camera to the mean, that is to say, dividing the indistinctness when focussing, no portion will be 1-10th of an inch out of focus.

We have next to find the measure of the lateral confusion of the image, or rather the diameter of the circle of confusion due to this 1-10th of an inch, for a focus of twenty-six inches and an aperture of three inches, by the formula given in my last paper, viz.,

$$C=\left(A\times\frac{d}{f}\right),$$

$$=\left(3\times\frac{0{,}1}{26}\right)=0{\cdot}0115,$$

or 1-90th of an inch (nearly.) That is to say, each pencil of rays, instead of coming to a point on the screen, will be diffused over a space of 1-90th of an inch.

Lastly, to consider the effect of this on the distinctness of the image, let the object be supposed to be the sharp and straight outline of a dark object projected upon a light or sky ground; such an outline is one of the severest tests of distinctness. Let its image be considered as made up of innumerable discs arranged in lines, these discs being as already ascertained 1-90th of an inch in diameter—the discs up to a certain line will be all bright, immediately beyond that line all dark. This will give the effect of a shaded line, whose entire breadth is 1-90th of an inch, but having one portion of this breadth shading insensibly into the dark, and another into the bright portions of the image to which it is the boundary; while the whole space (being so shaded) cannot be considered as effecting the eye sensibly for more than half its breadth, or say 1-180th of an inch, which quantity is the most which, I apprehend, we can fairly estimate (practically speaking) the visible (?) indistinctness of the images of the more and less distant objects in the view of the Burgplatz, taken with a lens of three inches diameter and twenty-six inches focus.

These observations have taken up so much space, that I defer until the next occasion the proof of the compound lens being equally definite in its focus (visual or attinic) as a single lens of the same focus and aperture.

From the Liverpool Photographic Journal.

M. DE POILLY'S PROCESS FOR COLLODION.*

Clean the glass plates by means of elm charcoal reduced to an impalpable powder.

TO MAKE THE PYROXYLINE.

In a wide-mouthed stoppered bottle introduce fifty to sixty cubic centimetres† of sulphuric acid: add, in several portions, eighty grammes of powdered saltpetre (nitrate of potash); then four grammes fine cotton in small quantities at a time. Allow the whole to soak for about ten minutes. Wash in eight or ten changes of water until there is no taste of acidity.

ANOTHER FORMULA FOR THE SAME.

200 grammes sulphuric acid of commerce.
100 " pulverised nitrate of potash, in small quantities at a time. Mix well, and add, little by little, five grains of fine cotton very dry. Allow it to soak, and wash as before.

FORMULA FOR PYROXYLINE FROM PAPER, ACCORDING TO MAXWELL LYTE.

Pure sulphuric acid. Pure nitric acid (quantities not given).

Introduce by small portions at a time as much "papier Joseph" as can be covered by the liquid. Allow it to remain for twelve hours, then wash and dry as above.

COLLODION.

Ether at 62° (scale not given.)	105 cubic centimetres	(about $3\frac{3}{4}$ oz.)
Alcohol at 40° "	50 "	(" $1\frac{3}{4}$ ")
Pyroxyline	8 decigrammes . .	$12\frac{1}{2}$ grs.

Iodise with—

Bottle No. 1	10 cubic centimetres	(170 minims.)
" No. 2	7 " "	(119 ")
" No. 4	5 drops.	
" No. 3, a sufficiency to produce the color of brandy.		

The bottles alluded to for sensitising the collodion are prepared as follows, viz.,

BOTTLE NO. 1.

Alcohol at 40° *saturated* with iodide of potas. 50 cubic centimetres.

Then add

Iodide of ammonium	1 gramme.
Iodide of zinc	1 "
Ether	5 cubic centimetres.

* The above is a translation of notes furnished by Mr. Richard Foxall.

† A cubic centimetre of water measures about seventeen minims, and *weighs* about fifteen and a half grains—the same as a gramme; consequently, if for *cubic centimetres* drachms or half drachms by measure be substituted, and for *grammes* drachms or half drachms by weight the relative proportions will be duly retained.

BOTTLE NO. 2.

Alcohol at 40°	30 cubic centimetres.	
Ether at 60°	40 "	"
Bromide of ammonium	5 decigrammes (about 8 grains).	
Bromide of cadmium	5 "	"
Fluoride of ammonium	1 "	(about $1\frac{1}{2}$ grains).
Cyanide of potassium	1 "	"

BOTTLE NO. 3.

Saturated tincture of iodine.

BOTTLE NO. 4.

Acetic acid, or prussic acid.

I use bottle No. 1 to iodise my collodion; this ought to be but weakly done, so that in that in the nitrate of silver bath it should not acquire more than a bluish tint. It is, however, requisite that the film should be capable of giving a picture, but in this state its sensitiveness is not sufficiently great to produce intense results.

I then add, by small portions at a time, some of the solution from bottle No. 2, until I obtain a convenient amount of sensitiveness. At length, in order to cause the proofs to acquire in the dark parts an intensity which they lack, I color the collodion to a deep brandy color by means of the solution in bottle No. 3; then add a few drops from bottle No. 4.

It always happens that this collodion alters, I then begin again to treat it according to its condition, say with 2, 3, and 4, but rarely with No. 1. This collodion becomes at length so stable that it remains good almost indefinitely. I never find it requisite to reject the old collodion, being able always to restore it either with new collodion, or to render it sensitive with the solutions above-named.

EXCITING BATH.

Distilled water	100 cubic centimetres.
Crystallized nitrate of silver	8 grammes.
Alcohol	5 cubic centimetres.
Sensitized collodion	2 to 3 " "

Dix and shake up the above several times, allow it to rest for twelve hours and filter. This bath should be always maintained at a strength of from five to eight per cent.

At the same time as the quantity of silver in the bath is diminished by use, an excess of iodide is formed there, the film then becomes wanting in sensitiveness; the defect is remedied as follows, viz.,

The new bath contains 510 cubic centimetres; as soon as I perceive that it has become weakened, I add a quantity of water sufficient to restore the volume to 510 cubic centimetres. A portion of the liquid having been lost by use the bath becomes cloudy, I filter it immediately in order to free it from the iodide in suspension. I test the strength by means of the aërometer, and add the quantity of nitrate of silver necessary to bring up the strength to eight per cent.

DEVELOPING BATH, NO. 1.

Rain water saturated with whiting	250 cubic centimetres.
Sulphate of iron	60 grammes.
Nitric acid	10 cubic centimetres.
Sulphuric acid	10 " "
Nitrate of silver	1 gramme.
Sensitized collodion	2 to 3 cubic centimetres.

Shake up several times, filter, then add—

From bottle No. 3	2 cubic centimetres.
" No. 1	2 " "
" No. 2	2 " "
Liquor ammoniæ	10 drops.

Allow it to settle for twenty-four hours, and filter.

DEVELOPER NO. 2.

Rain water	120 cubic centimetres.
Sulphate of iron	20 grammes.
Sulphuric acid	5 cubic centimetres.
Solution of nitrate of silver at 10 per cent	4 " "
Acetic acid	5 " "

Let it remain twenty-four hours and filter.

Now, in a bottle of sufficient capacity put some ordinary collodion, as prepared for pharmaceutical purposes, and precipitate the cotton by the addition of a sufficient quantity of water, (nine volumes of which are requisite to dissolve completely one of ether,) shake it up carefully, removing the stopper from time to time, and preserve for use. One hundred parts of collodion for 100 of water had better be used.

Twenty-four hours after your iron developing baths, Nos. 1 and 2, have made and filtered, pour into each of them some of this ethrised water until they present a silky and metallic appearance. Here it is necessary to be careful, for the reaction is so powerful that the bottles run the risk of being broken by explosion.

Take eighty cubic centimetres of bath No. 1, which you mix with bath No. 2 entire, and you will obtain a *perfect* iron bath, provided your operations have been properly conducted.

This bath will keep indefinitely, only it is necessary to restore its action, when weakened, thus:—

When it developes slowly, having become filled with metallic crystals, I restore it by adding several cubic centimetres of a saturated solution of sulphate of iron, then a few drops from bottle No. 1, and a precipitate is formed which I withdraw by filtration.

When the tones obtained are not satisfactory, the defect may be remedied by the addition of etherised water.

FIXING BATH.

Cyanide of potassium	8 to 10 grammes.
Rain water	100 cubic centimetres.
Alcohol	5 " "
Solution of nitrate of silver (10 per cent).	2 " "

This bath deteriorates by use and contact with the air, it is, therefore, better to replace it from time to time.

The quantities that I have indicated are those that I think best as starting points. As to the bottles Nos. 2, 3, and 4, the quantities from which to add to the collodion are not indicated, I leave the employment of them in the prescribed formula to the judgment and experience of the operators; they will find in a variation of the doses, a range of tones that they may desire to obtain.

The most brilliant proofs are those obtained by a minimum of exposure; for one prolonged beyond what is requisite injures the whiteness of the lights and depths of the shadows.

The washings after the iron bath, as well as after the fixing, should be carried to an excess; it is the first condition for obtaining unchangable proofs. A distinct lustre has shown me nearly always, that when the proof is dried, the dessication must not be carried on too rapidly, and it is absolutely necessary that it should be perfectly dry before varnishing.

The choice of a varnish is not a matter of indifference, I describe that I generally:—

Solution of bitumen of Judea in benzine	50 cubic centimetres.
" " " in turpentine.	50 " "
Virgin wax	5 grammes.
Indian rubber solution	2 "

This varnish dries quickly, and does not scale off.

These constitute the formulæ for my process for pictures called "mother-of-pearl positives;" however, when the proper exposure has been prolonged, it has happened that I have obtained proofs of sufficient intentity to use as negatives. I suspect that the absolute metallic reduction obtained by my iron bath is the principal cause that the molecules of silver are so closely connected that they form a surface impermeable to the light, possessing then the properties of the dark deposit in the negative proofs.

To the nacreous tones of my positive proofs, when transferred to waxed cloth, iridescent reflections are added, producing the best effects.

The above, which was promised insertion in a former number, we now pubish, because there are a few useful hints contained in some of the directions given; but we cannot forbear expressing our dissent from the notion conveyed that better effects are to be produced by so heterogenous a compound as the above, than from a much more simple combination. On the contrary, we are convinced that the more simple is the collodion employed, the more uniform are the results likely to prove. We suspect that our correspondent has given a recipe of ancient date, if the mushroom existence of photography upon glass can be regarded as yet having a past age to look back upon. It is the old story: we begin by simplicity,—we increase our complications,—a reaction sets in,—we discard one by one the unnecessary adjuncts, and return again to simplicity,—not necessarily the same as we started with, but a simplicity recommended by experience, and the result of laborious investigation.—Ed.

From Photographic Notes.

ON THE DRY COLLODION PROCESS.

64a, New Bond Street.

To the Editor of Photographic Notes:

Sir,—It appears by your report of the January Meeting of the Birmingham Photographic Society, that, during the discussion which followed the reading of Mr. Morris's Paper, exception was taken to the Preface of the Second Edition of my work on the "Dry Collodion Process," the remarks therein contained respecting Dr. Hill Norris's discoveries being characterized by Mr. Osborn as unwarranted and uncalled for. It appears also that on a previous occasion that gentleman introduced the subject to the Society, and treated it in a somewhat similar manner.

Will you allow me, through the medium of your Journal, to reply to these observations, and to give my version of the matter?

My first successful negatives, (Rotherithe Church, and Somerset House, enclosed herewith), were photographed and exhibited in October, 1854. They were taken by the method described in the First Edition of "Dry Collodion Process," May, 1856. That pamphlet would have been published in July, 1855, (the rough notes being quite ready), had not ill-health compelled me to abandon all photographic or active pursuits.

In that edition will be found the following remarks:—

"I find the Collodion is greatly improved after the lapse of eight or ten weeks. Especial care should be taken to reserve a small quantity of old collodion to add to the freshly iodized. If the collodion is required to be used in a day or two after it has been iodized, the addition of the old collodion should be made in the proportion, &c."

An appendix appeared in December, 1856, containing slight modifications of the process, and in which I pointed out, more strongly, the advantages to be derived from the use of albumen, a substratum of which was already recommended in the first edition, pages 25, and following. The second, and last edition, came out in August last.

Dr. Hill Norris's first letter, dated April 1855, appeared in the "Journal of the Photographic Society," of that month. He simply directs the plates to be sensitized in the usual manner, immersed in distilled water, and dried; those intended for the production of negatives, being finally washed over with a solution of pyrogallic acid.

His next communication, dated May, 1856, (inserted in the July No. of the "Journal of the Photographic Society"), contains the following paragraphs:—

"After numerous experiments, many of which were directed towards re-softening the film by substances having a partially solvent action upon it, I have arrived at this conclusion, that in order to prepare a collodion plate in such a condition that after dessication it can be restored to a penetrable pappy state, it is necessary to float over it, while still wet, some substance soluble in water, or at least penetrable by water, so that its capillaries or pores, being filled with this substance, the gallic acid and silver solution used in developing, may readily penetrate to the particles of iodide of silver, acted upon light." * *

"As regards the collodion, it does not seem to matter whether it is new or old, as the object is merely to produce a beautifully even layer of iodide of silver, with a collodion giving a pappy soft film, easily receiving the impression of the finger, in contra-distinction to one of a very firm, contractile nature: the after-development is far more rapid, being completed in from ten minutes to a quarter of an hour, instead of, as with the latter collodion, an hour or two."

In the third letter, (*Phot. Notes*, Sept., 1856), we find nothing novel respecting the collodion, it being merely stated that "all good collodions, either positive or negative, will be suitable for my process; but some require a longer time than others in the gelatine bath."

In the fourth communication, however, (Dec. 1856), Dr. Hill Norris seems to have become suddenly aware of the absolute necessity of using an old collodion in the preparation of dry plates, for he then says:—

"I find that almost any manufacture of collodion is suitable for dry purposes, providing it has acquired age. In nearly a hundred specimens of collodion, prepared for experiment, I was unsuccessful so long as they were new, but they gradually improved by keeping, till most became workable."

Upon comparing dates and quotations, the only conclusion I was able to arrive at, was, that up to—indeed, until some time after—the publication of my pamphlet, Dr. Hill Norris was working absolutely in the dark, and that it was only after issue, that the facts above referred to, were discovered by that gentleman. You will therefore readily imagine, that it was with considerable astonishment I found this so called discovery, paraded in Mr. Hardwich's "Manual of Photographic Chemistry," and you will perhaps allow, that I was quite justified in making the comments complained of, a copy of which I beg to enclose.

Apologizing for taking up so much of your valuable space,

I remain,

Your obedient Servant,

R. F. Barnes.

For the Photographic and Fine Art Journal.

THE RECOLLECTIONS AND REFLECTIONS OF A COUNTRY OPERATOR.

In these dottings and observations of a poor country operator, it must be remembered that he is one who practises the art for the love he beareth it, for I have not had the satisfaction of an over full pocket since I first laid my hand on a camera; but I feel doubly poor when the isolated condition of my situation is forced on my recollection by a sense of the enjoyment and satisfaction our European friends must feel when meeting in friendly union for the comparing and exhibiting of their work, and communicating to each other the results of the observations and discoveries made since their last meeting. We, in the country, have not the opportunity to see the work of those who are said to excel; therefore it depends, in a measure, on the aptitude of the operator to take notice of those changes that are so constantly taking place in his daily practice, for his eventual success. I need not ask the question, why have we not a Photographic Society? It has been tried and failed! Oh that the Sun could but imprint on the minds of those who make use of his power, the pleasure and benefit that would result from a free and unrestricted intercourse between its votaries, and bleach from their future lives, that selfish egotism that fills the breasts of so many who profess to be the elité of the profession. My first recollection connected with photography, runs back to the year 1845. I was then in England on a visit; once when passing down Cheapside, I saw a dagnerreotype hanging in the window of an optician's shop, whose name, if I recollect right, was Willat; it was a landscape with a description attached. Being fond of drawing, I thought what a deal of labor and care might be saved by this means. I made bold to enter the shop, and met a very pleasant gentleman who took pains to show me several more, together with some calotype heads, which I well remember were of a peculiar red color; also a small landscape of a light blue. From this time I became charmed, as it were, ever remembering that first picture. I soon afterwards got an introduction to a Mr. Egerton, of whom it was my intention to have taken lessons, but which I never received. It was he who was the first to place improved apparatus before the operator; he has the honor to be the first who gave battle to those who sought to place restrictions on the art, so far as to exclude it even from private practice for scientific purposes. He tried hard to have the daguerreotype placed on that free and independent footing, that France had endeavored to place it when she bought it of Daguerre, and made to the World a free gift of it; and so far was he prosecuted, that an injunction was placed on him, prohibiting not only the vending, &c. of likenesses, but also the sale of the apparatus. One Miles Berry, made application to the British Government for a patent, acting as an agent as is indicated by the application, viz: "A certain *foreigner residing in France*, instructed him to petition Her Majesty to grant her Royal Letters Patent for the exclusive use of this discovery within this Kingdom; and that he believes the said foreigner to be the inventor or discoverer of this process, for the spontaneous reproduction of images or pictures by the action of light." This patent was granted, and that after the same had been purchased and given to the World by France. It was purchased by a Mr. Beard, who opened an establishment in King William street, and continues it to this day; by the patent, he held an exclusive right to the same with one exception, that of Mr. Claudet. Not long since, Mr. Talbot claimed jurisdiction of right to the collodion process. In France, a Mr. Deboscq had seized a very large number of transparent stereoscopic slides, claiming that they were an infringement of a certain patent held by him; both failed in the object sought. And the attempt to fetter the practice of the collodion process in this country, I am happy to say failed also. One would think that after receiving the process from Mr. Archer, that they would have at least returned the compliment by making known any improvements that they might have observed, but they do not do it, not even subscribe to the aid of the widow. Is there an artist in the States so full of knowledge and perfection, that he does not seek and receive information from others? if not, let him do to others that which he does himself, and return a portion of the knowledge he may acquire in his practice. We receive a great proportion of our knowledge in the improvements in the art from across the water, and to console ourselves, make the brag that we excel them in their own processes. Have we returned anything? very little; have we given ourselves anything? very little; and that not without first demanding an alleged equivalent in solid dimes. It was not until the year 1851, that I became possessed of an apparatus, little thinking that from that time out, it was to be the means of my livelihood; but so pleased was I with my first attempt, that I have made it a scientific study, that I might be the better enabled to carry out its practice. I commenced it alone, and alone have I practised with such help as I received from the published knowledge of others, and feel grateful to them for the fullness of their descriptions. One sore recollection looms in the vista of the past. An artist, then holding a high position in the practice of the art, had obtained Whipple's process, and had commenced the practice of the same in Detroit; and on an occasional visit to his gallery, I once inadvertently asked permission to visit his dark room—that *sanctum sanctorum* of the artist—and never dreamed of the enormity of the offence, till receiving a severe rebuke. The bare idea of a country operator wishing to enter the dark room of a city artist, bah! How different on a visit to another; he was pleased to see me at any time, showed me his unfinished work, and wished me to inspect his arrangements, which were then on a small scale. And what is the fate of the two? the man has thrown up the practice in disgust—the gentleman is fast gaining public favor, and advancing to the upper ranks as an operator. The trials and tribulations of a poor artist, who would attempt to teach himself the practice of the art, needs not be told, for those who have passed through, have abundance of recollections on the subject, he has had to train his feelings and ill-temper to that degree, that the monks of old would have been glad to attain, he has succeeded in rendering himself the very picture of Patience sitting on a monument smiling at grief; but it carries with it its own reward. He becomes acquainted with minutiæ that otherwise would never have been observed. There are too many artists who are not possessed of a single page of chemistry, who could not tell the composition or chemical equivalent of a single article used. They can work after the formulæ given them by their preceptors, but to depart from the strict working of the same, would be wandering into the dark realms of confusion. I have often heard that the *Journal* had too much about that paper stuff; little dreamed they of the change that was taking place. In the year 1854, I placed a bath in my dark room, but for nearly a year, could not give a glass picture away; and some that I have retained, that were then taken, are as good as some taken at this day. The great remedy to purge the ranks of all ignorant and mean spirited men who pervade in, and practiced the art, would be to take them by the hand in a friendly manner, teach them how to make better pictures, foster in them a love of the Art for its own sake, and try to elevate that self-esteem and liberality of sentiment, that is so seldom found in our midst. Let an artist go to a new town and start a gallery; and who is the first man to cry wolf, to utter slurs, and to raise a perfect hue and cry? why it is a brother artist!

Do you suppose the public take no notice of such things? they do most assuredly: and the consequence is, the profession generally sink in their estimation. Gentlemen, this jealousy, heart-burning, strife and dissimulation that is practised towards each other, is doing sad work among us; we had better work just as hard the other way and root it out if possible. Let us have Photographic Societies, where we can meet as men and get familiarized with each other's society, and let us have exhibitions on a liberal scale in different parts of the country, and let all contribute; and it will act as an incentive to that desire to excel, that all must have, who wish to place themselves on the uppermost rounds of the ladder. J. J. B.

From Photographic Notes.

THE RISE AND PROGRESS OF PHOTOGRAPHY.

BY MR. C. L. HAINES.

Read before the Birmingham Photographic Society.

It is both interesting and instructive to trace an art from its earliest discovery, in its gradual increase to the time when to all appearances it has nearly reached perfection; to follow the windings of the stream of science as it flows towards the great sea of knowledge to which it tends; to seek out the first springs from which the river flows, and to follow its course as it joins other springs, and thereby increases, little by little, until a wide and deep river is the result. Who would imagine as he contemplates the little springs that give rise to the Thames—that mighty river—that little by little those springs would increase until at length they bear on their bosom the wealth of Europe. Such is Photography. Look back to the 16th century, (for even thus far back we can trace the commencement of this now important and still increasing science) look back, I say, to the 16th century, when the alchemists first stumbled, among other things, upon a peculiar combination of silver with chlorine, which they called horn-silver; when they first observed that this horn-silver, by being exposed to the light, became blackened, who then upon looking upon this first spring, as we may call it, of Photography, would have imagined that from that very fountain-head such mighty waters would in time proceed. But so it is, and we have already arrived at the time, after many hindrances (for the progress of discovery must be and ever has been slow) when we see the stream, as it were fast increasing in width and depth and pouring on, as day by day, we might almost say hour by hour, it approaches that great sea of perfection which all lovers of the art, and in fact all men must wish to see it reach. Little did the alchemists themselves think in that early age, of what a tree of knowledge they had planted the seed. That seed, as it were, lay buried in the soil of obscurity for many years, till at last it burst the soil and continued increasing little by little to the present time. Who would imagine upon examining the little acorn which lies unnoticed in the forest, that from that apparently worthless thing, in years to come, a mighty tree would grow, that may be in years yet later, that little acorn would form a part of a mighty vessel, on whose success all the wealth and prosperty of Europe may depend, but so it is. Photography is flourishing as a tree. It has been planted by our forefathers, for years it has been almost forgotten, and now we again behold it as a mighty tree, which although not at present near its full growth, is already an ornament to that forest of arts and sciences of which it forms a part. To trace the growth of Photography from the time of its very first discovery by the alchemists, and its progress through difficulties which it would seem almost impossible to have surmounted, to follow the science from year to year as it increases, is the object of my present Paper (and I must here beg your forgiveness if I am unable to tell you anything that is new, for I know that so many Papers have been read, and so many lectures given on this subject, of late years, that it is almost impossible for any one to write what has not at some time or other been written before). I shall only, therefore, in as few words as possible, trace out the progress of this interesting art, as far as I can, from the sources I have been able to obtain.

But before I begin to investigate the origin of Photography, it may not be out of place if I say a few words on the nature of light.

Hunt says, "It is now established that the sun's rays cannot fall upon any body without producing a molecular disturbance or a chemical change. Wherever a shadow falls, a picture is impressed. It matters not whether the material which receives the image be one of these chemical compounds which are so susceptible of change, or a plate of metal, or a block of stone. The surface of all material things are constantly, under the influence of sunshine, undergoing a mysterious change, which is communicated by molecular vibrations to the entire mass, and new conditions established, which, with all the powers of chemistry, we cannot yet follow."

Thus we see, that whether visible or invisible to mortal eyes, the light of the sun has its effects on all things,—on animate nature, we know it has its effects in promoting the health and vigor of the frame. On the vegetable kingdom also we know its effect, for without it no plant or herb would grow. It has been proved beyond doubt that it is not only the heat of the sun which causes plants to grow, but that heat alone, without other chemical agencies of light, would have no effect. If we could look into the depths of the sea, we should discover that at a very considerable depth, where the light cannot penetrate, would be an eternal blank; no sign of vegetable or animal to be found. As we ascend into where the light but faintly illuminates, a few animal and vegetable productions could be discerned; but near the surface we should find quantities of animals and every species of sea vegetables of all colors.

Even on our globe the power of light is plainly to be seen. Look at our Arctic regions, and you will find, in consequence of there being little sun there, that all creation has a darker appearance than elsewhere. As you approach more temperate climes you will find the flowers, and all other things, of a much brighter hue, and in the tropical climes they will be found to glow in richness and splendor of color never to be surpassed.

We all know that if a bright flower had never seen light it would have had no color, but would have been perfectly white. How wonderful then is that light to which we owe all the beauties of this our world, and how merciful was the Maker of all, in thus, before any other thing was created, giving the Divine command: *Let there be light.* All we are told is with sublime conciseness that *God said let there be light, and there was light.* How wonderfully does this in itself show the importance of this element of nature. All things owe their growth and beauty to it. How wonderful must have been the change which thus gave form to the earth and *chased the darkness from the face of the deep.* That light has more power over some substances than over others is easy to be perceived by all who take any interest at all in the subject. Thus, while light may bleach some objects, it may not injure, or may even add to, the color of others.

But having said a few words on the chemical action of light, let me at once proceed to investigate the "Origin and Progress of Photography up to the present time."

The earliest account that we have of Photography, is as I said before, in the 16th century.

Among the alchemists of that early date there were men gifted with minds of very superior order, as indeed their many careful experiments show. A pity however it is that these men did not give their minds and attentions to things that would have been more gratifying to themselves, and more useful to their followers, than their fruitless search after the Philosopher's Stone, or their vain endeavors to distil the Elixir Vitæ. In the course of one of their experiments, however, in the year 1556, it was discovered that horn-silver, exposed to the rays of the sun, became discolored. This, after a time, was thought no more of, and we hear no more of the subject until the year 1722. In this year, Petit showed that solutions of saltpetre and muriate of ammonia, crystallized more readily in the light than in the dark. This, however, trifling it may seem, is doubtless the link which connects the long chain of experiments which have since been tried, with the previous knowledge of the early alchemists.

In 1775, Kearsley's Pocket Ledger quotes from Dr. Hooper's Rational Recreations, "a Process for Writing on Glass by the Rays of the Sun;" the materials used are "chalk, dissolved in aquafortis to the consistence of milk, and strong dissolution of silver. These are to be placed in a bottle, on the outside of which, letters cut out of paper have been pasted, and the whole exposed to the light of the sun; the inner surface of the bottle is blackened in all those parts unprotected by the paper."

Two years after this date (1777), the great Scheele gave his first examination of the peculiar change of salts of silver, under the influence of light; and also found that they sooner grow black under the influence of the *violet* ray than a ray of other color. He says, "It is well known that a solution of silver in acid of nitre, poured on a piece of chalk, and exposed to the sun, becomes black." And again he says, "That if you fix a glass prism in a window, so as to let the rays fall on the floor, it will blacken sooner in the violet ray than in any other." Sennebier, in 1790, repeated these experiments, and discovered that the chloride of silver, which would take twenty minutes to blacken in a red ray, would be equally blackened in a violet ray in fifteen minutes. Count Rumford, soon after this time, published a Paper in the "Philosophical Transactions," in which he seems to think that the chemical changes caused by light are attributable to heat, and that light, without heat, would be useless in effecting these changes. He concludes by stating that the same chemical effect would be produced by a prolonged exposure to a heat of about 210° Fahrenheit.

In the year 1798, however, this distinguished man sent a paper to the Royal Society, entitled "An enquiry concerning the Chemical Properties that have been attributed to Light." In one of his experiments pieces of ribbon were wetted with a solution of gold; those which were exposed to the strong light of the sun, gradually changed color, and in a few hours acquired a fine purple hue, whilst those left in the dark remained unchanged. It was also found that the change took place much sooner when exposed in a wet state than if allowed to dry before exposure. Mr. Robert Harrup, in 1802, states also that several salts of mercury were discolored by light and not by heat. In 1802, Wedgwood, who undoubtedly was the first person who made an attempt to copy objects by aid of the sun's rays, published a paper in the Journal of the Royal Institution, entitled "An account of a Method of Copying Pictures, and of making Profiles by the agency of Light upon Nitrate of Silver." From this paper I will make a few extracts.

He says, that "white paper, or white leather, moistened with a solution of nitrate of silver, undergoes no change when kept in a dark place, but on being exposed to the daylight, it speedily changes color, and after passing through different shades of grey and brown, becomes at length nearly black. The alterations of color, and after passing through different shades of grey and brown, becomes at length nearly black. The alterations of color take place more speedily in proportion as the light is more intense; in the direct beam of the sun, two or three minutes are enough to produce the full effects; in the shade several hours are required."

He also states, "that light transmitted through various colored glasses has different effects. It is found," says he, "that red, or common sun rays, passed through red glass, have but little effect; those passed through yellow or green glass are more powerful, but those through blue or violet glass have the most decided and powerful effect." No plan, it appears, had at this time been discovered for fixing the image on the paper or leather. He says that neither rubbing, nor even washing in soap and water; would remove the image; and that it was in the highest degree permanent whilst kept in the dark, but that on exposure to the light, the uncolored parts of the picture would at once darken till it entirely obliterated the image. A transparent varnish was tried, but was found to be entirely unsuccessful, as it did not protect the uncolored parts from the action of light.

An attempt was now made to use these sensitive papers to impress the image given in a camera obscura, but they were not sufficiently sensitive to produce good results. Davy, however, succeeded better in some experiments with the solar microscope.

The failure of these two distinguished men seems to have disheartened their successors, for from this time we hear no more of Photography, until the year 1814. In this year Niepce endeavored to fix the images of the camera obscura. He discovered that light altered the solubility of various resinous substances. He spread a thin layer of asphalte on a glass or metal plate, and placed this in the camera. After waiting from five to six hours he found on the plate a latent image, which became visible upon treating the surface of the plate with a solvent.

In the year 1824, Daguerre (a man whom all Photographers well know as being the inventor of one of our most important processes), also turned his attention to the fixing of images rendered by the camera obscura: with what ultimate success I need not name, for all of us know the beauty of a good Daguerreotype. The first substance tried by Daguerre it appears was paper, soaked in a solution of nitrate of silver,—but this did not satisfy his wishes, and it was not until he became acquainted with Niepce, two years after (1826) that anything further was done in the matter. From this year they as it were joined hand to hand in promoting the great work they both had at heart.

In the year 1829, in a letter, dated December 5th, Niepce communicated to Daguerre his process. "The discovery I have made," says he "and to which I have given the name of Heliography, consists in this, that I produce instantaneously, by action of light, the image of the camera obscura, in all its gradations, from white to black." He then proceeds to explain in detail the method he adopted, but this it is quite unnecessary for me to give. In 1829, Daguerre and Niepce first used iodine to blacken the impressed image.

From the use of iodine for this purpose it appears probable that the celebrated process of Daguerre arose.

In July, 1853, Niepce died, and an agreement was entered upon between Daguerre and the nephew of the late Niepce.

In the year 1834, Mr. Fox Talbot first commenced his experiments for the permanency of pictures on papers, of which experiments we hear no more until the year 1839. In the January of that year he read before the Royal Society a paper entitled "Some Account of the Art of Photographic Drawing, or the Process by which Natural Objects may be made to Delineate themselves without the aid of the Artist's Pencil." The method he suggested was to cover a sheet of paper with a thin coat of chloride of silver by repeated washings. To fix the image, he recommended a solution of common salt, but this he says, succeeded but indifferently.

In the March of the same year, Sir John Herschel, in a communication to the Royal Society, recommends the use of hyposulphite of soda as a fixing agent, instead of common salt. He also recommends the use of iodide of potassium to convert the nitrate of silver on the paper into iodide of silver.

To trace the different discoveries and improvements from this date is more than either time or inclination will allow, so various and numerous are they; suffice it then if I choose a few, and those few some of the most important of that number.

In 1840, glass plates were first introduced by Sir John Herschel for the purpose of obtaining pictures, a discovery, which under the able hands of the late and much lamented Scott Archer, has since become one of the chief and certainly the most popular of all the photographic processes.

In 1842, Mr. Fox Talbot patented the Calotype, of which process I need say nothing, as it is so well known to all.

During the next few years Talbot tried various substances for the production of photographic pictures, among many others I may name porcelain plates as giving satisfactory results, but the difficulty of preparing these is so great that it is probable they will never come into constant use.

In 1848, Niepce de St. Victor first brought under notice the use of albumen on glass plates, a process, which having been improved upon by Le Gray and several others, gave a clear and perfect image, but which was not sufficiently sensitive for portraits.

In 1851, Mr. Frederick Scott Archer first published in the *Chemist*, the now well-known collodion process, and I need only say by way of a mark of esteem to that gentleman that the sympathy which is all over England being shown to his widow and children can but partially show that gratitude which I am sure all photographers must feel towards a man who spent a great portion of his life in the discovery of a long wanted process, which it is only a pity for us all he did not live long enough to practise and improve.

From this time, which must be in the recollection of us all, I will let the matter drop. Of Le Gray's celebrated process I need I am sure say not a word, when we have so beautiful a specimen presented to the society by one of its members. In fact I cannot, I think, do better than refer you to our late exhibition, to show you how Photography has improved during the last few years. That exhibition will speak for itself, with no weak words of mine to recommend it.

One word though I must say before I conclude. There is a great talk of taking pictures by artificial light. This may be very well in theory, but it will not, in my opinion, do in practice. I commend all who try to make discoveries of any description in the art, but I cannot see what is to be the ultimate good of such an object as this.

For evening scenes, moonlight may be desirable, if practicable, or for the astronomer it would not only be desirable but of the greatest use—but for the taking of *portraits* I can see no advantage. It may be well, as I know it is, to search out the properties of various kinds of light, but further than that I consider the sun's great and best light enough for practical purposes.

One word and I have done. The next and greatest aim of the Photographer is to obtain pictures in their natural colors. Many have been the opinions on this subject. I can only say that if such a process should eventually be discovered, the Photographer could wish no more, and Photography, from the little spring from whence it arose, will at length, after many windings and obstructions, widening and deepening as it flows, have reached its boundary, and flowed into the great ocean of knowledge of which it is doubtless destined to form a most conspicuous part. (Cheers).

Mr. Bourne.—I must say that I am of different opinion to Mr. Haines, respecting artificial light. I consider that it will eventually prove of great benefit to amateur photographers, inasmuch as many of us have little or no time during the day to practise the art.

The CHAIRMAN thought that the artificial light would be very useful during the winter months.

Mr. MORRIS agreed with the previous speakers respecting the advantages of artificial light, and said that the best portrait he had yet seen was taken by that means.

Mr. OSBORN said he really could not see that the artificial light would be of such manifest advantage as some persons strove to show. The great desideratum, a strong diffused light, had not been obtained, and could not well be so, by any method yet adopted. A great intensity of light had been produced, but was confined to one spot, and consequently you had a ghastly white face, starting from a sombre mass; and moreover, the light being too glaring for the eyes, invariably gave that sleepy unpleasant-looking, contraction of the pupil of the eye.

From Photographic Notes.

ON M. NIEPCE DE ST. VICTOR'S Experiments on the Action of Light.

BY THOMAS SUTTON.

We have some remarks to offer on the subject of M. Niepce de St. Victor's recent experiments. We have repeated some of the most important of them, and our results have, in every instance, been similar to those described by him. But we see nothing in any of these experiments to lead us to believe in any "new action of light." Our impressions, as we stated in the last number, are that instead of bottled sunshine in the sealed tube there is simply bottled hydrogen gas; and that an isolated paper, instead of absorbing light and radiating it again in the dark, is simply deprived of some of its oxygen by the well-known *chemical* action of light, and becomes in its turn a de-oxydizing body, capable either of decomposing aqueous vapor and liberating hydrogen, or of reducing a sensitive salt of silver placed in contact with it. In support of this view we have now a reremarkable experiment to describe. A jar was filled with pure hydrogen gas, and (in the dark room) a piece of sensitive chloride paper laid across its open end. In a very few minutes the paper was darkened to a brown tint. Next, an engraving on tolerably thick paper, was laid with its back across the mouth of the jar, and a sensitive chloride paper placed in contact with it; in a few minutes the gas penetrated through the whites of the engraving, and darkened the paper behind, while the blacks of the engraving prevented the gas from passing through, and thus preserved the whites. In this way a well defined negative image of the engraving was produced by the action of the hydrogen in the jar.

With respect to the action of light on paper prepared with nitrate of uranium, it is sufficient to say that the paper exhibits after isolation, a faint image of the negative superposed, when viewed by transmitted light, to upset at once the conclusion of M. Niepce that in that case, at any rate, a "new action of light" is concerned. The production of a *visible* image by exposure to light, is surely nothing but common photography.

In the first paper M. N. de St. Victor's cotton, dyed with various substances, was experimented on. Some of these dyes were favorable to the production of an image by insolation and subsequent contact with sensitive paper; others were not. Among the *in*sensitive dyes are mentioned madder, alumina, cochineal, alum, and indigo;—among the sensitive dyes, Prussian blue, and a per-salt of iron. Now, none of the former substances have, to our knowledge, been proved to be re-oxydized by light, and in that state to be capable of absorbing oxygen again; but many of the per-salts of iron *do* possess that property. So far, therefore, those experiments are favorable to the idea of a chemical change produced by insolation.

Again, in certain experiments, a sheet of glass, or rock crystal, or mica, placed between the insolated engraving and the sensitive paper, was found so prevent the formation of an image. This is intelligible enough if we suppose the image to be produced by hydrogen, or by contact with a re-iodized substance, but it is difficult to understand how colorless glass can prevent the passage of the chemical rays through it. M. Niepce has himself thrown some doubt upon his first experiments with sulphates of quininine, in which an opposite result is said to have been obtained.

The experiments of M. Niepce are curious and important, from their appearing to indicate the fact that white paper, marble, chalk, &c., are sensitive to light. The chemistry of lignine is still very obscure. There is a per-oxide of lignine; may there not be a lower oxide of it which parts with oxygen when exposed to light, and recovers it in the dark, either from the air, or by decomposing the aqueous vapor which the air always contains? The chemistry of the bleaching process by chlorine is but imperfectly understood. What then may be the effect of bleaching upon lignine? Paper also contains size, and is sometimes dyed with artificial ultra-marine. May it not therefore contain some substance capable of being de-oxydized by light? The chief value of the experiments of M. Niepce appears to us to consist in the new class of substances which he has shown to be chemically affected by light.

The printing processes with a per-salt of uranium, reduced by light, and the image developed with a gold or silver salt, are not new, having been published a year ago in this Journal; and since the principle is identical with that of the old CHRYSOTYPE process of Sir John Herschel, we are much amused at the extravagant enthusiasm with which the Editors of certain contemporary Photographic Journals, both French and English, have announced the supposed wonderful new discoveries in printing by M. Niepce de St. Victor. We are glad, however, to find public attention directed to any form of the CHRYSOTYPE process, for wherever gold is concerned in the production of a print, experience has sufficiently proved that increased permanence is the result.

The theory of the Auro-Uranium process (as it may be called) is simply this.—A paper impregnated with a per-salt of uranium, (the nitrate of the sesqui-oxide for instance), is exposed to light under a negative. Wherever light acts the salt is reduced to a proto-salt (which is a de-oxydizing agent), and a visible but faint image is produced. On immersing the paper in a solution of chloride of gold, an atom of water is decomposed by the proto-salt of uranium, which takes the oxygen and becomes converted again into a per-salt, while the hydrogen combines with the chlorine of the chloride of gold and gold is precipitated in a state of fine division, which presents a blueish tint. The picture is therefore blue and cold in color, and not very pleasing. It is then immersed in boiling. water, which dissolves out the uranium and gold salts. In this state the print is supposed by M. Niepce to be fixed, and its permanence established because boiling cyanide of potassium does not affect it.

The only difference between the above process and the CHRYSOTYPE of Sir John Herschel consists in the employment of a salt of the sesqui-oxide of uranium instead of one of the sesqui-oxide of iron, (the ammonia-citrate of iron). John Herschel did not consider a Chrysotype print to be perfectly fixed by mere washing in water. He fixed it with iodide of potassium. "Nothing," he says, "can surpass the sharpness and perfection of detail of the resulting photograph."

Another uranium process of M. Niepce is to develop with nitrate of silver instead of chloride of gold. In this case metallic silver is reduced by the de-oxydizing uranium salt, and the print is of a deep brown tint, and will also resist the action of boiling cyanide of potassium. The latter process was described a year ago in this Journal as well as the former, and it is precisely anologous to the modified form of Chrysotype in which Sir John Herschel substituted nitrate of silver for chloride of gold.

With respect to the probable permanence of a Chrysotype, or Auro-Uranium print. We have said that the image is formed by metallic gold in a state of fine division, and therefore presenting a blue tint; but there is a prot-oxide of gold of a purple tint, and this oxide might combine with lignine and give a picture having the same appearance as the other. If, however, the material of the picture were not prot-oxide of gold, it would be acted on by hydro-chloric acid, and converted into metallic gold and per-chlcride of gold; and this effect *must* occur by developing with *acid* chloride of gold. The picture is therefore, no doubt, metallic gold, and the dark parts are permanent; but unless the whole of the chloride of gold is removed from the paper by some more energetic mode of fixing than mere washing with water, we think it not unlikely that the lights might turn pink in the course of time by exposure to light. Chloride of gold, in the presence of organic matter, is sensitive to light; still it is very soluble in water, and unless the lignine holds a definite quantity in chemical combination with it, which it probably may do, the print may be considered permanently fixed.

But these Auro-Uranium prints are not the only ones which resist the action of boiling cyanide of potassium. Prints on ammonia-nitrate paper, toned with sel d'or and hydro-chloric acid to a maximum purple tint, will also resist boiling cyanide of potassium; and so will developed prints on serum, toned to the same deep blue tint with sel-d'or. In both these processes, which were published by us in the year '55, the image is principally metallic gold, the same as in the prints of M. Niepce, or Sir John Herschel. The purple tint of a print fully toned with gold, is, however, inky, and is objectionable in an artistic point of view; and the silver prints *slightly* toned with gold have certainly the best effect. It is important, however, to be able to produce a blue permanent print if we choose. In the sel-d'or processes the use of hypo-sulphite of soda is objectionable because metallic gold is not capable of resisting the continued action of an alkaline sulphide, but combines with it to form a double sulphide of gold and the alkali. This is no doubt the reason why prints, toned with gold, and not properly washed, have been known to change, and the blue tint of the gold to become red. It is possible also that in the fading of silver prints the black sulphide of silver may combine with an alkaline sulphide in the paper, and form a yellow double sulphide of silver and the alkali. It is quite certain that washing in an alkali, after fixing with hypo, rather *assists* than *prevents* fading; while prints that have been immersed in weak hydro-chloric acid after fixing in hypo have, according to our experience, a considerable degree of permanence. The great merit of the Auro-Uranium process is, that no fixing or toning bath is required.

The experiments of M. de la Blanchere with this process will no doubt interest our readers. The proportions he recommends are,—

Nitrate of uranium	96 grains.
Distilled water	1 ounce.

The paper to be either floated or immersed. Expose to sunshine, at this season, from two to ten minutes, and develope immediately with

Acid chloride of gold	2 grains.
Distilled water	1 ounce.

The print is very quickly developed to a deep blue tint. Fix with boiling water.

Or, expose only half as long as before, and develope with

Nitrate of silver (slightly acid)	30 grains.
Distilled water	1 ounce.

The print is quickly developed to a brown tint. Fix as before with boiling water.

Another method is, to expose three times as long as in the first case; to immerse the print in a nearly saturated solution of bi-chloride of mercury until bleached; to wash it thoroughly; and develop with nitrate silver as before. The tint is a sort of greyish black.

Nitrate of uranium is an acid salt, and coagulates albumen. A piece of paper simply albumenized, and when dry floated upon the uranium bath, may therefore be used for printing upon. In this way very fine definition may be obtained. Gelatine may also be employed in the same way.

Nitrate of uranium is soluble both in ether and alcohol, and may therefore be added to collodion. Plates coated with this collodion, and allowed to dry, may be used for printing transparencies.

We have found the nitrate of uranium more sensitive and better than the tartrate of uranium. A sun-print may be obtained by floating a uranium paper on nitrate of silver, and letting it dry. The paper is not very sensitive, but the print may be fixed with hot water. The nitrate bath is not discolored by this process, and the yellow tint of the paper is removed by the nitrate of silver. The print may be intensified with gallic acid, or toned with sel-d'or.

Uranium is not a costly metal. It is obtained from a mineral termed Pechblende, and from varieties of uranitic mica found at Callington, in Cornwall. Bucholz observed, some years ago, that an ethereal solution of nitrate of uranium was affected by light. This salt is yellow, and its crystals resemble those of hypo-sulphite of soda. Sesqui-oxide of uranium is a yellow powder.

We strongly recommend the Auro-Uranium process to the notice of those professionals who take portraits on paper to be colored by the artist. But the new method of printing in carbon has for us at present much greater interest than this resuscitation of the old Chrysotype process, or in fact than any purely chemical process, from the infinite variety and perfect control of tints which is likely to be obtained by it. We sent two or three of Mr. Pouncy's carbon prints to Mr. Hardwich a few days ago, and in reply he says: "I view the carbon prints with the greatest interest, and when I have time shall certainly try the action of various chemicals upon them, and let you know the result."

From the Liverpool Photographic Journal.

LONDON PHOTOGRAPHIC SOCIETY.

The ordinary meeting of this Society was held on the 6th of April, R. Fenton, Esq., Vice-President, in the chair.

The minutes of the last meeting were read and confirmed.

M. O. G. Rejlander's paper

"ON PHOTOGRAPHIC COMPOSITION,"

with a description of his "*Two Ways of Life*," was then read by the Secretary, as follows:—

I have been honored with a request to read a paper this evening, the principal subject of which should be, the photographic composition entitled "Two ways of Life."

Considering the very unusual amount of criticism to which this work has been subjected, I am thankful for the opportunity afforded me of giving some explanation regarding its origin, and the object which I sought to accomplish in its construction; and I trust that I shall not be charged with possessing any undue quantum of vanity in thus responding to the call, and engrossing your attention for a few passing moments upon a subject you have done me the honor to stamp with your approval.

Permit me to ask your indulgence for the many imperfections which this attempt at addressing you will manifestly contain. *Artists* are not necessarily *writers;* and while it is my highest pride to rank as the former, I have not the smallest claim to be regarded as the latter.

The composition referred to arose out of the competition which was naturally excited among photographers by the desire worthily to represent, not only themselves, but the new art which they had espoused at the Art-Treasures' Exhibition in Manchester; and as every true soldier should fight as though the battle depended upon his individual exertion, I buckled-to in earnest. In passing, however, I cannot but remark, that in my opinion, and in that of others also, the Manchester authorities very inadequately seconded the efforts which were made, as they treated photography too much as an art belonging to the future, and consequently as one scarcely deserving of their present care.

Whether *good* or *bad*, my effort duly appeared, and full many a tilt did it sustain from the shafts of critics upon both sides of the Tweed, until at last it was *fairly*, or perhaps you may say *unfairly*, tilted altogether out of the Edinbugh Photographic Exhibition.*

* The rejection of the picture, which I believe was solely instigated by ignorance, should surely have sufficed; but I have learned that aspersions were uttered that have fallen harmless upon me, but which were a disgrace to their authors. Even so recently as the 13th January, 1858,

It is not for me to say how far the reasons are correct which were adduced in justification of its rejection, but I take my stand in defence of my work, adopting the national motto, "*Honi soit qui mal y pense.*"

The principal reasons which actuated me in its production were the following:—

1stly. It was to be competitive with what might be expected from abroad.

2ndly. I wished to show to artists how useful photography might be made as an *aid* to their art, not only in details, but in preparing what may be regarded as a most perfect sketch of their composition; thereby enabling them to judge of effect, before proceeding to the elaboration of their finished work.

3rdly. To show the plasticity of photography, I sought to bring in figures draped and nude, some clear and rounded in the light, others transparent in the shade, and to prove that you are not, by my way of proceeding, confined to one plane, but may place figures and objects at any distance, as clear and distinct as they relatively ought to be.

I know well the prejudicial opinion I had to work against in attempting a composition; I kept in good memory the expressions made use of by that authority on art, the *Art Journal*, in its notice of our Exhibition of 1856, to wit:—"They are wonderfully clever, but after all they are but images of actors, posed for the occasion; they all want life, expression; passion they have none; yet these pictures tell a pleasing tale." Again, "We believe indeed that such pictures as those will have a tendency to lower the appreciation of art in the eyes of the public, and unfit them for receiving the full impression intended by, or seeing the beauties of, the artist's production."

In 1857 the same Journal remarked on that year's photographic exhibition:—"With the photographic exhibition it is not necessary to speak of individual works, as we would of the production of the painter, the cases are not parallel; the painter employs, or should employ, eye and hand governed by a presiding mind; the photographer uses a machine, and requires a 'little' judgment; the artist works from within to that which is without; the photographer employs external agents to do his bidding."

When reading these opinions I thought the same as I think now, that as far as the conception of a picture, the composition thereof, with the various expressions and postures of the figures, the arrangement of draperies and costume, the distribution of light and shade, and the preserving it in one subordinate whole, that these various points, which are essential to the production of a perfect picture, require the same operations of mind, the same artistic treatment and careful manipulation, whether it be executed in crayon, grey-in-grey, paint of any description, or by photographic agency, and the same in mosaic, if the worker be also the artist.

I should like to set all presumption of rivalry at rest, by not comparing this art-process with what is generally understood as art: let us reject all parallel, and examine the *modus operandi* of this, which is a new and distinct art, one but of yesterday, and discuss it according to the *results produced*, without comparison.

I believe a time will come, and that not far distant, when *real art* and photography will go hand-in-hand, the latter as a means to the artistic end. It cannot be otherwise: photography is but "the holding of a mirror up to nature;" and the more thoroughly a mind is imbued with the love of, and a discernment of the *true* in art, the oftener will it plume and refresh itself at the fountain of its inspiration, and draw from its ample, but too many, hidden treasures.

I cannot for my part see the objection that photographs want life, expression, reality. I cannot understand how a painting upon the same subject can, except in its coloring, be more real or truthful than a photograph, both being but representative. The difference is in favor of the photograph, which having passed through fewer mediums, must necessarily be the more truthful, at least in details.

But I will come now to the argument of the composition, "The Two Ways of Life." The world is aptly described by the immortal bard as "a stage, and all the men and women merely players."

It is upon this stage that I have lifted the *curtain* to introduce to you the *dramatis personæ.*

In the background is represented a country scene, where, far from the tumult of life, two youths have been fondly reared. The time has arrived when duty calls them to perform their part in the busy haunts of men. The father, with many misgivings, but with many prayers, conducts them from the home of their childhood, through an archway, which is symbolic of the boundary between town and country. Left orphans at an early age, the spirit of the mother is seen still hovering near them, instilling into their minds good desires, and attending them as a guardian angel, that their feet slip not.

Aware of the dangers and temptations which will beset their path, the Sage cautions and counsels them:—

"My sons, if sinners entice thee, consent thou not:" "Keep thy father's commandment, and forsake not the law of thy mother:" "That they may keep thee from the strange woman, from the stranger that flattereth with her words:" "Go not astray into her paths:" "Incline thine ear unto wisdom, and apply thine heart to understanding:" "Length of days is in her right hand, and in her left are riches and honor."

With faith in his leader and guide, one of the youths appears willing to be led by wisdom and experience, and is thus brought into the paths which lead to *Religion*, at whose feet

> "A lowly child, with unkempt hair,
> Is crouching down, yet welcome there."

Near to Religion is *Knowledge*, personified by a female reading, the book being a sign of human progress. From these, we come to *Mercy*, who binds up the wounds of the sufferer, and, "while pouring out the healing oil, consoles the weak and weary." The proper use of life is further illustrated by *Industry, Handicraft*, and *Mental Application;* whilst *Married Life* is faintly traced behind the group of Industry.

The other youth, more impulsive, braves the future for the present: believing in nought but what he sees, he slips the hand of his guiding friend, and, strong in his own conceit, goes *his* way, the wise man waving his hand in grief. Two *Sirens* with song and dance display their charms to tempt the youth; 'tis but a step,—he looks not far before him. Behind them, but in the foreground, lies an *Idle group*;—Idleness the root of every evil. The *Old Hag* thereby contrasts them well: like them she was; as she, they'll be, despised and vengeful in their turn. A *Bacchante* is in the foreground placed with the *cup* in either hand; in the deepest shade of that dark Bacchante lurks *Murder* with ready arm. Hid from his view the *Gamblers* play; one wins the throw, foul or fair; the other seems aggrieved, yet ready to drown his anger in the tankard; the third has lost his all, and seems as lost himself. *Complicity* whispers close behind, and some strong arm is drawing off a pinioned man. To the central figure, with half-covered head, I have given the name of *Penitence.* She is placed, I think rightly, between the two ways of good and evil, to convey what is taught to and believed by us all, that repentance, if true, will not be refused by *Religion.*

This was the only subject I could then think of, which would enable me to bring into one picture various draped figures, as well as exhibit the beautiful lines of the human form; and in one or two of those unadorned figures I think I have succeeded in showing such gradations of tints between the highest light and the deepest shade (as in the Penitent for instance) as may serve for a lesson in art without the aid of language. There are numerous spots and masses which I admit have no business there. I could not avoid them then, but with the experience I have gained I could be more successful now; having, however, to conceive every point in the picture in my own mind, and

I read in the daily 'Press," in its report of the proceedings of the Photographic Society: "The discussion of the merits of Mr. Rejlander's picture was also mixed up with the general question, Mr. George Harvey taking occasion to denounce it in strong terms."

there, if I may so say, finish it, keeping it day and night in view, like a chess-player playing without the board, I could not be perfectly sure, when taking individual figures, whether the backgrounds should be light or dark, which difficulty you may easily understand. I had, in printing one figure whose general background might be dark when placed in the picture, to put one side or other against a light background, for the sketch I made was not sufficiently worked out in light and shade. Circumstances, too, made me vary from the sketch. The various peculiarities in the positions of some of the models are owing to their being more or less perfect in shape. Anxious to display the good lines, I had to hide what seemed less correct, not being able, like the painter, to draw upon the antique.

The rule of proceeding here is also contrary to the art of drawing. I began with the foreground figures and finished with those farthest off. After having fixed upon the size of most of the nearest figures, I proceeded with those in the second plane. With a pair of compasses I measured on the focusing glass the proportionate size according to the sketch; similarly with the third plane, and so on, until I was as far off the smallest group as my operating room would allow, and then I was not far enough by yards, so I reversed the whole scene and took them from a looking-glass, thus increasing the distance.

Having got all the figures of the various sizes, attitudes, and lights and shades that I wanted, and again sketching them on a sheet of paper, I found likewise that our largest prepared paper was much too small, and fastening two sheets together caused an inequality on the surface; how to cement them to show no difference of color at the joining was a poser which occupied me some days in solving. I had made various experiments, until at last I found the best way was not to cement at all, but to put the two papers together edge to edge, and those parts of the picture which bordered on either side of those edges had to be printed at the same time, to ensure their having the same strength; and then I devised, to ensure the two edges being perfectly similar, to put the end of the larger sheet upon the smaller, and with a razor on a plate of glass I cut them both simultaneously. But as you know that a paper is put on glass in printing with the reverse side to you, I found that I could not be sure, after printing the first figure on either side those edges, that when I came to the second portion, I could with certainty put the papers in the same position as before: so I had to cut my papers again, and did so now irregularly with a nick top and bottom: this produced many inconveniences, particularly in the washing, until at last I cut the papers straight down to within a couple of inches of the bottom, when I continued the cut obliquely, which afterwards proved a sufficient guide.

Those papers were chosen from the same maker, and sensitized at the same time, to ensure the same tint after having been in the hypo; but even then it happened that the two sheets turned out with a different tint, and once the smaller sheet yielded a bluish tint, while the larger sheet was of a rich brown, though both were put into the bath at the same time; and, as a curious fact, I must mention that in all of those I have yet printed, the smaller sheets have shown a slightly cooler tint, for the reason perhaps that being of a smaller body it was sooner acted upon. After having printed in all the figures, I had to find a background; and in the place where I reside there is not within some considerable distance any sign of classic architecture. So I went into a friend's grounds and selected from his garden-ornaments and portico what you see, excepting the draperies, which were arranged in my room, which is not twelve feet high; this, however, did not prove a serious obstacle, for if I wanted a curtain of large dimensions I had but to move my camera so much the nearer to obtain the required size, which would be properly tested when introduced into the picture, and so with any other objects I wished to portray. If I wanted to introduce an urn three feet in height, it might be taken from one not more than six inches with the same effect.

In printing, I commenced with the Old Hag, and rendered her so deep as to be nearly invisible, the figure alone being exposed to the action of light. This was effected by first printing from all the negatives upon separate pieces of paper, neatly cutting out the figures, and then, instead of fixing the prints, exposing both pieces to the light until they were blackened all over. By this contrivance I was enabled to cover up, so as to protect from the action of the light, any portion of one negative corresponding in outline exactly to such part as I wished to introduce from another negative. The remaining portion of the sheet of sensitive paper that was not under immediate manipulation was protected by a covering of black velvet. I next printed in the Bacchante, having measured off the distance, almost as dark; then Murder, perfectly bronzed: then Repentance, very deep: next I came to the Group of Idlers, where the highest lights were just covered; then the Dancers rather lighter, and the Gamblers lighter still, and the figures behind yet more so. The Disobedient Youth was then begun, followed by the Sage and the Good Youth, hand in hand; then the two papers were put together, and the Religious Group was printed, when the larger sheet was put by into the dark room, and the smaller sheet was proceeded with in the same way. After all the figures had been printed, the two pillars and the lions were proceeded with: the pillar and lion behind Religion had, of course, to be printed with the two papers together, and the top curtain in a similar manner. Then the archway and the landscape appear, next the curtains, and finally the dark fringe.

When all these were printed, immense faith and determination were still required; for I can assure you it was a motley group: in spite of all the care I had taken in shading some parts in the light that they should not print too dark, and in spite of having used a sun glass for printing through the thickest whites, there was no harmonious whole. The lights and shades and distances for so many figures appeared to set me at defiance; so I put the two sheets together, and covered them with a plate of glass. Now comes the sun-painting. I cover up some parts of the picture, and use a few *rays* and *pencils* of light to just glaze over the gambling group, and using them a little more freely on the hinder figures; I said "thank you," and covered them up (for you must know that I talk a good deal to the mysterious agents while I am at work); "Now please to paint me the background behind them." The rays do my my bidding, and on it goes smoothly and evenly. I can almost see the fluid flow; and knowing from practice how it will be reduced in the hypo. bath, I let the light paint it deeper in appearance than it was intended to be. I then uncover the Idle Group, and bid the light sink one of those figures deeper in the shade. I then solicit the rays of the sun to do the same on the side of Industry, and many of the spots and marks from the printing of the separate figures are then evened by the same brush, and finally the whole top of the picture is exposed; but as such light as I choose works quickly, I must move as fast and guide it well, or there will be marks from his brush: and thus the picture is produced.

My ambition has been that this composition should be wholly photographic. It is evident, that if art were employed to give it the finishing touches, it would be more consonant with what art requires, and equally evident that an abler artist with better means could do a better thing. Nay, I believe that if Maclise were to make a composition indicating light and shade, like some of those splendid series of sketches which were exhibited in the Royal Academy Exhibition last year, I could produce from life a photographic picture that would require but little touching. I dare not say how far I believe we may carry this art; but I have a lively presentiment that the time will come, when a work will be judged by its merits, and not by the method of its production; and then, with some fostering care, things can and will be done, that scarcely believers, and never unbelievers, yet dream of in their philosophy.

Having concluded my paper upon the composition, "*The Two Ways of Life*," I shall be happy to give you a few sketches from my photographic experiences, with the hope that they will possess some points of interest.

In the midsummer of 1855 I was printing a group of several figures, and my assistant was doing the same under my direction; it was a beautifully clear, sunny day, and the sky was cloudless. From that morning's experience I knew how soon to expect the figure to be done, or nearly so. When I thought the third figure sufficiently printed, I took the printing-frame into a dark room to ascertain the progress made, when, to my astonishment, I found there was but a faint image, instead of its being rather over-printed, as I had feared. I was being apprehensive that I had exposed it too long; I first thought that something might have been amiss on that very spot as to the salting or silvering; but, when the printing-frame of my assistant was brought in, and that print examined, and found to be as little affected as my own, I was fairly astonished.

I scanned the heavens, but could see neither cloud nor smoke, nor anything like a red or yellowish light. We brought our frames into the sun again for printing purposes, and on re-examination we certainly found some progress made, though the figures were yet scarcely half done, and not to be compared with what I expected, although they had been exposed for the same period as the first figures. We again proceeded to print; and, after exposing our prints for about the same length of time as preceded our last examination, we again removed them to the dark room. I recollect well that though our respective figures did not require the same amount of printing, we exposed them similarly for the sake of comparison; and now my astonishment was complete, for both our figures were nearly over printed, and I could not see any cause, nor can I now give any reason for the remarkable difference in the results produced. I must here observe that after this we continued to print with the same steadiness and celerity as marked the progress of the first figures; and the only conjecture I can make with regard to the phenomenon is, that there may have been an undulating motion, or shortcoming of the actinic ray. I have not since noticed any similar effects in printing, though they may have occurred. I would not have ventured to mention this fact had I been alone; but the case being similar with both the prints, and having also the evidence of another witness, I thought it worthy of mention.

Another of my experiences I will also touch upon, only in corroboration of what I read in the *Liverpool and Manchester Photographic Journal* of January 15th this year, about the variation of the foci in photographic lenses by Mr. Claudet. I have noticed the same for a couple of years, but cannot give a reason why. I can only guess that there may have been a variation in the actinic ray, as in the case previously noticed, but more perceptible here. In the same Journal attention was drawn to the curious appearance of narrow streaks of light round the edges of objects in some landscape photographs, where the light appears stronger than the sky. That also has occurred to me, but each time there was a humid atmosphere and a prolonged exposure. And in addition to this, I may mention that I have several specimens taken in my room in dull weather, where the white cuffs round the ladies' wrists against a dark dress, and the white strings from a widow's cap which, I have no doubt, has been pointed out as a failure, when it is only an attempt to show against a black dress, have been surrounded with a halo of fainter light spread over the black surface. The hygrometic state of the lens at the time may have been the cause, or I must plead ignorance.

The want of ærial perspective, particularly in the larger landscape photographs, has been one of the causes that has induced me to try to take a picture in different planes separately, and then print them together, which mode I have seen termed "tricks." An extensive landscape taken particularly with a large lens, is not true, nor will it ever be so—the focus cannot be everywhere. Here is a fair specimen of a view from Loch Katrine, taken at once; if it had been drawn by a skillful hand, directed by a correct eye, there would not have been so much detail, but the proportions would have been different and more true; and the larger the lens, the greater the errors. In this picture the focus was taken for the middle distance, between the steamer and the eminence, and that part is no doubt correct; but the distant mountains and the woods are too large, and the foreground is too small. While the camera was in the same place as when the picture was taken, I took another instantaneous view, with the focus for the distant mountains; the camera had to be so much shortened that, when the view was taken, the difference between the two backgrounds was so great that, when lineally measured, it amounted to 3-40ths of an inch, as you may see by these specimens; and, if I had taken a nearer focus for the foreground, the difference between the two pictures, I have no doubt, would have been half an inch, if I may judge by these two photographs, taken by smaller lenses, when the one was focused for the distant mountain, and the other for the immediate foreground. And here the difference is a quarter of an inch—*vide* the specimens produced—and mathematically they must differ, as much as the difference of the squares described, and the angle from the nearest off focused object to the sensitive plate in the more elongated camera; and this is what I think is the cause of the apparent want of ærial perspective. I should be very glad to possess a lens that did not need focusing. I should carry it in my pocket, and with a dry collodion process I could catch positions and expressions in a crowd far better than with my own eyes; for these poor orbs have to obey fixed laws, for they cannot even see a man clearly in the street while looking at a spot on the window frame.

The Chairman, upon inviting the discussion which ensued, stated that he had no doubt that the picture, at any rate, was highly instructive to artists.

Mr. Crace: I must beg leave to express the admiration which I think all must feel. I consider that the picture produced by Mr. Rejlander, of which he has been good enough to furnish us with an explanation, is the symbol of a new era in photography. I think never before have we had a really living scene so clearly and so perfectly portrayed. The picture itself has been severely criticised; and it certainly is to be regretted that two or three figures in it, though, perhaps, not exactly indelicate, verge so closely upon it, as to prevent that *general* approval of the picture which it otherwise would have met with. I am sure that I express the feelings of all present when I say that it is a wonderful performance, and that we are much indebted to him for his open and candid manner in explaining the process by which it was produced.

Mr. Shadbolt: I did not intend to have made any observation, but I cannot let pass the opportunity of expressing also my great admiration of this work of art, and of stating that I most strongly dissent from the opinion expressed by Mr. Crace, that there is *any* position of it which is offensive to delicacy.

Mr. O. G. Rejlander: If some people have thought any part of that picture at all approaching the indelicate, that I cannot help; I never intended it. Six weeks was the whole time that I had to conceive the picture in my mind, to compose it afterwards, to carry it out and deliver it at the Manchester Exhibition. A great many trials had to be made before I could get one at all fit to be sent, without being touched by hand. Perhaps some of the peculiar positions were owing to my wish not to show too great an approach to the pre-Raphaellites and Bunyans. I was anxious to show only what I thought were good lines, and if the models were not perfect, I tried to make the most of them. I carefully selected, and where I could I draped. I tried to show what was good, and hide what was bad, at the same time keeping in view the intention that the figures should plainly relate their own stories, and the morals to be derived.

The Chairman: I will ask Mr. Fry to take the chair for a few moments, in order that I may say a few words, which I think of very great importance to the future interests and to the advance of this art.

Mr. P. W. Fry then took the chair, and Mr. Fenton continued as follows:—

Upon the last meeting of the sub-committee of the Society of Arts appointed to consider the best means of protecting the copyright for works of Art before the adoption of their report, the question arose as to the position which photography would occupy in art, and while every wish was entertained to give pho-

Neg by FABIS from an Engraving. After Rubens.

THE ELOPEMENT OF PHOEBE AND ILAIRA.

BY CASTOR AND POLLUX.

tographers the the fullest *protection* that they could desire for the works that they should produce, yet there was a feeling among the artist members that they (the photographers) were not entitled to take their place among artists, but must be content to take their copyright as *re-producers* of art. Against that position I dissented very strongly, and I am glad to say, not without some success, and, although I was at first outvoted, the matter was again taken into consideration, and the difficulty of giving a direct decision was avoided by leaving the matter an open question. I think that as the question is now before us for consideration, it would be as well if photographers would devote some consideration to it—that they should take the trouble to go to the Photographic Society's Exhibition and look at the attempts that have been made, some very crude, all imperfect, but they are the beginning of the artistic application of photography. I will not refer to this picture, which, with all respect to its very great merit, I think is too ambitious a beginning, and what can be done; but I will refer you to small pictures. I will refer particularly to a picture by Mr. Grundy, of Birmingham, of the Wilkie or Tenier's kind. There is one picture of a Fisherman—a single figure, in which the lines have all been studied, as well as the *pose* of the figure and the *chiaro oscuro;* there is everything but color—there is expression, though no doubt expression of a low order. The question was started whether it was possible to obtain a picture of a high character from the human body? To that picture I would refer as an answer to the question in one form, viz., with respect to a lower description of art. If you wish to answer it with respect to a higher class of art, you have only to take the same pains, and selecting the requisite models, to meet with the same success as has been done with the lower style of subjects. I make these remarks in the hope that they will bring forth approval or dissent, by bringing the attention of the Society to what has been done, and by stimulating endeavors to carry that little to a greater degree of perfection.

Mr. Buss: I think that, notwithstanding any adverse criticisms, they have been passed without appreciating or understanding the immense difficulties under which such a work as that before us has to be performed. The mind of the artist has been completely exemplified throughout, but the difficulties of the camera of course show themselves in the picture, and I am quite sure that those who have adversely criticised the picture are unacquainted with the difficulties of the camera. I am perfectly aware of them, and am astonished to see how well they have been overcome, and I can scarcely conjecture where he went for his models. I cannot allow this to pass without expressing my high appreciation of Mr. Rejlander's production, and I have no doubt, from what has been said, that the art will be advanced by that gentleman.

Mr. Le Neve Foster: Although I perfectly agree with all that has been said with reference to the talents of Mr. Rejlander and the picture he has produced, and although I perfectly concur with every one in congratulating Mr. Rejlander in the attempt he has made in a direction to rescue photography from the reproach that it was merely a mechanical art, still I and several others have come here with the idea that we should not only hear an explanation of that picture, but some explanation of the *means by which it was produced.* If Mr. Rejlander has invented a mode of production, he has an undoubted right to keep it to himself, but I thought from the title of the paper, we should hear some explanation of the means employed. I am utterly as loss to know how he has produced that combination of figures from the various studies separately taken.

Mr. Rejlander: I thought that the paper explained what I meant to convey, but if it did not, and you will be pleased to ask me any questions, I shall be happy to answer them. I think I stated that I first commenced to print the figure called Hag, [pointing to the figure in the picture placed against the wall.] This was then a large plain sheet of sensitive paper. I put the negative of this Hag upon it, and carefully excluded the light from every part except the figure, and the black velvet with which I covered the whole plate, with the exception named, was wrinkled just round *this* figure; while the sun shone, according to the intensity of the light, the velvet was moved so as to prevent any lines: if the chemical light was very strong, it was moved very quickly; if it was slow, of course it was not moved so fast. After a while I looked at it, and if I found that it was as much over printed as I wanted, knowing how it would come out, I have taken that paper out of the frame in the dark room, and I then applied *this* negative [pointing to another figure in the picture] as before, but in the place where I intended this figure to be, and of course, as before, I excluded the light from the entire sheet of paper, as also from *the* figure (the Hag) already printed; and to be sure that the half tones on this side may be kept intact, I had another Hag printed and cut out very neatly, without being fixed, and subsequently allowed to blacken of itself. It ought to be albumenized, not plain paper, because plain paper is apt to slip, and albumenized paper, if it is slightly damped in distilled water, will stick in the place when applied over the printed part, while I examine it now and then. Thus I have gone on with every figure, until I came to the background. Every one was done in the same way; all were covered up, except what was to be printed, and I printed some, as I said, very deeply, and some others not so deeply; some slightly, according to the distances required; and after having printed all, as every one of these figures had been taken in the same light, all equally strong, in order to give gradation of tone, having covered up all these, I exposed *this* group, for instance to the light, and it had the effect of apparently weakening the shades, while the lights were intensified. Each figure was taken separately, each with separate backgrounds, as happened; one was an easel, another a warming pan. Of course I had a right to stop that out; then I covered up every part, and I exposed parts alternately for a considerable time, so as to give value to *this* figure, and went on from one to another, until I got them more perfect. I should say it was done, the whole thirty figures and all, in six weeks, and that was a year ago. I hope that next year I shall do something better, and I shall take very great care not to lay myself open to animadversion upon the ground of indelicacy.

Mr. Monson: I have seen Mr. Rejlander down at Wolverhampton; he has a very small operating room in a mining district, in such a very bad town to obtain subjects that I do not know how he managed it. If you were to get up a picture in London you would, perhaps, procure them readily; but Wolverhampton is the most unlikely place in the world for such a purpose. I was so interested in the subject of Mr. Rejlander's picture, that directly I saw his name down to give a lecture I travelled up to London to hear it, and very much gratified I have been with its explanation.

Mr. Buss: May I ask if the picture was entirely produced at Wolverhampton?

Mr. Rejlander: Yes.

Mr. Monson: I think it a meritorious affair to produce large pillars from small models and so on.

Mr. Crace: We must not forget other pictures that we have seen of Mr. Rejlander's with figures in action—we could not easily forget the washing scene, with figures hanging up the clothes and others in the suds, which could not be produced without a great amount of genius on his part, and practice in the drilling of the models to get them perfect; and then again, that scene of the factory boy and his sweetheart walking one day in their working dresses and the next day in their holiday attire. I consider that photography is materially advanced by the way he has produced absolute pictures, and while looking at this one we should not forget the smaller works that have led to the great one.

A Member: Will you allow me to ask how long the picture has taken in printing, because if you keep a paper long after it has been excited the high lights take a tint of yellow.

Mr. Rejlander: It takes three very fair days, but if you employ albumenized paper you may accomplish it sooner, but if you are careful you may keep it perfect three or four days. It has happened sometimes that some of the lights have been slightly tinged, but not more than has been obviated by immersion in the hyposulphite of soda. It takes three good summer days to produce a picture like this one.

The CHAIRMAN (exhibiting a photograph): Mr. Rejlander requests me to show this picture to the Society as illustrating a most important point in art. You may notice the muscles of the fore-arm are very much contracted, while the rest of the muscles are comparatively inactive, some of the muscles are so contracted that if they had been seen in a painting, it would have been pronounced an exaggeration, but it was really the momentary contraction.

Mr. REJLANDER: There is among artists a conventionalism that when a man is drawn of great muscle, for the sake of keeping, all the muscles in the body are drawn apparently equally developed, which could scarcely happen. I want to show that of those muscles which are greatly excited, the opposite ones are just as quiescent. If any man presses me hard *here* (placing his hand upon his arm) *this* will be developed, and *these* muscles (*here*) will be perfectly flaccid. I hope photography will do art so much good that people will know that all the muscles should not be painted in action because some are.

Mr. POUNCEY exhibited some photographs which he alleged to have been produced by printing in the pressure frame in such a mode that the material forming the picture is simple carbon. He stated that he was not prepared to communicate the process, it being, in his opinion, one of value, and his means not allowing him to forego any advantage to be derived from it.

A long and somewhat personal discussion then ensued, but as it is contrary to the established practice in any of the Scientific Societies to discuss *at all* any matter not freely communicated, we decline to repeat it.

The meeting then closed.

From Photographic Notes.

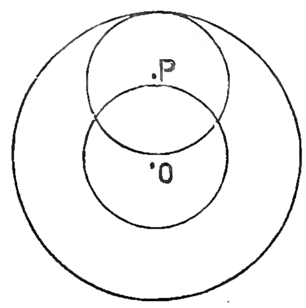
M. PETZVAL'S NEW LENS.

Letter from M. Petzval to M. Paul Pretsch; translated by the latter:—

Several articles in English journals have shown me that some people there are favoring the results of my researches with their attention. But there is also M. Voigtlander, who states having known my new lens for many years, and somebody else, who declares having obtained full particulars from myself. Although I have published a detailed treatise about these matters (a correct translation of which into English I should like very much to see published), it seems, nevertheless, that the real qualities of this new production are not sufficiently known. I take therefore the liberty of making some observations for this purpose, and should be much obliged to you if you would make them known in some Journal connected with this subject.

One of these observations relates to the smaller aperture of the second lens of my objective, the real cause of which I think is not well perceived. Every combination of lenses, invented for any purpose, suffers, as a matter of course, some imperfection, known by the name of aberrations. It is not possible to remove all, because there are many of them. We must be therefore satisfied to remove the most troublesome, and to compensate or balance the remaining ones amongst themselves. These remaining ones consolidate the natural ability, the special character of the instrument, limit the aperture and degree of sharpness, cause sometimes the use of a diaphragm, to which they give a certain place. In the combination for views, this place for the stop is near the place of the second lens, therefore the mountings of this lens can be used as a diaphragm. For the same reason the place of a diaphragm in a portrait combination is in the centre of the tube, between the two lenses. These circumstances regulate the proportions of aperture, and if, in a combination for portraits, both achromatic lenses can possess the same aperture, it is still necessary to diminish, in a combination for views, the aperture of the second lens. But, if we are not afraid of a little sacrifice in glass, which is connected with a repeated enlarging of the front lens, this diminution serves also for another purpose, viz., perfect equality of light in the centre, as well as in the extremest corners and edges of the picture, a peculiarity which will be appreciated in future more and more.

To make this more clear, we may imagine two cylinders of rays of light, the first one falling in parallel to the axis of the instrument, and representing a dot in the centre of the field of view;—the other one inclining to the axis under the half angle of view of the instrument, and representing a dot on the utmost corner. The full aperture of the second lens is efficient for both cones of rays, but not the full aperture of the first one. If the aperture of the first lens is 36 lines (one line equal to one-twelfth of an inch, therefore 36 lines equal to 3 inches), the cylinder of the central rays possesses in falling in a diameter of 36 lines (3 inches), yet it is transformed after the refraction by this lens into a cone of rays which has at the place where it reaches the second lens, only a diameter of 32 lines ($2\frac{2}{3}$ ins.) of the section. However, this quantity of light will not be admitted through the second lens, because this lens has not 32 lines, but only 24 lines (2 inches) aperture. Therefore the edges of 4 lines ($\frac{1}{3}$ of an inch), round the first lens, are not efficient or active, and form the sacrifice which has been made to the equal distribution of light. Consequently the objective acts like a combination of lenses with an aperture of 28 lines ($2\frac{1}{3}$ inches), which is now equally available for all the bundles



of rays, with the only difference that the aperture with the centre O acts for the central bundle, but the aperture with the centre P for the utmost edges of the picture, the last one touching the edges of the lens. All these are fixed proportions, which are founded in the nature of the matter; they are therefore not at all arbitrary, and I can only add that such a lens *must* possess the aptitude of producing by the given proportions of aperture without any diaphragm the sharpest picture of an object suitably placed.

I have found in some papers the opinion expressed that this new lens is especially constructed for taking views, and not at all available for taking portraits. I am convinced by the profundity of the theory, that it is not so. With some sacrifices in optic means, namely, by adding two lenses more, we can obtain such an important advantage in light, that this will become really practicable. Moreover, I think that we might, under favorable circumstances, for the sake of the extraordinary beauty of the pictures, and of their plastic appearance, prefer the use of the view combination for taking portraits, because the time of exposure is not much more than double the amount.

M. Voigtlander asserts in his letter about these matters that this new lens has been known to him for 17 years, and has made this assertion also to the Imperial Academy of Sciences in Vienna—that among the unsuccessful trials made at that time for the purpose of carying out some of my calculations, had been a similar lens;—I had been, as usual, not satisfied with his productions,—and some little things, for instance the proportions of aperture, differences of about three inches in the diameter of curvatures, which reach the absolute value of one-sixth, were no matter of importance, if only the principle be the same. He considers therefore the matter as an old acquaintance, and gives it the name of "Orthoscopic objective."

I wish to reply hereto briefly. There is only one principle in all optics, and this is the law of sines of the refractions; all combinations of lenses, whatever they may be, must be constructed according to this law. Therefore in this respect M. Voigtlander is right, if he means that this new lens is constructed according to this old and well-known principle. He possesses also the merit of having been the first who executed, 17 years ago, the well-known portrait lens, calculated by myself, but known by the name of Voigtlander's. After I had broken off every connexion with him, and not communicated to him any new theory, or formulæ, or tables, he was obliged to go his own way, and has in fact invented the chemical focus. I am unable to appreciate this new invention of M. Voigtlander's. I consider it rather a great "misère" of photography; he has therefore all the merits of this invention for himself, and has in in fact (the short period of 17 years excepted), never, and in no way worked according to my calculation, does not work even now according to them, which is proved sufficiently by his chemical focus, boasting in his price list under my name. If the calculation of the new lens was communicated to M. Voigtlander seventeen years ago, there arises reasonably enough the question, "why has he kept from the photographic world during seventeen years this valuable production, the want of which has been felt long ago?" But perhaps he might have wanted seventeen years for inventing the very nice name "Orthoscopic objective," which invention would not have been due to myself.

M. Voigtlander says also that the camera with the movement on a prism, and the surface of the image inclining to the axis of the instrument, is a very ingenious arrangement, but not necessary at all, since everything can be obtained with an ordinary camera. But I myself have found this camera indispensable for the view lens, because the nature of the lens requires the inclination of the surface of the image to the axis of the instrument. And there arises the question again, how it happened that M. Voigtlander could have known this lens during seventeen years, remaining in perfect darkness about its peculiarities. No doubt he might be very glad to put his name besides my own; this is quite natural, and somebody else thinks the same, but the mode and manner in which this has been carried out is more than ingenious.

At all events I am obliged to assert that at present nobody works according to my calculations, except the optician, M. Dietzler, in Vienna.*

M. Voigtlander's memorial to the Academy of Vienna has been rejected as an absurdity.

Please to translate these my observations into English, and make them known in some of the photographic Journals.

JOSEPH PETZVAL.

Vienna, May 20, 1858.

From the Liverpool Photographic Journal.

PIN HOLES IN NEGATIVES.

To the Editor of the Liverpool Photographic Journal:

SIR,—Will you, in an early number, explain to me the cause of fine pin holes in a collodion negative printing black in the positive. The negative was developed with—1½ grains pyrogallic acid, 15 minims acetic acid, 10 minims alcohol, 1 ounce water. Yours truly, J. Y.

[The defect complained of may arise from one of several causes, viz.:—1st, if the nitrate of silver bath be not properly saturated with iodide of silver the plate would be partially affected by the dissolving out a portion of the iodide, as soon as produced by the double decomposition. 2nd, particles of matter (oxide of silver for instance), in suspension in the bath become deposited all over the plate, and in those parts prevent the action of the developer. 3rd, a similar effect would be produced by a discolored developer from a like cause. 4th, the collodion may be filled with minute bubbles of air in consequence of having been shaken up, or other causes. *Remedy.*—Leave a plate coated with sensitized collodion in the bath all night; filter the bath into a perfectly clean vessel; see that the dipper is perfectly clean and *dry*, or if moistened, it should be with *distilled* water. Filter your developing solution or make it afresh. Omitting the alcohol. The introduction of a small quantity of common water, though of little importance generally, will *occasionally* cause that defect, by the formation of a small quantity of chloride of silver *in fine powder*; this is more apt to be the case where the nitrate of silver bath is an old one, and surcharged with organic matter. The use of the developer after it has become discolored, either on the plate or before, is also frequently the source of this annoyance.—ED.]

* Whose sole Agent in England is Mr. PAUL PRETSCH, 67 Great Portland street, London, W.

For the Photographic and Fine Art Journal.

SMALL MATTERS.

With the Heliographer, as with every other professional person, and indeed with all of whatever vocation or condition, things, which *in themselves* small, are not unfrequently of very considerable moment.

For example, how much may the beauty and attractiveness of a portrait be enhanced by a graceful lock of hair—an easy fold of the dress—the point or slight glimpe of the collar, or the wristband, or the cravat! It is not unimportant, then, that the Heliographer should secure these graces, with a little care and proper adjustment.

So, too, a lady's hair may require the operant's attention. Her dress should fall easily and gracefully, both sides being balanced or correspondent; while the head should be neither too high nor too low, and the eyes should be fixed upon some object in the proper direction—a circumstance which will give them the best expression, and one conforming to the attitude of the body, position of the head, &c. All these individually "small matters" are, in the aggregate, of inestimable value, and constitute the difference between a highly artistic and pleasing picture and a worthless shadow. The things required should be seen at a glance, and quickly adjusted without any appearance of hesitation or of study by the artist at the camera.

Such attentions will be rewarded with success, and the artist's judgment and skill will prove highly valuable to the establishment, provided everything be done in a graceful and pleasing manner.

I have known some very skillful manipulators, who were yet very disagreeable and injurious to the establishment, while permitted to manage the camera and control the sitting department. All things were performed *mechanically;* and every word they uttered before an intelligent sitter was proof positive to him of their unfitness to occupy the post of artist at the camera. No energy—no feeling—no politeness—no *socialness*—but cold, dull, rough, morose; a person of this cast is excessively disagreeable and offensive to the sitter—a fact, which is generally indicated by the entire aspect of the portrait taken. By consequence, the Art is degraded and condemned in this country. Such a man has either mistaken his vocation, or he has wantonly compromises the character of his Art and the interests of his employer and the reputation of the gallery he occupies.

The "small round lights" on the eyes are indispensable, in order to impart thought or meaning and expression to the face; yet numerous persons, possessing sound judgment in other matters, will find fault with, and refuse a good daguerreotypic or photographic likeness on account of the "small lights in the eyes"—remarking, that they look like "cataracts" on the eyes. There may, indeed, be truth in this remark, unless the light spot is *very small* and located close under the eyelid.

They, moreover, frequently object to a good picture, because of its boldness and strength and depth of its shadows—the very circumstances which give it rotundity, truth and beauty—and wish it to be light, flat, and without shadow. The fault of such lies in their judgment—the result, perhaps, of a bad education.

A learned Professor once remarked to me, that *his* portrait was perfect in every way, both as a truthful likeness and as a work of Art, with the sole exception of the "cataract" on the eye—each eye having a very small round light spot close beneath the edge of the upper eyelid, which was secured with some difficulty, and gave to the eyes a bright, life like expression.

These are specimens of some of the drawbacks and difficulties to be encountered and explained to the ignorant or misjudging by the enthusiastic practitioner of the Heliographic Art.

Another person, who was a better judge of works of true Art, on seeing a bold, round, artistic picture of himself, just taken, beside another of a different stamp, exclaimed, "look! here are productions of different men—mark the contrast between these two portraits of the same individual! Both are good, as daguerreotypes—good, that is, *chemically* and *mechanically*—but one is the production of a *mere mechanic*, while the other exhibits high artistic skill in the handling. The first is without expression—a flat, meaningless shadow—while the other is a round, truthful, life-like representation of the original face, full of intelligence, thought and meaning. I see it now—the mystery is solved—the secret lies not in the instrument, or the materials, one or all. It is in the *man*—the man, who is thoroughly qualified for, and whose soul is in his Art!"

Perhaps these miscellaneous scraps may be of some utility, as *suggestives*, to my brother Heliographers. If you so judge, Mr. Editor, they are at the service of your *Journal*.

M. A. Root.

Philadelphia, April 28, 1858.

From the Photographic Notes.

PHOTOGRAPHIC HINTS AND SUGGESTIONS.

MR. TAYLOR'S PAPER.

I will tell you how, on a recent occasion, I made the most of a lens. It is a landscape lens, 18 inches focus, but the camera to which it was attached would only expand 11 inches. I got a set of long focus unclipped meniscus spectacle eyes, one of which I inserted under the diaphragm. This reduced the focus to the desired length, and the resulting picture was very sharp. I was so pleased that I tried the converse of the experiment, viz., by a con*cave* lens to *lengthen* the focus. In this I was successful. I advise any of you to try this, by all means, as the cost is so small. Unfitted biconvex spectacle eyes, round, and about 1 inch diameter, only cost 9d. per dozen; meniscus and bi-concave about three times that sum."

Mr. Taylor then describes a pair of lanterns he is having made, for exhibiting dissolving views, transparent photographs, &c. He says,—"The object-glass is an ordinary quarter-size achromatic combination, of a rather short focus. Pictures, when exhibited through such achromatics, are exceedingly sharp compared with the ordinary object-glasses." He uses the lime-ball light and oxyhydrogen gasses, and places a condenser between the light and the picture, the object-glasses being in the focus of the condenser. He proposes also to place a parabolic reflector between the condenser and lime-ball light, and asks if any one will advise him on this matter. [We consider Mr. Taylor's arrangement quite correct in principle, and the parabolic reflector an improvement. The portrait lens, No. 1, makes an excellent lens for the magic lantern. When the two lenses of a stereoscopic camera are used in dissolving view lanterns, a pair of transparent styreograms may be exhibited on the *opposite* walls of an apartment, and viewed by reflectors. This application of the Stereoscope is very important, and has yet to be worked out. The oxy-calcium light is very good, and the oxygen very easily made. It is less dangerous than the other, and the light very white and brilliant. We exhibited a set of Mr. Firth's views of Egypt, in this way, the other evening, and they were greatly admired, but we had unfortunately only one lantern. Copies of sculpture, on a black background, exhibited in this way, are very fine; and so are portraits, when good.—[Ed. P. N.]

MR. R. L. JONES' PAPER.

"Two subjects are at present very interesting to Photographers; perhaps the most of any is Permanent Printing, and a Dry Collodion Process that shall be in all respects satisfactory.

"With regard to the former, I am disposed to think that the processes of development are the only ones to be relied on with certainty, and at present I am inclined to follow that of Mr. Sutton, last published, where he prepares his paper with salt and lemon-juice only. I find that with slight exposure and long development I get fine blacks, and with longer exposure and cutting the development rather short, I get good browns, which nevertheless appear to have gallic acid enough to render them permanent. I enclose a specimen of the latter, which, to my eye, presents a very pleasing color, more like a drawing than an engraving, which is what I think we ought to aim at. It is *printed on* 'Papier Saxe.'

"With respect to the latter. Dr. Hill Norris's and Mr. Long's process seem to do *almost* all that we need; the tenderness of the film is a drawback, but the especial difficulty I find is that of their requiring a neutral exciting bath, and therefore there is a continual liability to get out of order. Now the albumen upon unsensitized collodion, if it could be successfully carried out, would be as simple as the gelatine process, and would enable us to add acetic acid to the exciting solution and to keep it always in order.

"Will some of our contributors turn their attention to this? That is, to Collodion—unexcited if possible—and covered with albumen, or something that will bear an acid bath. I have had some fine negatives on waxed paper, but unless much washed, a single hot day will deteriorate it, and if much washed the exposure must be *very* long. With Long's Dry Collodion I have to give five minutes in the sun at this time of the year."

MR. G. C. WARREN'S PAPER.

"I am sorry I cannot give Mr. Taylor any advice regarding Parabolic Reflectors for his Dissolving View Lanterns, but I would like him to try an experiment with the Lime Light when his apparatus is complete.

"During last summer I managed to enlarge several small negative portraits to life size, upon Iodized Paper; the exposure varied from five minutes to half an hour. This comparatively dull weather prevents my obtaining a good picture in any reasonable time, so I have thought of trying Artificial Light, and think the Lime Light would be the best to adopt. If Mr. Taylor, when his apparatus is in working order, will just pin up a piece of sensitive paper (Calotype) at the focus of his enlarged picture, he may very possibly obtain an impression; if so, the use of the Lime Light in his lantern will be an advance in the Art of Photography.

"Dry Collodion Process.—At present I am much inclined towards a modification of Long's Gelatine Process. When I first tried this method, as published, I could not keep the film on the glass, nor could I prevent my negative developing unevenly (I used pyro gallic), owing to the innumerable blisters formed. I tried Long's and Hill Norris's Collodion, but both were the some; thinking over the matter, the following ideas struck me:—

"The gelatine in drying will contract, and when again wetted will expand or swell, and at the same time be almost sure to move the collodion with it. You are sure to have innumerable hills and dales. It at once suggnested itself to me to dilute the gelatine and introduce some ingredient to prevent its drying so hard and horny, or contracting so much, I introduce either honey or dextrine, or both, about 1 drachm to 20 ounces of gelatine solution. This I find has the desired effect, and the plates can be developed with the pyro-gallic solution without fear of blistering, and, with proper collodion, without coming off the glass. My method is to make the preservative solution according to Long's formulæ, and then add an equal bulk of water, for instance, if I make 10 oz. of Long's Preservative solution, I add to it 10 oz. of distilled water, then add the honey or dextrine.

"Instead of using honey to preserve plates for a short time, I find the ordinary syrup (simple) of the chemists', adding half a grain of citric acid and half an ounce of water to each ounce of syrup, much better, and more likely to produce a picture free from stains. The enclosed developed print by Mr. Jones is the best specimen of the sort I have met with, still there is the same want that we experience in all developed prints, the want of richness and depth, *combined* with transparency in the dark parts and shadows. I suppose we shall get over it just in time to welcome an entirely new process, such as the Printing Direct in Carbon. I tried, some months or more back to print in a similar way, as Mr. Sutton suggests, with bi-chromate of potass and and lampblack. Lampblack is too coarse, even the finest. Indian ink would be better, or perhaps a mixture of transparent water colors, as lake sepia and indigo, but I do not think this way will answer well at all.

"If the Panoramic Lens can be worked well it will be just the thing that is wanted for views. It must have occurred to many besides myself how much better the pictures would look if we could but include a larger angle; it will add greater interest to the picture."

MR. R. RIMMER'S PAPER.

"Our friend Mr. Jones, in his remarks on the Dry Collodion Processes complains most justly of the tender films which they but too often produce. I have no doubt that this *may* be avoided by employing a suitable sample of collodion, which it is, however, almost impossible, with any degree of certainty to procure. I have more than once gone to the fountain head, and employed that prepared (or, all events, *said* to be prepared), by Hill Norris himself, but there was always the same blistering and peeling off of the film. I believe that Mr. Berry ot Liverpool, can supply a sample of pyroxyline, expressly prepared for the Dry Process, with which any amateur may make most excellent collodion. For my own part, however, I much prefer the Honey Process, it steers as it were a middle course; it is neither absolutely wet, nor absolutely dry, and is capable of producing negatives which no other process can easily surpass, while its keeping properties are, for all ordinary purposes quite sufficient. *In medio tutissimus ibis.*

"In the employment of honey moreover, Mr. Jones need not in any way distress himself about his nitrate bath. It is quite true that honied plates, being moist, are not *quite* so easily packed as those perfectly dry, still I would rather endure this than experience the mortification of finding a long day's toil rewarded only with tender and blistered films.

"I enclose a view of the South Porch of Lincoln Cathedral, taken on a honey plate, and am sorry that I have not a better print to vindicate the claims of my favorite process."

MR. SUTTON'S PAPER.

"I enclose a few little specimens which will no doubt interest you. One is, a print in carbon, by Mr. Pouncy; another a transferred daguerreotype; another, a negative on collodionized paper; another, a positive on the back of an address card; and the last, a positive transferred from glass to leather by damping it with spirits of wine. The great novelty is of course the print in carbon. If you examine it narrowly you will see that the paper was first blackened all over, and the photograph fixed in carbon by means of bi-chromate of potass. Observe how remarkably clean the lights are, although the paper has once been blackened all over; they are in fact whiter than the paper was originally; that the paper *was* blackened all over I have no doubt, because Mr. Pouncy has himself told me so, and as for the bi-chromate, you may *see* it, at the bottom of the paper, at the back of the paper, and by transmitted light. I find that if I first gelatinize a piece of paper, and then blacken it with printer's ink, the most adhesive stuff of all, the whole can be removed on the following day by a boiling hot solution of soda, and the paper left rather whiter and cleaner than it was at first. Again, if a piece of paper is rubbed all over with stone blue, dried, and then a solution of bi-chromate applied, dried and exposed under a negative,—and lastly, soaked in a hot solution of soda, the whites become perfectly clean, and the dark parts are absolutely fixed to the paper. We are assuredly on the eve of an important change in the printing processes, and this will open a new branch of industry to hundreds, and give Photography an immense spur onwards.

"As tor the Panoramic Camera, I am quite satisfied it will answer. It is a mere question of £ s. d. to get the mechanism of it perfect.

"I am now unfortunately greatly occupied with a Dictionary of Photography, which will be published next month, or I should have more time to experiment with the carbon printing; but I hope Mr. Pouncy will soon publish the details of his manipulation. I consider that great credit is due to him for what he has done; and I hope he will be adequately rewarded for it."

HONEY PROCESS.

Liverpool, March 13th, 1858.

To Editor of Liverpool Photographic Journal:

SIR,—I am emboldened by your kind and very satisfactory answers to enquiring photographers, to request the favor of your furnishing me with the formulæ for your honey process—as to the collodion, bath, honey syrup, and developing solution. A paragraph on this in the Journal would be very welcome to many amateurs looking forward to a summer's campaign; and no doubt you have effected improvements in the process to render it worthy an additional notice. A constant subscriber, I would take the liberty also to say that I go to the country early next month, and if you would kindly send me a memo. of the formulæ direct I would feel much obliged.

I am, sir, your obedient servant,

VALE SALVE.

[It would be quite incompatible with our arrangement to answer correspondents except through the medium of the *Journal*, but in this way our best assistance will be always cheerfully accorded. The collodion we prefer is one that is somewhat old, thick, and which forms an absorbent film, in fact; that which for other purposes is generally regarded as spoiled, the sensitizing bath, the ordinary thirty grains of nitrate of silver, saturated with iodide of the same base. If you have to make a new bath we prefer Mr. Hockin's method of adding about a drachm of the iodized collodion, shaking well, allow it to settle, and filter. The honey solution: equal volumes of the liquid portion of the honey and distilled water; stir well, and filter. The filtration is somewhat tedious, and if the syrup be very thick, a little more water may be added, just enough to permit it to pass through the paper. Developing solution: two grains of pyrogallic acid, one ounce of distilled water, and one grain citric acid. Having coated and excited your plate in the ordinary way, drain it well for about a minute, then pour over it a sufficiency of the syrup, beginning along one edge, and causing it to flow in a steady wave towards the opposite side, driving the free nitrate of silver before it; this may be done several times with the same portion of syrup, and continue until there is no tendency to streakiness, then stand on edge to drain: the face of the plate should be towards the wall, resting against a slip of glass, and with one corner down in a porcelain dish, the lower edge being supported over the opposite rim, thus there is an inclination towards one corner. The plate should be left for about a quarter of an hour at least to drain, and may then be removed to the dark frame, or left until convenient. The exposure of plates thus prepared should take place within the next twenty-four hours; if desired to be kept longer, they may after being drained say for five minutes, be again treated as at first with a fresh portion of syrup, and they will then be fit for use for some weeks; but the requisite exposure will be longer than before. If we require plates to be kept for any length of time, we prefer Dr. Norris's dry plates, but if for use the follwing day, our predilections are in favor of the syrup, especially as we can always *convert* a plate prepared with syrup, if not used when expected, into one of Dr. Norris's by washing off the latter, and pouring on a hot solution of gelatine. The washing may be considered complete when a drop of the water from the plate ceases to have either a metallic or sweet taste. Develop the syruped plate by first immersing in water for an instant, in order to allow the solution to flow without check, which may be poured on as with a fresh plate. When sufficiently intense, wash and fix with *hyposulphite* of soda, *not* cyanide of potassium, and subsequently wash copiously to remove the hyposulphite. If the details are all perfect, but the intensity deficient, this may be increased to almost any extent by another development before drying the plate, only adding a few drops of the nitrate bath before pouring the pyrogallic acid solution on. Lastly, wash well, but no further fixing is necessary.—Ed.]

From the Liverpool Photographic Journal.

BINOCULAR AND STEREOSCOPIC VISION.

To the Editor of the Liverpool Photographic Journal:

Sir,—In reply to your query respecting an instrument which has lately occupied some attention, termed the *Telestereoscope*, I have to state that I made a similar instrument upwards of five years ago. It consisted simply of four rectangular pieces of looking-glass mounted upon a flat staff of wood four feet long; the two pieces fixed in the middle of the staff were inclined at an angle of 45°, the vertex being towards the observer. Two eye-holes, about one inch in diameter, were cut through the wood to admit the reflected images from the fixed mirrors into both eyes. Each mirror at the *end* of the staff was hinged at its base, in order to adjust the degree of outward inclination for objects more or less distant, and to direct the first reflected image on to the two mirrors of 45°, and from thence to the eyes.

Some of the effects of this piece of apparatus were very remarkable: objects so far distant that the ordinary angle of vision of the two eyes was not sufficient to enable one to appreciate their size and relative positions, were brought into high stereoscopic relief, strongly persuading one of the fact that for long ranges, at least, there is considerable advantage in taking a *hippopotamus* view of distant objects. On the other hand, the use of the instrument on near objects was instructive, *but not satisfactory*, in producing a true stereoscopic effect—for example, on standing at the end of a row of pillars, or trees, both sides were seen at the same time, producing a double image. The outer minor required to be adjusted to a range of at least fifty yards before agreeable or correct vision could be obtained.

These adjustments proved to be a matter of such nicety that it occurred to me the instrument might be usefully employed as a means of approximately measuring short inaccessible distances, up to about 1000 yards, by attaching a lever index to the arrangement for simultaneously moving the outer mirrors, which lever would point out the distances, upon a properly divided scale. I have also now before me another instrument constructed about the same period. This is just the converse of the preceding. The vision from the two eyes being carried *inwards* or brought together by means of reflecting prisms through a small aperture over the bridge of the nose. This apparatus is figured and described in the transactions of the Microspical Society, contained in the *Quarterly Journal of Microscopic Science*, for May 25th, 1853, from which I quote the following passage.

"On looking through this instrument without the magnifier, a singular illusion is produced, for the vision with the two eyes is brought so nearly to a state of parallelism that they are in effect blended into one, and we so far lose the power of appreciating distance that we appear able to grasp objects several feet away from us, as the deceptions arising from monocular vision are increased, by seeking with both eyes from the same position as with one."

There has been much discussion with reference to the proper angle for obtaining stereoscopic pictures; but if the angular position from which the two objects are represented is to be considered simply as a means of *giving the appearance of solidity and relative distance*, then, I take it, that any degree of angle that will produce the desired effect is correct and advisable. The argument against a large angle is, that we then *do not* see the objects similarly correct in size and proportion as seen with the naked eye; but that the distance between the eyes is not sufficient to meet many cases has been repeatedly shown. On looking with both eyes at a landscape, a building, across a broad river or valley, there are many conditions which enable us to form a correct idea of size and position, which cannot be included in a camera picture. There may be moving clouds in the background. The eye has the power of making instant comparison by glancing quickly from object to object, and scanning the space from the feet to the place observed. Now set up the camera, and take two pictures with the lenses the same distance apart as the two eyes, the result will be a flat picture deficient in stereoscopic relief, because the conditions I have referred to are wanting, for no camera lens can ever be made to give the same *panoramic* indications as the eye. I have supposed a case where even the foreground cannot be delineated. Move the camera some feet asunder for each picture and a good stereoscopic result will be obtained, free from distortion, and giving a *correct idea* of the form and size of the object. I have no hesitation in stating, that for a very distant object, where no foreground can be shown, (such as a rock, or a ship at sea, for example), the camera may be moved as much as ten or fifteen feet asunder with advantage. This I frequently have been obliged to do in cases where, with the *usual* angle, I could not obtain any stereoscopic effect at all.

I consider it simply absurd to set down *one* definite distance between the points of vision for *all* ranges; as well might we expect to obtain a stereoscopic picture of the moon with the ordinary stereo-camera. In illustration I would allude to the beautiful stereoscopic pictures of the moon, by Mr. De La Rue, taking during her librations—equivalent to an angle of vision from two points exceeding *four thousand miles asunder*.

I am, dear sir, yours faithfully,

F. H. Wenham.

ON DEVELOPING NEGATIVES WITH IRON.

Aberdeen, April 7th, 1858.

To the Editor of the Photographic Notes:

Sir,—You have on several occasions been good enough to mention with unqualified praise some of my Stereoscopic Views which you had seen, remarking at the same time that you understood them to have been developed with the proto-sulphate of iron. This is not altogether correct, however, for I use both pyrogallic acid and proto-sulphate of iron, according to the circumstances of the case require, indeed I sometimes use both of them in developing the same negative.

Almost all the Scottish photographers that I am acquainted with have used iron as a developer for years, and Mr. Tunny, of Edinburgh, who instructed me in the art five years ago, has used it, if I mistake not, since 1851. I cannot claim any merit therefore on the score of originality; and I suspect it is more in the manner of using it, and being careful in choosing subjects and timing the exposure, than from any superiority that iron has over pyro-gallic acid, that my views are said to be excellent. When my subject is well lighted, I prefer pyro-gyllic acid as a developer, but when there is great contrast in the picture, and an undue portion of deep shadow, then iron is much to be preferred.

When proto-sulphate of iron is used, a much shorter exposure in the camera is required, and when uncertain about the proper time I begin to develop with pyro-gallic acid, and if all the details come up I develop in the usual way. If the plate appears to be under-exposed, however, I wash off the pyro-gallic acid; when the negative is half developed pour over it a solution of nitrate of silver, from a little kept in a measure for that purpose, and then dash on the solution of proto-sulphate of iron.

This brings up the details at once, and often saves a negative that would have otherwise been useless.

Before taking the camera to a spot, I find it a good plan to make a previous visit on a day when nothing else can be done, and after taking the bearings as it were, and choosing the best point of view, the hour of the day when the subject will be best lighted will be more easily determined. This saves time when you come back to work on a fine day, and often prevents the annoyance of walking to a spot with all your apparatus, in the early morning, and making the discovery that it will not be properly lighted till the afternoon. When I pitch my camp opposite a good subject, perhaps 50 to 100 miles away from home, I think it foolishness to come away with one or two bad negatives, if, by a little perseverance, or by waiting a day or two even, I can bring home a perfect one. Perseverance, and as you remarked some time ago, "a little artistic knowledge, and a little common sense," are more to be depended upon than peculiarities in the developing solution. These are not to be neglected, but I believe that any little excellence my works may display, is to be attributed more to some artistic knowledge than to any little excellence in the Chemistry of Photography.

I hope, therefore you will continue to advocate the claims of Photography, as an art, and to uphold its dignity in an artistic point of view, as you have done, almost alone, hitherto.

Your most obedient Servant,

Geo. N. Wilson.

From the Liverpool Photographic Journal.

THE HISTORIC SOCIETY OF LANCASHIRE AND CHESHIRE.

Although the formal amalgamation of the Liverpool Photographic Society with the Historic Society of Lancashire and Cheshire has not yet taken place, the preliminaries are all satisfactorily arranged, and the union has in reality commenced.

On Thursday evening, the usual meeting of the members of the latter society, held in the Grand Jury room, St. George's Hall, was considerably augmented by the presence of a number of the leading members of the late Photographic Society.

P. Macintyre, Esq., M.D., having taken the chair, the minutes of the previous meeting were read by the Assistant-Secretary, Mr. Jean, some donations were announced, and a variety of subjects of scientific and literary interest were exhibited. Those relating to photography included, by Mr. Atkinson, a patent American solar camera, the reflex of the sun being received on a looking-glass attached to the camera in a horizontal position, and fitted with appliances which enable the operator to place it at such an angle as to transmit the likeness through the lens to the prepared plate.

Mr. Forrest stated that, with the assistance of this camera, they could get impressions life size. It was going to Woolwich on the following day ; but, before it was sent, he thought it of sufficient interest to submit it to the society. It was a very high class instrument, was the latest new work of the kind out, and its cost, he said, was £20. The camera created much interest.

Mr. Forrest exhibited a new lens, manufactured on Prof. Petzval's principle, by Messrs. Voughl and Fra, Berlin. It was composed, he said, of three glasses, and its peculiarity lay in the preservation of the lines of buildings perfectly straight.

Mr. Glover exhibited a stereoscopic view of Dr. Livingstone's steel-built launch, for the exploration of Zambesi River.

Mr. Corey, one of the vice-presidents of the late Photographic Society, then read a paper on "*The History of Photography.*" In the course of his remarks he commented at some length on the progress of this art, tracing it back to a very early period, yet showing that though philosophers were fully aware of the action of light on silver at very remote periods, it was not until the present age the areana by which the pleasing representations that it produces could be prevented from fleeting away almost as rapidly as they were produced. After giving a chronological account of the invention, expatiating on experiments of Sir H. Davy and Mr. Wedgwood, interesting as they were, yet futile until the discovery of Sir John Herschel, on the effect of the hyposulphites in fixing the products of the camera, and awarding their several merits to the labors of M. Daguerre, Mr. Goddard, Mr. R. Hunt, Mr Fox Talbot, and above all, to Scott Archer; he congratulated his hearers on the utilitarian character the art had assumed by the rapid progress it was making to "record its own reflections," and supported his arguments by some very choice specimens.

Mr. Towson hoped that what remarks he had to urge in connection with photography would not be deemed to savour of egotism. Mr. Robt. Hunt had been mentioned as one of the earliest photographers; but perhaps Mr. Corey was not aware that scarcely a single day elapsed in the year 1838 in which he (Mr. Towson) was not making experiments in concert with Mr. Hunt, while he was also in constant communication with Sir John Herschel and the Honorable Mr. Fox Talbot. At that period, although their experiments were not perfectly satisfactory, they were quite sanguine that the art would arrive at the condition it had since attained; and although he had no idea that they should be able to bring it to a state of perfection, they were still determined to prosecute their experiments until the work got into better hands. Although there was very little he himself had done to be proud of in connection with photography, he had the satisfaction of knowing that he had been instrumental in preventing the success of Mr. Fox Talbot's application for a patent for the glass processes; for, in 1838, he (Mr. Towson) produced a photograph on glass, which is still in existence and which, at the time, was sent by him to Sir John Herschel with the knowledge of Mr. R. Hunt, and was referred to by both as a proof that Mr. Fox Talbot had no claim whatever to an exclusive enjoyment of the privilege of producing photographs on glass. By reference, also, to the *London and Edinburgh Philosophical Magazine* of that period it would be found that the proposition, as to the possibility of taking photographic figures from life, came from him (Mr. Towson).

Mr. Corey was glad of having that opportunity of bearing testimony to the value of Mr. Robert Hunt's experiments, to which he and other photographers of the present day were greatly indebted.

The series of Mr. Frith's beautiful photographic views from Karnac and Thebes were next exhibited on a screen, by means of the oxyhydrogen light, under the able management of Mr. James Cassady, of Lime street, Liverpool: the lamp and apparatus employed having been kindly lent by Messrs. Abraham & Co., of Lord street.

The Rev. H. H. Higgins, who had travelled in Egypt, explained the views as they were thrown upon the screen, giving little historical accounts, which added greatly to the interest of the exhibition. He bore testimony to the remarkable fidelity of the views, which not only preserved the details, but, as seen by means of this beautiful and wonderful phase of the art, showed the exact appearance of the stone, which was as white and chaste as if it had just left the chisel of the sculptor. He considered that that the facility afforded by photography in its application to dissolving views, which might be shown on a large scale to a great number of people at once, was one of the most remarkable triumphs of the art. The colored views which are generally shown by this process, are extremely beautiful, and convey an excellent impression of the wonderful architectural remains of the East; but they are in no way to be compared with these photographic views of Mr. Frith.

The exhibition excited much interest, and the members of the late Photographic Society received a vote of thanks for the pleasing entertainment they had provided for the members.

The proceedings soon afterwards terminated.

Oxide.—A compound of oxygen and a base destitute of acid and salifying properties.

From the Liverpool Photographic Journal.

A MODIFIED DRY PROCESS.

BY J. GLOVER.

Being rather late for the next publication, I must necessarily be brief, but shall be happy to supply any further information.

COLLODION.

From pyroxyline prepared at a high temperature, and in contact with the acids longer than usually recommended, with full proportion of alcohol. To one ounce of plain collodion two grains iodide of ammonium, one-and-a-half grains iodide potassium, half a grain bromide ammonium, and one drop saturated tincture of iodine: iodised at least ten days before use.

PRESERVED LIQUID.

120 grains gelatine, twenty grains citric acid, sixty grains gum arabic, two fluid drachms honey: dissolved in two ounces distilled water; boiled slowly in a flask twenty minutes, cooled, and again boiled five minutes. Make up the volume with distilled water to twelve ounces. When cool, add half an ounce alcohol, containing two grains camphor dissolved. Stand two days, and filter just before use.

DEVELOPER.

Two and a-half grains pyrogallic acid, ten minims glacial acetic acid, one quarter grain citric acid, ten minims alcohol, and one ounce water.

SILVER SOLUTION.

Eight grains of nitrate of silver to one ounce of water.

FIXING.

Four grains cyanide potassium, and one ounce of water used as a bath.

MODE OF MANIPULATION.

Make sensitive in the usual way, allowing the collodion to set to the maximum extent before immersion. Drain one minute, pour the first portion of preservative on at one edge, then flow slowly across the plate, and off at the opposite edge into the waste dish. Place the plate on a levelling-stand, cover with the second portion of preservative, allow it to rest three minutes, then run the solution round the plate several times, and off into the measure, to be used as the first portion for the succeeding plate: drain from one corner, when dry store in dark frames or boxes. Prepare the plates twelve hours before exposure.

TO DEVELOP.

Place on the levelling-stand, pour over the silver solution, and off again; rest the plate horizontally one minute, then apply the developer and proceed as with wet collodion, adding silver as required. The development takes from ten to twenty minutes.

The chief features in this process are—a hard glassy surface, giving exquisite detail, good keeping qualities, tolerable sensitiveness, easy development, freedom from stains and blisters, if prepared as directed, wide range of exposure, and last, not least, almost absolute certainty in the results.

CHLORO-CHROMIC ACID.—This is a beautiful salt made by the addition of a small portion of chlorine to chromic acid, evaporating and crystallizing. The crystals are of a brilliant carmine color and very deliquescent, and should be kept in a closely stopped bottle. It is supposed that this compound will enter largely into any substance discovered for taking daguerreotypes in the natural color.

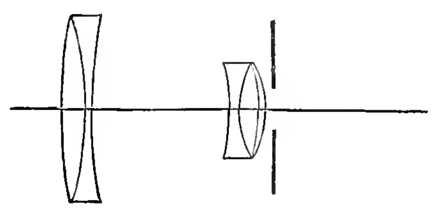
From the Photographic Notes.

ANALYSIS OF THE ORTHOSCOPIC LENS.

We shall endeavor in the present article to discuss fully the geometry of the new lens lately introduced by Messrs. Voigtlander and Son, and called by them the "Orthoscopic Lens;" observing that it is constructed on the same principle as a new lens manufactured by M. Dietzler, of Vienna, according to the formula and under the superintendence of M. Petzval, an eminent German Mathematician, who is the inventor of this form of instrument, as well as of the Portrait Lens in common use.

The term "Orthoscopic," adopted by Messrs. Voigtlander, is derived from the two Greek words "orthos," right, and "skopeo," I see; and the idea intended to be conveyed by the term as applied to a photographic lens, is, that it gives a picture much more free from distortion than other photographic lenses. We shall show bye-and-bye that the term is not misapplied to it.

The Orthoscopic Lens is an arrangement consisting of two achromatic compound lenses separated by an interval, as shown in the figure.



The front lens is the larger, and is the same as the front lens of the present combination for portraits; that is to say it is composed of a double convex lens of crown glass, cemented with Canada balsam to a concave lens of flint, the entire lens having *negative* focal length—that is, causing parallel rays to converge to a focus on the *opposite* side of the lens to the origin of light.

The posterior lens is an achromatic compound lens formed of two, not cemented together, but merely touching at the edges, and having a space between them in the middle, as shown in the figure. The inner lens is of flint glass, and double concave, the flatter side being outwards. The outer lens is a meniscus of crown glass, having its convex side outwards and next to the picture. The deepest concavity of the flint lens is therefore opposite to the concavity of the meniscus. As these lenses are not cemented together, but have a cavity between them, their inner surfaces may sometimes require wiping; they are therefore merely deposited in the cell which receives them, and are fixed in their place by an open cap, which is screwed until it touches a brass ring laid in contact with the outer lens. When a stop is used it is placed between the ring and the cap, as shown in the figure. The diameter of the posterior lens is about two-thirds that of the front lens, and the distance between them is about half the diameter of the front lens.

The posterior compound lens has *positive* focal length, and would cause parallel rays to *diverge* from a point on the *same* side of the lens as the origin of light. The front lens therefore tends to bring parallel rays to a focus, the black lens to scatter them wider apart. In popular language the front lens is convex and magnifies, the back lens is concave and diminishes.*

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* We would take this opportunity of observing that in optics the signs *plus minus* are introduced into formulæ from their property of being able to represent not merely the operations of addition and subtraction, but also contrariety of position or direction. By calling lines measured on one side of a lens positive, and on the other side negative, and affixing the signs *plus* or *minus* to the magnitude of a line, according to its position, it is possible to make one formula include a great variety of different cases. The convention adopted in optics is, to call lines measured from the lens *towards* the origin of light *positive*, and in the opposite direction negative. In other branches of mathematics it is found very convenient to adopt similar conventions in which the signs *plus* and *minus* indicate *opposite qualities*, as well as mere addition and subtraction.

The exact particulars of the compound lenses are as follow:—

Front lens—Diameter	8 centimètres.		
Focal length	40	do.	(Negative)
Back lens—Diameter	5 centimètres.		
Focal length	90	do.	(Positive)
Distance between the lenses	4 centimètres.		
Focal length of entire combination	63	do.	(Negative)
Diameter of the field	54	do.	

[A centimètre is about two-fifths of an inch.]

These dimensions apply to the 6-inch lens, but by dividing or multiplying them all by any given quantity, the corresponding dimensions of any other size of lens may be obtained.

The front lens is placed with its convex side to the view, and the back lens with its convex side to the picture. The optical principle, therefore enunciated by M. Derffel at a recent meeting of the Photographic Society, and said to be the discovery of M. Petzval, has not been observed in the construction of this instrument; nor has that principle, so far as we know, been demonstrated in any work on Optics.

Since the front lens of this new instrument is the same in every respect as the front lens of Voigtlander's Portrait Combination, the latter may be converted into the former by removing its posterior lens, and substituting for it the posterior lens of the Orthoscopic Combination, mounted of course at its proper distance from the front lens.

In order to cut off reflected light from the inside of the tube, a stop is placed midway between the front and back lens; but not so as to intercept any of the legitimate rays of light.

Such is the construction of the Orthoscopic Lens. It is essentially a VIEW-LENS, and is not intended for portraiture. We have therefore to discuss its merits as a view-lens when compared with the ordinary form, and in doing so must direct our attention more particularly to the following points:—

1st,—Flatness of Field, and the included angle of view.

2nd,—Freedom from Distortion.

3rd,—Equality of illumination.

4th,—Perfection of focus and freedom from spherical aberration.

5th,—Coincidence of the visual and actinic foci.

6th,—General convenience, freedom from diffused light, copying powers when the focus is elongated, power of rendering aerial perspective, and other good qualities.

We shall discuss these matters in the order in which they stand.

1st,—Flatness of Field, and the included angle of view.

In determining the flatness of field of any lens, we have to compare the course of the most oblique with that of a direct pencil; and the simplest plan is to suppose the pencils cylindrical, or that the lens is pointed at extremely distant objects; should it be found to answer well in this case it will be equally good for all ordinary purposes.

In the above figure the lenses are represented by straight lines, strong and black, the front lens passing through A and the back lens through C; A C q being their common axis. A stop is placed behind the back lens, and in contact with it. In order to fix the ideas, and render what we have to say more intelligible, we shall suppose the lens to be a No. 1, having a combined focus of rather more than 11 inches, and covering a picture 10×8, with a half-inch stop.

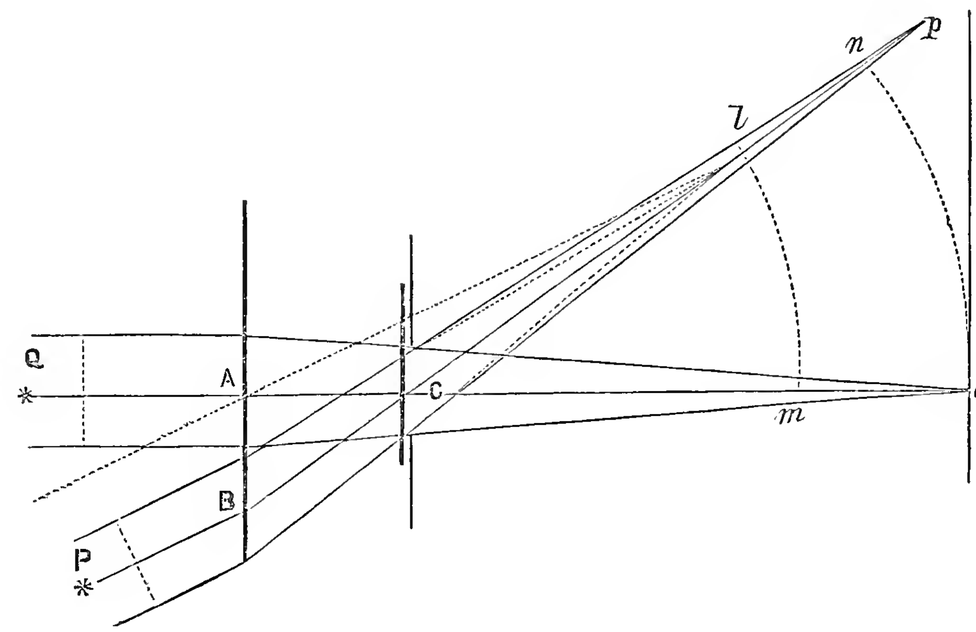
It will be seen, from the above figure, that the oblique pencil passes *ex*centrically through the front lens and *cen*trically through the back lens. If, then, q be the focus of the direct pencil from a distant point Q and p the focus of an oblique pencil from a distant point P, we have to compare the length C p with C q, in order to discover the flatness of field, and how far it deviates from a sphere whose centre is C; and we would observe that unless it *does* deviate, and that pretty considerably, from such a sphere, the lens would be next to worthless for the purpose intended. We have to show, then, that the focal length C. p, of the oblique pencil, is greater than the focal length, C q, of the direct pencil, and to calculate the difference between them.

Let us consider first the case of the direct pencil incident at A. After refraction through the front lens it converges towards m, the principal focus of that lens; the distance A m being 8 inches (in round numbers). This converging pencil is then refracted by the posterior lens, the positive focal length of which is 18 inches (in round numbers). The effect of this is to diminish the convergency of the rays and bring them to a focus at q, which is further than m from C. The distance A C being one inch, C m is 7 inches, and C q is then found in the following way:—

Multiply 7×18, and divide the product by their difference;—that is, divide 126 by 11. This gives C q=$11\frac{5}{11}$ inches.

Next, let us consider the oblique pencil which proceeds from a distant point P, is incident *ex*centrically on the front lens at B, and passes centrically through the back lens at C.

Through A, the centre of the front lens, draw a dotted line A l, parallel to B. P, and with a A as centre, and and A m as radius, strike an arc of a circle cutting A l at l. Then, A l equals 8 inches; and the oblique pencil from P will, after passing through the front lens, converge towards the point l (as shown by the dotted lines).



Now we come to the pith of the matter. What happens at the second lens?

We have at the second lens an oblique pencil, incident centrically, and converging towards l. Join, therefore, C l, and produce it to p. Also, with C as centre and C q as radius, strike a circle cutting C p at n. C n is therefore equal to C q.

Now, adopting the same formula as in the former case in order to find C p, we must must multiply C l by 18 and divide the product by their difference. What then is the length of C l?

In the reply to this query will be seen the great ingenuity of M. Petzval's arrangement; for it appears that C l is greater than C m.

The proof of this is easy enough. Any two sides of a triangle are, together, greater than the third, therefore l C and C A are together greater than A l, and therefore than A m. Take away the common part A C, and C l is proved to be greater than C m.

The actual difference between C l and C m in the No 1 lens, with the extreme oblique pencil, is about the one-tenth of an inch. If then we multiply $7\frac{1}{10}\times18$ and ÷ the product by their difference, we get C p=$11\frac{79}{109}$ inches. The difference between C l and C m, (n p), is therefore nearly one-third of an inch. This is of course in favor of flatness of field, because it brings p nearer to the plane through q.

In the common view lens, presented to extremely distant objects, the field is very approximately a sphere, the centre of which is the centre of the convex surface of the lens. On taking the exact dimensions of the Orthoscopic Lens, and working the problem out completely, we find that, as regards flatness of field, the common view-lens has a little the advantage; and this result of theory is also borne out by the experiments we have made with both forms of lens differing but little in their focal length. In what follows, however, we shall show that in other respects the Orthoscopic lens has many and great advantages over the common view-lens.

So much for flatness of field. Next, with respect to the angular extent of the field of view. It might be supposed that ought to include a wider angular field; but that is not the case the common view lens having the advantage in *flatness* of field, it because the distortion produced by the common view-lens is so great, and becomes so unbearable when a certain small angle of field is exceeded, that it is necessary from this cause to restrict that angle to about 35°. In the case of the Orthoscopic Lens, the distortion is not only different in *character*, but much less in *amount*, and therefore, although the field is not absolutely so flat, still an angle as great as 47° may be included. This is a great merit of the Orthoscopic Lens, and one which should recommend it particularly to the notice of the landscape photographer, because the bad effects of curvature of the image may be remedied by using a small stop, but for distortion there is no such remedy. A small stop gives a finer point to the pencils, but does not affect the curvature of the lines of the picture.

We now come to the 2nd topic, viz; Freedom from Distortion.

In the common view-lens with the stop in front, the oblique pencils do not pass straight through the margin of the lens, but are bent out of their course, inwards, towards the centre of the picture. This produces distortion, in a way in which we will endeavor to explain. Suppose the stop extremely small, and the lens removed; a perspective view would then be formed on the focusing screen, but larger than the picture produced by the lens, and quite free from distortion. Suppose a plain irregular polygon to be the figures represented, the angles of which on the focusing screen are points A, B, C, D, &c., and let 0 be the point where the axis of the camera cuts it. Draw radial lines 0 A, 0 B, 0 C, 0 D, &c. Now introduce the lens. In consequence of the deflection of the axes of the pencils which pass through the margin of it, towards the point 0, the image of the polygon will be smaller than before, and its angular points a, b, c, d, &c., will lie on the lines 0A, 0B, 0C, &c., nearer to 0. Now, if the decrements aA, bB, cC, &c., were exactly proportional to the radial lines 0 A, 0 B, 0C, &c., the small polygon a b c d-- would be exactly similar to the large one A B D C---and there would be no distortion; but no such is observed in the production of these decrements as that of direct proportionality to the radial line, and the greater the radial line may be, *fortiori* greater the decrement becomes. This produces distortion, and causes all straight lines which do not pass through the centre of the picture, to be bent inwards at their extremities.

Now let us turn to the Orthoscopic Lens. Here we see that the axes of the oblique pencils are bent *outwards* out of their course, and a *larger* picture produced than if a small hole, without lenses, were put at C. Instead of *de*crements we have now *in*crements of the radial lines—and the production of these increments depends upon a different law from that of the decrements in the farmer case, and qroduces less distortion. What little distortion there is has the effect of rendering straight lines *convex* to the centre of the picture, by bending their extremities outwards, but this defect is so inconsiderable as to be scarcely appreciable, and so far as it exists it has the *good* effect of increasing the comparative size of the *side* objects, and therefore throwing the central objects apparently further back; while the common view lens has the opposite effect to such an extent as to interfere greatly with the ærial perspective, by diminishing the objects at the sides of the picture, which are generally the nearest, and thereby bringing the central and generally most distant objects apparently too much forward.

3rd,—Equality of Illumination. Through m imagine a line m k drawn at right at right angles to m C, and cutting C p in k. Now let a straight line passing always through this imaginary point k sweep round the circumference of the stop at C and mark out with its end a circle on the front lens, in the neighborhood of B, which would be its centre. Similarly, let a line passing through m sweep round the circumference of the stop and trace another circle on the front lens, the centre of which would be A. These two circles, viz., that at A and that at B will be equal to another. But if instead of the point k we take the point l, nearer to C, the circle at B will then become *larger* than before, and consequently larger than at A. Hence it follows that the area on the front lens covered by an oblique pencil is *greater* than that covered by the direct pencil. On the other hand the obliquity of the pencil occasions loss of light, as shown by the dotted lines across it. The gain from one cause does not entirely compensate for the loss from the other and there is not *perfect* equality of illumination; but in the common view-lens there is less from obliquity of incidence without *any* set off to counterbalance it. The Orthoscopic Lens has therefore the advantage as regards equality of illumination.

4th,—Perfection of focus, and freedom spherical aberration. In the common view-lens *no* attempt is made to cure spherical aberration, or improve the focus, except by means of the stop. Everything is sacrificed to flatness of field. There would be *much* less spherical aberration in the central pencil if the lens could be turned with its convex side to the view. But in the Orthoscopic Combination spherical aberration may be, and is, *completely* remedied, and the quality of the focus, both of the direct and oblique pencils, greatly improved.

5th,—Coincidence of the visual and actic foci. With four glasses instead of two, more lines of the spectrum may be united, and therefore the chemical focus improved. So that the Orthoscopic Lens has the advantage in that respect.

6th,—In lightness and convenience, and freedom from diffused light, the Orthoscopic Lens has greatly the advantage over the other. In copying, the common view lens cannot be used when the copy is to exceed one half the size of the original; but when the focus of the Orthoscopic Lens is lengthened by bringing the object near it, it gives a sharp and good image up to full size. It is in fact the best copying lens that has yet been produced.

On the whole, therefore, although we do not by any means go the length of the French Committee appointed to try and report on this instrument, in asserting its good qualities, we are inclined strongly to advise our readers to procure a lens on this principle:—aun to render the matter complete we should say, add to it one of M. Petzval's cameras, in which the plate may be inclined at any angle to the axis of the camera. We shall take an early opportunity of describing this piece of apparatus.

In a letter just received from Mr. Knight, alluding to the negatives we sent him, taken with the Orthoscopic Lens No. 1, on 10×8 plates, with a half-inch stop, he says, "I have printed some copies from your negatives and they are beautifully sharp." It requires, us Herr Pretsch says, a photographer to take a picture, but it also requires a *good lens* to take it " beautifully sharp.—[Ed. P. N.]

Platinum.—This rare and valuable metal occurs native in Peru, Brazil, and other parts of South America, in combination with gold, silver, copper, iron, lead, &c. It is procured in the form of round or flattened grains, of a white color, mixed with sand and other alluvial deposits. Pure platinum is a soft metal, and an imperfect conductor of caloric; it has a white silver like appearance; but less malleable than either silver or gold. Its density is greater than other metals, being 21 5; its atomic weight is 96; it does not fuse at the highest temperature of a Smith's forge, but may be welded like iron when heated at a high temperature.

For the Photographic & Fine Art Journal.

A WORD OR TWO FROM AN AMATEUR.

Dear Sir,—It has long been a subject of wonder to me, that we should have so few amateur photographers in this country, and it seems as if those we have were almost ashamed to acknowledge that they practice an art which has been so degraded by the thousands of ignorant, illiterate clowns, who have taken up the *trade* of picture-making, because they found themselves totally unfit for everything else.

The country fairly swarms with these men, and the mischief that has been done by them in vitiating the tastes of the masses of the people, seems to me almost irreparable. I have found that even the better informed, among the country people especially, have been so long accustomed to see the distorted and ghastly shadows, which they buy under the name of *cheap* daguerreotypes and ambrotypes, that they now judge all pictures by that standard of comparison. It is a notorious fact, that the few among country "operators," who possess taste and skill, *dare* not take artistic pictures, being well aware that their customers would reject them.

Suppose, for instance, the subject to be a young lady, and that the artist has taken unusual pains and trouble, in arranging the *pose* of his sitter, and in distributing the light and shade, so as to produce the most artistic effect. The picture, when finished, proves to be a gem, and the delighted artist, hastens to show it to his customer, who at the first glance, turns up her nose, and "hopes she isn't *quite* as ugly as that." She wishes him to understand that her "head is as straight between her shoulders as his own," and that "her face is *just as white on one side as on the other.*" She also declares, that her wrist hangs so "*limber*, that people will think her arm is broken." In all probability she has greased and polished her hair to the last possible degree, and if any light has fallen upon it, she abuses the unlucky artist for "making her grey-headed."

If the artist had had some experience and knew how to please his subject, he would have placed her perfectly straight, stiff and upright in her chair, as could be effected by the aid of a plumb line, with her eyes staring directly into the camera, one hand in her lap, and the other upon her stomach, with the fingers of both spread wide apart, so as to show her rings to the best advantage. If there is a lover in the case, he will be seated by her side, in the same attitude, but his right hand will be laid palm upward, with the fingers spread, in her lap, and her left placed in the same manner palm downwards upon it. The picture must be exposed in the camera, till the faces are perfectly flat, and white, without so much as the suspicion of a shadow, for strange as it may seem, there are few uneducated people who can understand the meaning of shadows in a picture, no matter how delicately transparent, and truthfully rendered they may be.

It is not two weeks since I took the portraits of a loving couple, in precisely the attitudes described above; I need hardly add, that, the merit of this truly original composition, belongs entirely to themselves. Any attempt to convince these people, of their error, and persuade them to be guided by the artist, is a mere waste of words, for he will be told, that they can show him "plenty of pictures *taken just that very way.*" The itinerant manufacturers of *cheap* pictures, are undoubtedly responsible for this state of things, and it will be found, a far more difficult task to *unlearn* this false taste, than it would have been to *teach* the people, had they been ignorant of the very existence of art.

I began the practice of photography, with the intention of using it as an aid to my favorite pursuit of landscape painting but I soon found that it opened a field so wide, as to claim my undivided attention, if I wished for success. At that time, it was almost impossible to obtain chemicals and materials in this country, which were in a fit state for use, and I was in consequence, obliged to go through a long course of difficult, and sometimes disheartening experiment, for I was not long in finding out, that formulæs written in England or France, were of but little use in this country. I built myself a neat sky-light gallery with dark rooms, &c. complete, near our house (we live in the country), and am now adding to it, a small but complete laboratory where I can carry on my experiments with every facility.

My attention being turned more particularly towards landscape photography, I found it necessary to devise some means of rendering my apparatus sufficiently portable, and after carefully studying all the portable tents, cameras, &c., of which the English and French Journals contains so many descriptions, I decided upon a plan of my own. I have a small hand waggon, the bed of which is about six feet long by three feet wide, and upon this I raised an exceedingly light frame, over which I stretched first, yellow calico, and over that oil-cloth. This is my "dark room," at the back of which, there is a little window of yellow glass; and under that, a small sink to carry off the washings. My chemicals are packed in a case, where each bottle has its place, and the case, camera, stand, bucket for water, &c., are all put into the waggon, which, when fully loaded, can be drawn with one hand with the greatest ease. When I find a suitable view, the case is taken out, placed beside the waggon, opened, and the necessary chemicals placed inside the dark room, which is always ready, and needs no setting up. The plate is prepared, and the picture taken and developed, as conveniently as at home.

Even with the dry process, it is necessary to carry a camera, and this alone is more inconvenient, than drawing my little waggon. But the greatest advantage consists in being enabled to work with *wet collodion*, for after having tried all the dry processes, and seen many specimens, I am satisfied that the delicate gradation of the middle tints, which so delights the eye of an artist, have never *yet* been attained by any of those processes. Besides this disadvantage, it would afford me but little pleasure to spend two or three weeks or month, upon a photographic excursion, without being able to tell, until my return home, whether I had succeeded in securing a single picture.

Why is so little attention paid to landscape photography in this country? I can imagine nothing more delightful than a photographic trip during pleasant weather. In my former sketching excursions, the labor of transferring the view to paper by hand, detracted greatly from the pleasure, but here the *drudgery* is done by the camera, leaving the *mind* of the artist perfectly free to select his point of view, and watch for those beautiful but transient effects of light and shade, which the sketcher in vain attempts to remember, but which the *camera* seizes as they pass. That photography deserves to rank as a fine art, is only disputed by a few bigoted artists, actuated by a mixture of jealousy and ignorance. Their inconsistency is absurd, for they profess to despise mere mechanical skill in painting, and yet deny photography a place among the fine arts, simply because it relieves the artist from the *purely mechanical* part of the work. The fact is, it is only the works of really *great* artists, that will bear a comparison with sun pictures, and this is the secret of the prejudice against them existing among the rank and file of the profession.

Although in the present state of our knowledge, we cannot obtain the colors of nature, yet by modifying the processes, I have been able to produce a great variety of tints, and it is my constant practice, to tone my prints to such a color as rule *suggest*, the prevailing tone of the landscape at the time the picture was taken, and this I accomplish by having several baths which yield different tints. This is an idea, which I do not remember to have seen suggested, and yet any one who tries the experiments, will be astonished to find, that a picture which appeared flat and spiritless, when printed in one tint, will be most brilliant and striking in another. In illustration of this fact, I send you a few prints of different subjects. The beauty of the marble monument with the bronze angel upon it, consists in the purity of the white marble and delicacy of the detail, contrasted with the dark background of forest, upon which the shades of evening have already settled, while a ray of sunlight still illuminates the monument, bringing it out in bold relief. The sketch entitled "*potato picking*," or any of the views in warm tints, would be miserably weak and spiritless, if printed in black and white, the clear yellow of the lights, with the rich warm purple of the shadows, *suggest* the mutual color of the objects when lighted by the sun. I never touch a photograph with brush or pencil, as I do not consider one which needs such assistance worthy of the name, and to re-touch a *fine* print would be sacrilege.

Yours respectfully,
B. M. BRACKENRIDGE.

From the Liverpool Photographic Journal.

ON THE PRODUCTION
Of Direct Positives—On Printing by the Salts of the Uranic and Ferric Oxides, with Observations Climetic and Chemical.

BY C. J. BURNETT.

The search after processes giving good positives direct is one of great interest in many ways, and which has received far too little attention.

Among the advantages which might be expected from processes of this nature we may enumerate the being able to see and judge at once, as soon as we have developed it, of the success or failure of our pictures.

At present the beginner, and often even the accomplished photographer, has the greatest difficulty, and is utterly at a loss, even after he has developed it, from the strange effect of the reversed lights and shades, to know whether his negative has received too much or too little exposure. He is also at a loss to know at what point to arrest the developing of it. With a positive direct process, all this is removed, the picture speaks unmistakeably at a glance, and the inexperienced or occasional amateur is placed, so far, on much the same footing as the professional photographer, whose correct judgment as to the state of ripeness and development of negatives has been secured by constant practice.

In collodion or other film-pictures, to be developed on the spot, (though it is possible that this may be avoidable,) we might judge of each picture at once, before we lay it past as a good one, while, with paper and allied processes, the development of one positive at the beginning of the operations, or one oc casionally during the day, enables us to know sufficiently exact the character of those which we are reserving for after-development.

One great object of our search after positive-direct processes, should be to enable us to extend the use of paper or waxed paper processes to those classes of subjects, in photographing which the use of collodion or other transparent films on glass is now rendered necessary, by the inequalities of texture, and of translucency in our papers.

The original positive-direct is manifestly unaffected by these inequalities in the interior of the paper, and, if we take the pains to secure a sufficient quantity of the blackenable (or otherwise sensitive) chemicals on the surface of the paper, should be a very perfect picture. Were we to proceed to multiply it in the pressure-frame, by transmission of light in the ordinary way, whether at one step by positive direct processes, or by making negatives, by any common printing process in the first instance, to be afterwards printed from one positive in the same way, we should of course introduce the evil; but by either taking other positives direct by the camera from our first positive, or better, by taking a negative instead of a positive from it, in the camera, and then printing from *this* in a pressure-frame by the common processes; or possibly *still better*, by printing by juxta-position in another way, the feasibility of which has been suggested to me by some of my uranium experiments, we may be able to get nearly, though *possibly* not entirely, rid of the evil. What I allude to is the developable impression produced on uranic papers by newspaper printing which has been placed in contact with it; and I have observed analagous phenomena in the case of argentine papers in various cases. The investigation of these phenomena, to see whether something practical in the direction just alluded to cannot be (as I have every expectation) got out of them, is one of the first things I intend proceeding to when able to resume my experiments. With the ordinary system of taking negatives in the camera, these negatives might be afterwards multiplied or printed from in the ordinary way we have just spoken of on the uranic, and probably also the chromic, ferric, manganic, and argentine papers, without, or nearly without, reproducing the internal paper flaws; only, for this style of printing, the original negative paper would require to be prepared or managed (which would be simple enough), so as to keep the picture as much as possible on the surface, instead of having it, as is general in our ordinary paper or waxed paper negatives, all through the body of the paper.

Such modes of multiplication and of manipulation might not only extend the most convenient use of paper for negatives taken in delicate subjects, as foliage, and to which it has not hitherto been so well applicable as are collodion and albumen films, without compelling us to use positive-direct processes, but might also, of course, be turned to very useful account in the copying of drawings and engravings, and reproduction of them from stones or plates, either impressed from the original directly, or in such a form as to afford a basis for the after manufacture of photographic or photo-metallographic stones or plates, all this being managed without recourse to the camera, and we might even reproduce a printed page with woodcuts complete in either copperplate or stereotype metal.

Some of the experiments which I have made seem to point to rather startling and strange possibilities in connexion with the changes produced on our calotype and other sensitive papers by light or actinism.

One or two experiments have seemed even to indicate the possibility of producing pictures on an unsensitized paper or other surface, by the *after* application of sensitive mixtures containing silver along with gallic acid or ferrous or allied salt. But, still the imperfect result, or comparative or approximate failure, of such experiments generally seem to show the necessity, for practical purposes at least, of the presence of some substance capable of entering into a more definite or stable combination with actinism, or more capable of being allotropised into activity, than such substances as paper or glass are.

It has been observed by others, as by Mr. Hunt, in his "Researches," that most invaluable storehouse of observation, and accords with my experience that many salts which do not appear to be "chemically," as the phrase is, changed by light, are yet so acted on by it, either by simple absorption or allotropisation, as to act differently on silver salts, these, previously inactive, reducing it after light exposure. The action of proto-sulphate of iron on silver (and gold) salts, offers some very curious and interesting observations. The presence in or previous absorption of actinism by, or (cyanic) allotropisation of, either the silver preparations, or the ferrous salt, seems to be almost essential, at least to anything like rapid action, *i. e.*, in the presence of acetic or other free acid. The non-blacking all over of our ordinary negatives proves this; and there are other proofs of it, *e. g.*, sulphate of iron may be applied to our silver papers in preparation before solarisation. I have also made, not altogether successful though very doubtful, experiments in the taking of pictures on paper which had been prepared by proto-sulphate alone, and developing them after exposure by silver.

I have also, and successfully, mixed a proto-salt of iron, both with the uranic salts used in preparing uranic sensitive paper, and with the ferric or ammonia-ferric salts used in preparing ferric sensitive paper, and succeeded in getting pictures in these cases by silver and gold developments, showing amongst other things, and what can more clearly show it, that it is not the mere production of ferrous oxide, or its presence in the ammonio-citrate papers, and their allies, which enables them to reduce the silver salts after solarisation. Two principal questions must be asked regarding these papers:—1st. Is it necessary that this reduction must have commenced, or is an unreduced ferric or uranic salt allotropisable, or otherwise convertible by light—absorption into an active silver—reduced?—2. Is the proto oxide more capable of this allotropisation by light when acting on it at the exact moment of its production than after it has been formed?

The so far inferior results (almost failures) of my protosulphate experiments may be partly owing to the oxides in it as bought, being partly in the more active (or cyanotropic form, to coin a word for our momentary accommodation.) It is a point to be ascertained, in which form it exists in each salt, and whether it is capable of existing in both, in combination with different acids.

The effect of the red rays, which are probably capable of not only undoing the allotropic change produced in substances by the blue rays, but of producing an allotropism of another or opposite character, ought to be investigated.

We must also carefully examine how far the new activity of the ferrous oxide in these cases is due to the looser absorption (?) before alluded to.

As we have been speaking of the use of ferric and uranic papers, I think it well to remark that it does seem stange that the published experiments of Mr. Hunt, Sir J. Herschel, and others, with regard to ferric salts, and mine with regard to uranic salts, should not have directed the attention of *practical* photographers to the employment of iron with the after-development by silver salts and gold, &c., or by mixtures of silver salts with such other substances as might further promote the reduction; and uranium salts, not only for *positive printing*, but also for use in the camera. Ferric salts would have very great advantage in cheapness over silver salts for preparation; and if our negatives are accidently mismanaged in any way, if we find for instance, on trying one or two, that they have been under or over exposed: there is, at all events, little loss of money. I intend giving the ferric and uranic salts a fair trial next summer with a camera which I had constructed last year* partly with a view to this, having a slide adapted to contain, and enable us to unroll as it is wanted, paper enough for a large number of pictures,† so as to avoid the troublesome shifting of papers when we are at work. I propose among other plans connected with this, the charging the paper in the coil with the sensitive salt under pressure, as proposed some years ago by Mr. Stewart, by first exhausting, and then re-admitting the air. The developing silver solution might also, perhaps, be applied to a similar way, or by first exhausting the air, and then admitting the solution into the cylinder. We might try various salts of silver, as well as the nitrate and ammonia-nitrate for developers; and some of my experiments point to the use of protosalts as accelerators or stimulants here, either by moving them with the silver developing solution (with addition of a little acetic, formic, citric, nitric, or other acid), or by transferring the negative, as soon as it has imbibed sufficient silver from the silver bath, to a stimulating solution of acidulated protosulphate of iron, (gallic acid being also compatible with the urantum salts,) or cuprous or uranous salt. When using the paper coils I have spoken of, for negative-taking, they may be spread out during development. I have already alluded to the possible use of an unsolarized protosalt of iron, or uranium, or copper mixture, with the sesquisalt, in paper preparation in both ferric and uranic silver development processes, as well as in the preparation of argentine papers.

To enter a little further into particulars, I may mention that in preparing uranic or ferric papers we may take our choice of two modes. The first being to use a readily soluble neutral salt or this bin-acid salt, or a solution of ammonio-acid salt, where the neutral is not sufficiently soluble, as is the case with many of the vegetable acids, *e. g.* in uranic paper-preparation I have used, and been successful, with the neutral and bin-acid, or ammonio-acid salts formed by the nitric, chloric, phosphoric, hydrochloric, hydrofluoric, hydrobromic, citric, formic, acetic, oxalic, tartaric, succinic, benzoic, and with ferric oxide we may use the ammonio or the bin-acid salts; or, as I have found out, the pernitrate salt, and the second, (though here I speak less from actual experiment,) being to employ an insoluble salt of the sesqui-oxide, deposited on the paper by the application of the successive baths, the one containing the nitrate, acetate, hydrochlorate, or some very soluble salt of uranic (or ferric-nitrate oxide), and the other acid, or salt of an acid, as benzoic, succinic, or oxalic, giving an insoluble precipitate with the sesquioxide.

(*To be continued.*)

* I understand that my contrivance of December, 1856, has been in some respects anticipated by one of Mr. Melluish's, but I do not know to what extent, as I have not seen his description. The *plan of* mine may be found in *Photographic Notes* of last year.

† Paper is originally made in most cases in the web, and only afterwards cut down.

From the Liverpool Photographic Journal.

PROCESS FOR POSITIVES, WITH THE SALTS OF URANIUM.

BY H. DE LA BLANCHERE.

M. Blanchere, who assisted M. Nièpce de St. Victor in the prosecution of the experiments resulting in the discoveries announced in our last, has published the formula for the production of the uranium pictures as used by him up to the present time, and we propose to give a short abstract of his instructions.

It is not considered by any means as at present perfect, but will form a foundation for further researches.

Nitrate of uranium is an acid salt of a greenish yellow hue, and is really a nitrate of the sesqui-oxide, the construction being,—

$$U_2O_3 + N.\ O_5 + 6H.\ O.$$

It is almost as soluble in ether as in water, while the action of light appears to be similar with regard to all the other salts of uranium as with the nitrate, which is rendered insoluble when affected by the chemical rays. It is therefore advisable to keep the bottles containing the salts in solution carefully excluded from daylight, although it is certain that the dry crystals are absolutely insensitive to the action of light.

The paper employed should be *unsized*, and it is indispensable that for several days previously to its preparation, it shall have been carefully withdrawn from the influence of light by being exclosed in a box or drawer.

In one ounce of *distilled* water, dissolve one hundred grains of nitrate of uranium, filter, and preserve the golden yellow colored solutions in a stoppered bottle kept in the dark.

The paper is to be immersed in or floated on the solution for five minutes, which will penetrate completely through the paper; it would, however, be desirable, if possible, to keep it as much on the surface as can be managed, to obviate a tendency in the proof to become veiled by the substance of the paper.

The paper may be hung up to dry, freely exposed to the air, but in the dark, in which condition it will keep indefinitely.

Expose under a negative from one to ten minutes in the sunshine, or from fifteen minutes to an hour in the shade; from three to five minutes in the sun will suffice on an average under a collodion negative of ordinary density.

The beauty of the proof depends especially upon the time of exposure, and without contradiction it is the most delicate part of the process. It is necessary to give a sufficient exposure, but not to overdo it, because by allowing it to remain a little in the developing bath the image gains brilliancy.

The yellow color of the paper should be at least of a lemon tint, and by passing it twice through the uranium bath, the quantity imbibed is augmented, and at the same time the sensibility of the paper in equal proportion; comparative experiments leave no doubt upon this point.

This tint is altered where the light has acted, and becomes of a brownish red, which is more perceptible on looking through the paper than by examining the surface, and its degree of intensity serves nearly always (but not invariably) as a guide to the amount of the luminous impression. When in proper condition the image should be slightly visible when removed from the pressure frame, and if kept in darkness, can be developed after the lapse of twenty-four, or even of forty-eight hours.

The paper is to be plunged rapidly into a bath composed of distilled water one ounce, crystallized nitrate of silver, *slightly acid*, thirty grains. The proof will immediately appear, and be completely out in from thirty to forty seconds. Remove it quickly, and wash well in two or three changes of distilled water, when it becomes permanently fixed, and unaffected even by boiling cyanide of potassium.

If the nitrate of silver bath is not acidulated, in removing the proof to immerse in the water bath, the darkest parts change to a lemon yellow color, which, however, disappears on toning with chloride of gold, or even by heating before a brisk fire in order to dry the paper, and these parts in the latter case assume a vigrous brownish black tone. The toning with chloride of gold gives to all the proofs a violet tint, similar to that of pictures obtained in the ordinary manner.

The chloride of gold bath should be made by dissolving one grain of the salt in one ounce of distilled water, and if the picture on its removal from the pressure frame be immersed therein, it will be developed of a somewhat cold blue color, but the exposure should be almost double that required for the silver bath. The true use of the gold bath, however, is to tone the pictures produced previously by that of the nitrate of silver, and as chlorine has a tendency to dissolve the uranium salt, even if not exposed to light, it assists in brightening those pictures that are somewhat foggy.

A formula is given in which the bichloride of mercury is employed, in conjunction with a silver bath, but the exposure required is thrice that for the first quoted method of operating, and, moreover, the half tones of the picture materially suffer.

General Remarks:—If the exposure has been too great, or the immersion in the developing bath too prolonged, so that the lights have become somewhat veiled, an improvement may be effected by washing with water slightly acidulated with hydrochloric acid.

The acidity of the nitrate of uranium immediately coagulates albumen into which it is thrown. Papier Saxe has been employed, after being floated for five minutes upon a solution of gelatine fifteen grains in one ounce of warm water, as also upon albumen, which has been subsequently floated for ten minutes upon the bath of nitrate of uranium. The proof is much more on the surface than with the other method, and it seems also more vigorous and sharp. It presents also this remarkable fact, that the *image is not perceptible* when taken out of the pressure frame, but developes and tones with rapidity, equal to that with the paper prepared as before described.

Personal & Art Intelligence.

— The only great distinction we can draw between the characteristics of the Fine Arts and those of Photography are: the former absolutely requires that its practitioner shall possess genius—a natural talent—for the particular branch to which he intends to devote himself in order to attain even mediocrity in skill and reputation; and it is further necessary that he should submit to the severest discipline and study to fully understand nature as it should be depicted upon his canvas. His study must also cover an extensive field—a world of animated beings must be, not only superficially inspected, but anatomically investigated to the minutest detail—a world of inanimate nature has also to claim his closest attention; every tree, plant, and leaf; every rock, fossil, mineral, and earth must be thoroughly mastered in form and color. Then, to depict all these with truthfulness, he is obliged to master the combination of colors upon his pallet, to learn the most intimate blending of tints from the most harsh to the most delicate. Night after night he must pour over the best works on anatomy, mineralogy, and botany. Every undulation of the human form, the construction of every bone and joint, must be as familiar to his mind as his A B C. The passions must be also as an open book to him—every defect of animal or vegetable life; in short, the slightest change in nature, the most minute thing, must be as intimately known to him as the pencils which are intended to reproduce them upon his canvas, if he would become a true master of his art, and acquire the highest pinacle in the temple of fame.

The latter requires (actually) no such intense application and study. A ready, skillful hand and an eye to appreciate the beautiful and sublime, with a good knowledge, either natural or acquired, of perspective, is quite sufficient to produce pictures perfectly true to nature in every respect save color. To depict nature as she is, he takes the natural model, and troubles himself very little about the minutia of organism. Objects are rendered by the camera as they stand or lie before it, and it his instrument is what it should be, he feels confident that he has rendered the image true to the subject. So far he can rest satisfied; but although it is not essentially necessary to pass through the intense study of the painter in order that he may rival him in the higher works of art; in showing nature as nature is, there is knowledge to be acquired before he can stand pre-eminently forth in the front rank of photogaphy. The constant changes, both in theory and practice, the improvements and inventions daily made, require some portion of time to study.

But although the study of the Photographer is limited to a narrower compass than that of the painter or sculptor, it is quite as necessary for him to acquire thorough knowledge of correct taste, rules of art, graceful position, and of chemistry, as for the painter to master the various branches of learning above enumerated.

The necessity of this, as well as the capabilities of the Photographic art, was forcibly brought to our mind a few days since while examining a series of stereoscopic views in one of Mr. Becker's patent stereoscopes, at his gallery, 411 Broadway. The views were of American, European, Asiatic, and Egyptian scenery, and the marked difference between those taken by the educated hand and the mere mechanic, stood out in striking contrast. The imperfections of the latter caused painful sensations (and we were highly gratified that there were but two of them), while the beauties of the others carried us in soul and body, mind and estate, to the very scenes they depicted. We were transported so completely to the place that it was really difficult to divest our mind of the idea that we were not a part of the actuality before us.

The Stereoscope.—How little is this wonderful instrument understood and appreciated. The thousands who purchase it do so simply for the moments of pleasure it may afford—as a mere toy. Yet it is more than this; it is one of the most powerful instruments for investigating the past and present ever given to man to study. The past, in the contemplation of the vast piles of ruins and deserted cities of the ancients, which it places before you. The present, by the living scenes of to-day. In your parlor you can, by it, study every stone, its very fashion, size, and position, as hewn and placed by the workmen of every age—trace the progress of architectural art and sculptor, view the wonderful cities, living and decayed, of every country and period, or revel in the beauties of the primeval forest, the graceful valley, or the beautiful and sublime waterfall. The student of the day in ancient history has, in the stereoscope and its pictures, a means of knowledge unsurpassed by even a visit to the lands of which we read. And to what great uses cannot this simple little instrument be devoted were it properly understood and appreciated. Besides giving us the most intensely natural embodiment of scenes all around us, near and far distant, what a wonderful assistance would it be in the lecture room of the anatomist, or the closet of the medical student—what a ready help in the transition of information in architectural design, or construction! With such a stereoscope as that of Mr. Beckers, you have before your eye, not merely a picture, but the object itself, in its length, breadth, and heighth—every stem can be counted, every line traced, each marking of the hammer or chisel is prominently visible. In the medical college they can be made to take the place, in a great measure, of the dissecting room; every vein, muscle, and nerve can be reproduced to the eye in all the roundness and relief of the natural object. How many vexations cases might thus, also, be preserved for future investigation long after the poor diseased body has crumbled into dust. The stereoscope was not given to us as a toy, but as a powerful source of knowledge and investigation, and as such it should be employed.

As we said before, nothing proves the necessity of study to the photographic artist, in this country at least, so strongly as the trifling estimation in which stereoscopic photography is held, and the poor attempts at producing stereoscopic pictures. Those engaged in this branch of photography in the United States, are not only ignorant of its vast importance, but of the principles upon which it is based. There is not one stereoscopic picture in a thousand, taken here, that is worth a moments' consideration by any one of good taste or judgment; and yet, there is no branch of the art deserving of more attention.

— We have received several little photographic gems from Mr. Breckenridge, of Tarentum, Pa. In another column a letter from Mr. Breckenridge will be found, giving an account of these pictures. Since that was in type we have received the following, which we take the liberty of inserting here:—

Tarentum, May 15th, 1858.

H. H. Snelling, Esq—*Dear Sir*—I have this day forwarded to you by express a small box containing a few of my prints.

I have delayed sending them so long in the hope of being able to send you some portraits &c.; but I find it impossible to obtain a single sheet of paper fit for my purpose, and I have no prints of that kind on hand, for you will see by the date upon the back of each of these I send, that they have been printed some time

I have tried almost every photographic process as it was published, and after comparing prints from the *same negatives* (the only true test) obtained by all the known printing and toning processes, with those printed and toned by the process which produced the prints I send you, I have come to the conclusion that nothing has yet been discovered which, for depth, brilliancy, and permanency, can equal albumen treated in the proper manner. With regard to permanence, I can only say that I have never known a single one of my prints to fade which had been carefully treated by the process I now use, and I have prints nearly six years old.

I am of opinion that one of the greatest causes of fading is the paste used in mounting prints. I am satisfied that no matter what paste is employed it will destroy the print if used wet enough to penetrate the paper. I have lost prints which had remained good for several years, by soaking them in water to remove them from the mount, and this I have found to be the case no matter what process of printing or toning had been adopted. The great objection to albumen in this country seems to be, that it it is difficult to obtain pure blacks and whites, but I find no difficulty in producing that or any other tint, as you will perceive from the specimens I send, and I feel assured that if instead of taking it for granted that the process is impracticable, artists would devote themselves to rendering it perfect, the albmuen process would yet supercede all other modes of obtaining *plain* photographs, which are the only ones that I consider worthy of the name. Who would think of coloring a fine engraving? It would be considered barbarous, and it is an acknowledgement of weakness or inferiority in photography thus to call in the aid of another art. It is this practice of always coloring or retouching photographs which, in my opinion, retards its advancement as an *art* in this country, for the operator knows that his deficiencies will be made up by the artist who colors the picture, and who alone deserves a particle of credit for the production, which is called, "photography in oil by ——."

I have conversed with professional photographers who were under the impression that landscape photography is the easiest thing in the world, and that, as one of them elegantly expressed it, "you had nothing to do but point the camera anywhere, and let her rip." Let any one who has some knowledge of what constitutes a *picture*, make the attempt, and I think he will agree with me that it is by far the most difficult branch of the art. No one who has not tried it can imagine the obstacles which have to be overcome in order so produce an artistic landscape by the camera. In the first place, it is necessary to have a chemical surface which will give all the middle tints, detail in the deep shadows, and upon which all the different colors, from pure white to green, yellow, brown, and black, will produce the proper effect when included in the same view. This I need scarcely say, is no easy task. Then the selection of the view, and the point from wihch to take it, is a matter requiring taste, judgment, and the eye of an artist, and not merely the eye of an artist, but of a *photographic artist*, for there are many scenes which would furnish beautiful *sketches* which are not at all applicable to the camera, and *vice versa*. My own practice is, to take a small camera and spend a day or two in selecting subjects; when I find one I make a memorandum of it with the time of day and effect under which it should be taken, and when I start with my little waggon, I have nothing to do but go directly to each place at the proper time.

If you think it would interest your readers to know the process by which my prints are obtained, I will be happy to communicate it to you at any time.

Yours truly,

B. M. Breckenridge.

P. S.—What is the reason that no Saxe Paper can be had?

Of course the experience of one so successful as you have been in photography, must not only be interesting, but instructive to our readers. The prints you send us are in some respects equal to the best English and French views, and fall very little short in any. Tolerably good Canson Paper can now be had, and we hear of some Saxe being in port. All the paper mills of Europe were stopped by the panic, and they have only recently commenced operations again.

— Our Illustrations this month consist of a copy of Thorwaldsen's *Bas*-relief of Winter—the negative by Messrs. Whipple & Black; and a copy of an old Italian engraving after Rubens, of the Elopement of Phœbe and Ilaira. We promised in our last to give some account of the bas-reliefs of Thorwaldsen in this number, but we have been so occupied since the first of May with alterations in our office—which has consequently been turned upside down ever since—that we have found it impossible to devote the usual time to our Journal. We must therefore omit our usual descriptions.

The Formulas by which the present illustrations were printed are as follows:—

The Salting Solution was the same as for May, adding 30 or 40 drops lemon juice.

The *Nitrate Solution* was made in the usual way, but containing only *twenty* grains of nitrate of silver to the ounce of water.

The *toning bath*: Water $\frac{1}{2}$ gallon, chloride of lead solution I quart, chloride of silver, 2 ounces, hyposulphite soda to saturation. The chloride of lead solution (see May number) was made by simply dissolving the acetate of lead in the water (a good proportion is one ounce acetate to one pint water), precipitating it by common table salt, re-dissolving with hyposulphite soda, and filtering.

Great care must be taken, in toning, not to suffer the print to remain too long in this bath, as it will become dull, and veiled, and chalky, besides being liable to fade. Never tone to a decided black, but stop at the purple tint, as the prints darken in the washing trough and in drying.

Mr R. J. Nunn, of Savannah, Ga., writes:—"Mr. Hamilton states that he uses whiting for a canvas process. About a year ago I made experiments on the use of powders for that purpose, and found that almost any powder would do; such as magnesia, tripoli, allumina, rottenstone, flour, starch, &c., &c. Alcohol is not decidedly necessary, water answering as well, and the chloride of ammonium or sodium mixed with other powders may be applied at the same time, thus lessening the process by one operation. I have been for some time, and am still, engaged on a series of experiments in toning positive prints with various metals and metalloids, such as antimony, arsenic, palladium, copper, iron, zinc, platinum, iodine, &c., &c., and hope soon to give you the results of my experience." It will give us pleasure to have you do so, so that we can lay them before our readers at an early day.

— The photographers of our large eastern cities must look to their laurels, or they will very soon be deprived of them, if they have not already, in many respects, lost them. We have this month received a number of plain prints from our country friends, that not only compare favorably with anything executed in Boston, New York, or Philadelphia, in all respects, but are superior in some points.

— Mr. McPherson, of Concord, N. H., has sent us four cabinet heads, which, for brilliancy of tone, delicacy of shade and color, sharpness, freedom from imperfections, and cleanliness of manipulation, are equal to any prints we have seen. The details, with the slight exception of the lower parts of the drapery, are also well preserved. *Such* photographs would be ruined by retouching, for their softness cannot be approached by the pencil of the artist.

— Mr. Gage, of St. Johnsbury, Vt., has sent us a charming little lot of portraits and views, some of which are exquisite. The portrait of the Rev. B. F. Hall is unsurpassable either by the camera of the photographer or the pencil of the painter. It almost speaks; every portion of the picture within the focal reach of the camera is delightfully round, exquisitely shaded, and minute in detail. That of Dr. Newton is of different style of finish, but equally good, except in position, and in the evident desire of the Doctor to give prominence to a fine pair of bright eyes and large overhanging eyebrows. A little drooping of the eye-lids would have produced a more pleasing result. The views are fair, but a little overtoned. This is a branch of photography in which our American artists have yet much to learn. The manipulations and details of these views are good, but they want perspective and an atmosphere. The best solar camera prints we have yet seen have been executed by Mr. Gage They are not now before us, and we therefore cannot point out their good qualities.

This reminds us of the article we copied last month from Mr. Sutton's *Photographic Notes,* on enlarging collodion negatives by Woodward's Solar Camera. The position therein assumed by Mr. Sutton is not tennable, and had he seen its operations would never have been put forth by him. His objections, suggestions, and speculations are all chimerical, and we can have no better proof—nor would he require better—against his arguments than the portraits sent to Mr. Anthony by Mr. Gage

Mr. Ford of Ravanne, O., sends us two half size portraits that evince decided improvement in every respect, since our first notice of his efforts. The positions, shadings, and brilliancy are good; but sharpness and detail is wanting in the drapery, caused, we should judge, from sitting the models too near the background, and too thin a film.

We can only say, in regard to the *Sphereotype* patent, that the question of its validity can be decided by the United States court only. Our own opinion is, that it would be sustained. There is no patent for the use of colored glass for *Ambrotypes.* The man was a "*sucker,*" and tried to cheat you.

Messrs. Cutting & Turner have sent us several *Photolithographic* prints of microscopic objects, printed in various colors. They surpass anything of the kind ever executed by the lithographic art. We have only to examine them through a magnifying glass to be convinced of this fact. They are entirely free from the disagreeable grainy appearance so prominent in lithographs, and in other photolithographic processes. Messrs. Cutting & Turner have made a great stride in the right direction for this kind of illustration.

— We copy the following from the *Cincinnati Dispatch:*

Miss Davenport.—During the late engagement of this celebrated actress in our city, she sat to Mr. Mullen (of Faris & Mullen's *Melodeon Gallery*) for a photograph in character dress; with what result the following letter from *Miss D.* (which *Mr. M.* has kindly given us for publication) will show:

"Miss Davenport presents her compliments to Mr. Mullen, and feels that she cannot leave Cincinnati without first expressing her thanks for the remarkably fine Photograph he has created, remarkable both as a work of art and as a likeness—the best certainly she has ever had taken of her.

— The *Portland* (Me). *Advertiser*, gives us the following information:

"Photographic Association.—At a meeting of the Photographers of this city, held on Saturday evening last, a Society was organized under the name of the Portland Photographic Association. B. F. Smith was chosen President; Rufus Adams Vice President; and Mark F. King, Secretary and Treasurer. The Association includes all the Daguerreotypists and proprietors of picture galleries in the city. It is got up for the mutual improvement and benefit of all concerned."

This is the right spirit, and we hope to see it followed in every town and city in the Union where there are six photographers. We shall be highly gratified if some one of our friends in Portland will keep us advised of the progress of this initial society. That it has our best wishes for its prosperity, will not be doubted by any one who has read our Journal for the last nine years.

— No one can peruse our present number and doubt that the Photographic Art is eminently progressive, or that it is destined to work wonderful changes not only in the world of art, but the world of science also. The article on "*Panoramic Negatives,*" contains some useful hints. This is a subject which we shall take an early opportunity to discuss, as we conceive that we have a plan for the production of panoramic pictures, superior to any that have been yet suggested.

Mr. Grubb continues the discussion on photographic lenses very ably, and gives information that must prove valuable to every photographer. The discussion on the Dry Collodion process is continued with considerable spirit by various claimants. We have also, a very interesting paper on "*The Rise and Progress of Photography.*" One of considerable value on "*Photographic Composition,*" both interesting and curious. Two we consider of great importance on M Petzval's and the *Orthoscopic* lenses, both of which should claim the attention of every artist who intends to devote himself to landscape photography. Mr. Root's article on "*Small Matters*" should be read attentively, for his hints and advice are worth pondering. Besides a great fund of other valuable information, we present two very interesting communications.

But now again turn over the pages of the present number, count our appropriations of the brains of foreign authors, and then the free gifts of those of our own country, and then think of the miserable contrast that must be justly made between the two classes, and contemplate it if you can without shame, all you readers of this Journal. Is there no process by which we can stir you up to sufficient self respect, to have you prove to the world that you are not the mere machines in Photographic Art you are now considered by the majority of all thinking men? Is there no gentle purgative we can give you, nor any species of gall and wormwood to be administered that will purge you of your apathy? Are we really talking to stocks and stones? The motto of the Messrs. Fowlers & Wells is, "*Think of living;*" we say to you *Think of immortality* also.

— We have now our rooms suitably fitted up for printing photographic postives in large quantities, and in the best style of the art, including a room for enlarging small negatives to cabinet and life-size, and are prepared to execute orders for photographers throughout the United States in either branch at the shortest notice and at very reasonable rates. We have also a department for the instruction of pupils, or for the practice of those who desire to improve their knowledge of the art. In this department our terms will be *ten dollars* a week for instruction. This will give the student an opportunity to acquire experience according to the length of his purse.

— Our *second* edition for the first six months of 1858 is entirely exhausted. All who subscribe, therefore, hereafter to the two dollar edition must commence with the *July number* with which we will increase the number of copies. The increase to our subscription list during the present year is highly gratifying, and if it continues as it has begun, we shall soon have the largest circulation as well as the most beautiful Photographic Journal in the world.

— We have been for the last month completely upside down in our office, consequent upon our enlargements and alterations to meet the demands of our increased business. Necessarily our present issue is a few days behind time; but we shall be prompt again with our next.

From Photographic Notes.

PHOTOGRAPHY—ITS APPLICATION

To the Present Wants of Society and its Future Prospects.

BY MR. W. B. OSBORN.

Read Before the Birmingham Photographic Society, March 30th 1858.

THE beautiful art of Photography is almost universally declared to be at present in its infancy. The term, perhaps, may be considered scarcely applicable to an art, which has been before the public for so many years, but we may liken it with safety, to a youth of bright promise, watched over with anxiety and pleasure by its friends, beautiful and charming even in its present realities, partially revealed though they are, yet foreshadowing a glorious manhood, when bursting from the trammels which at present confines its path and dims its lustre; it shall repay its enthusiastic admirers by a display of power and beauty, of which even the most sanguine scarcely dare to dream. It is not our province this evening to trace its early history and search for the slight causes from which this young giant of the age has sprung, that has already been done, over and over again, in the works of such men as Hunt and Hardwich, and in papers read before our own, and other Societies.

Our aim to-night is to consider the present applications of Photography to the Arts and Sciences, and to shadow forth our anticipations for its future, to hint at its probable uses, and to show as nearly as we can, from bygone experiences, and the indications now before us, of what the art may reasonably be supposed to be capable; and should these ideas be thought romantic and extravagant, and not likely to be realized, let me remind you of the past, and of the gigantic strides that have already been made in the art, and of the wonders that have been accomplished, and then ask you,—Who shall dare to place a limit to its progress, or say of what it shall not be capable,. or where its onward course shall stop?

Look back for a moment to the time, when the Alchemists, in their ardent search after an impossibility, stumbled over the apparently insignificant fact, that Horn Silver (chloride of silver), darkened by exposure to light. Who would have thought that such an humble origin, from such a simple fact, thrown aside as worthless, and well nigh forgotten as soon as discovered, the mighty structure we now admire so much, should have arisen? Truly it furnishes us with an apt illustration of the adage—

"What great events from trifling causes spring."

The germ of this discovery lay hid for many years, but at last, in our own time, it suddenly burst forth into life and light, like a lovely flower,

"A thing of beauty, and of joy for ever."

So much for the past, now let us consider the present and the future.

I shall first endeavor to place before you a rapid summary of the processes now most in use, together with their recent improvents, and then show their adaptation to the present wants of Society, and their probable bearing on the future.

First on my list comes the glorious, although I regret to say, almost obsolete discovery of the great Daguerre; for beauty and delicacy it is unsurpassed, even at the present day, but I am compelled to admit that the objections urged against it are many and weighty, so much so that I fear it must eventually give way to more modern and simpler processes.

Yet can anything be more exquisite than a really first-rate Daguerreotype portrait—more delicate in its detail, or softer, or more beautiful in its gradations of light and shade? For certain purposes to which I shall presently refer it undoubtedly stands unrivalled.

The Calotype, or Talbotype, comes next in order, the result of the experiments and researches of our illustrious countryman, Henry Fox Talbot, to whom, with Daguerre, equal honor is due. Who can contemplate the beautiful pictures of the earlier Calotypists without a feeling somewhat akin to envy at the superiority of their works over some of ours, even with all the increased appliances at our call. Our own town has produced some excellent followers of this branch. I may mention our Vice-Presidents, George Shaw and William Howell—Johnstone, and George Hill, whose works were in our Exhibition. What delicacy and softness and beautiful delineation, do you find in many Calotypes, and there are numbers upon which we can still gaze with feelings of admiration, although years have passed since they were produced.

But times and things change, and other methods have sprung up to supplant the old ones, and there are but few who practice the Colotypy now. The Wax-Paper has found many votaries, and is in some respects superior to the Calotype; some splendid things have been produced by this process, and in skillful hands may rival glass. Albumen on glass has also had its day, its chief drawback being its extreme slowness in receiving impressions in the camera; many practitioners have produced first-rate pictures, worthy of emulation and praise.

But to our lamented countryman, Frederick Scott Archer, is due the crowning triumph of the art. With his grand discovery of the applicability of Collodion as a vehicle for the sensitive film, a new era dawned upon Photography, new powers were given to it, a new field opened to its research, and numberless applications brought to bear upon it.

The Collodion Process, whether Positive or Negative, is unsurpassed for giving extreme delicacy and softness combined with marvellous rapidity, or sensitiveness, so much so that in the hands of clever manipulators, absolutely instantaneous pictures have been obtained. This process is now almost universally adopted and merits a high degree of praise, and yet with all that is known about the practice of the art, there is a great amount of ignorance upon the subject of Collodion, that is, the Chemistry of it. Light, however, is dawning upon us, and we may hope that now we have some of the first chemists of the day employed upon it, we shall not long remain deficient of true theoretical knowledge upon the matter, for until we obtain this, we are only groping in the dark, and occasionally stumbling over facts hitherto concealed. It is a mortifying reflection that we know so little of the nature and properties of light, the subtle agent by which we work, or that we find it so difficult to assign satisfactory reasons for the many perplexing changes, which so often occur in practice, and the curious results we frequently meet with.

The use of collodion in a dry state next claims our attention; this is a discovery of infinite value to all Photographers, and promises to prove of immense utility. The one drawback to its extended use—want of sensitiveness, will no doubt be soon removed, but this is more than compensated by its keeping qualities. I believe, by Dr. Hill Norris's process plates may be preserved an indefinite time; to this gentleman is due high praise, for his liberality in giving to the Photographic world the result of his arduous researches and experiments; and also for producing a really useable and simple Dry Process.

While we may claim for him the merit of being the *first* discoverer, whilst on this subject we must not forget the claims of Mr. Barnes, as the author of a process, more complicated it is true, but tending to the same end. To both gentlemen we wish every success in their efforts, and trust that they may be able very soon to render Dry Collodion as sensitive as the wet is now. Collodio-Albumen deservedly holds a high rank as a dry process and in some hands has produced exquisitively beautiful results, but its complication precludes its general use.

With this cursory glance I must now proceed to the consideration of the main subject of the present paper and endeavor to show how far Photography is applicable to the present wants of Society, and what may be the future prospects of the Art. And here a field of speculation is open to our view, which might occupy several papers like the present without exhausting the subject. In the first place, then, Portraiture will ever claim the services of Photography to a great extent. The facility with which it is accomplished, and the marvellous fidelity of its results when in good hands, will always secure it a place in public estimation; for you must bear in mind that the fault of the hideous caricatures we so often see exhibited under the name of Photographs, lies with the sitter and operator, and not in the Art itself. Due attention to this will always secure remuneration to the clever artist. Who can look without emotion upon the portrait of some dear friend, separated perhaps by hundreds or thousands of miles, or perchance removed by the hand of death, and gaze on each well-remembered feature, so faithfully depicted on the tablet before him by the unerring pencil of light, without blessing the art which can thus immortalize and recall the remembrance of happy days and hours, long since buried in the irrecoverable past? It is needless to dwell upon this theme, as it must find an echo in the hearts of all present, who will endorse the value of Photography for this purpose.

What a noble future opens out for Photography in its application to the purposes of education. Here its utility will be immeasurable, and so obvious that it is really a matter of surprise that the instructors of youth have not availed themselves of its existence, in conjunction with the Stereoscope, to a much greater extent than they have yet done. By its aid we can place before our youth the whole wonders of the animal, vegetable, and mineral kingdoms; all the remarkable places of the earth, unembellished and unexaggerated by the fancy of the painter, but vivid transcripts of the reality. Beginning with the infant schools, we can give correct representations of the objects of common life, in any size, and instead of the impossible animals so depicted in their picture books, we can furnish them with exact copies of the originals. To the youth, and the more advanced student what infinite assistance and interest does Stereoscopic Photography give to their studies. Is he reading History? Photography furnishes him with the identical spots on which mighty events took place, and in which the world's heroes lived. Is Biblical history his study? and the manners and customs of the East? Here, again, Photography is ready to help him. By its aid we can roam through Palestine and the Holy Land, visit the scenes where our Saviour performed his wondrous miracles,—the spots rendered sacred by his presence in life, and his sufferings in death. Rome with her Castle and the Vatican, St. Peter's and the Coliseum, and the hundred recollections of her departed glory. Egypt, with her Pyramids and strange hieroglyphics, and the wonders of her Architecture. Thebes, with her hundred gates and ruined Memnon. Nubia, with her tombs. Assyria, with her wondrous sculptures and buried palaces. All these have been and will be photographed for the benefit of those who stay at home.

Still further in the scale of education. The geologist can obtain faithful records of every peculiarity in the formation of our earth, and of every fossil which marks a distinct era in the history of our world, and shows him the form of the strange and wondrous animals which once inhabited our globe, and roamed through the mighty forests, whose place is now occupied by thriving towns and cities.

The Antiquary, who delights in the glories of the past, and the buried relics of by-gone ages, in old brasses and tombstones, in ancient armor, and antique carving and tracery, and in fact all that bears the stamp of age, will find Photography a faithful helper in the pursuit of his much-loved study.

We have seen, in a recent excellent paper, read before this Society, of what immense utility it will be to the Architect and Builder, and there are many other professions to which the art is highly adapted, and it is a matter of surprise that it is not more extensively used, for instance, the student of Anatomy, the Surgeon, and the Physician, would all find it extremely useful in their studies. The various forms of the skeleton, the numerous peculiarities of disease or mal-formation, might all be studied with almost as much facility by the fireside as in the lecture room.

To the Sculptor and the Painter it will furnish models of the human form divine, for reference, at times when a living subject might not be available; while to the painter of Landscape scenery its assistance is invaluable, the ever-varying effects of light and shade—the little bits of detail and the numberless points which go to make up a picture, may be faithfully rendered for his use and consultation in the studio, like the memoranda of a student. But while no true artist will make up his pictures by sordid copying from a photograph, there is, on the other hand, scarcely an artist in the kingdom who would not derive great benefit from its assistance. This consideration naturally brings me to the subject of Landscape Photography, and I had thought of saying a word or two on the arrangement of pictures, only that this object has been accomplished so much better by Mr. Mudd, in his able paper, read before the Manchester Society, on the 3rd of February, that I can only advise you to carefully study it. There is certainly very ample room for improvement among amateurs in this respect—there is a want of artistic feeling in their productions, they are so often tame and spiritless, and not only so, but very often the worst possible position is chosen for the view, as though the operator had dropped his apparatus on the first ground he came to. Look at some of the stereoscope slides offered for sale, how very few are really artistic in character, many of them positively vile; surely this should not be, and you may depend upon this, that as the public taste gets more cultivated, *only those pictures which are really and artistically good,* will meet with a ready sale. The Photographer *must* pay more attention to the characteristics of a good picture, and *must* study effect; in a word, he must be an artist in the true sense of the term, as well as a careful manipulator.

Our friend Mr. Rejlander has shown us how Art may be wedded to Nature in Photography, in many of his beautiful pictures; for example, his "Home, Sweet Home;" a picture made up of artistic bits from various localities, and worked up with great taste into one harmonious whole, presenting, as you all know a picture, at once true to nature, artistic in execution, and pleasing in effect. I should earnestly recommend all photographers who desire to excel in the art, and to improve their taste, to purchase several first-rate examples of the works of such men as Fenton, Rejlander, Delamotte, and others, and refer to them constantly, as standards of comparison for their own works, so that by aiming high they may eventually improve their taste, and consequently their productions. What one man has accomplished cannot be an impossibillty to others. But I must hasten forward.

The next adaptation of Photography, to which I would direct your attention, is its application to the purposes of trade. Manufacturers have too long neglected and overlooked its importance and utility in furnishing them with pattern books. We had in our exhibition some first-rate specimens of this use of the art. I refer to the Agricultural implements of Messrs. Ransome and Sims.

Microscopic Photography has yet to take an important station in the sphere of utility. I mean the impressions of *magnified* microscopic objects, so that we can see the objects, before invisible, save by the aid of the microscope, now fairly and correctly mapped down before us, on a scale large enough for book illustration. This is a part of the subject which has not yet received the attention that it deserves. Closely allied to this in its uses of Photography is Botany. The minute vesicle and and cellular structure of Plants will come under the head of Micro-Photography, while the camera and the pressure frame are both useful in copying the peculiarities of each order of plants.

The Astronomer will doubtless find great advantage from the use of Photography; already have we got Photographic maps of the Sun and Moon, together with a number of Cloud pictures, all of which will be very useful even as they are, but when they are rendered more perfect by means of accurate machinery and extremely sensitive surfaces, we may not only expect to have first-rate copies of every change in those bodies, but the whole planetary system may be nightly mapped for reference, and many phenomena probably explained.

One more instance of the utility of Photography, and then I must leave this interesting part of the subject. With the aid of the Magic Lantern the lecturer may illustrate his subject with the transparent slides now to be purchased in every shop where Photographs are sold. By a suitable arrangement such as described recently in one of the Journals, these pictures could be exhibited on a screen about 4 feet by 4 without the necessity of puting out the lights in the room, and while upon this subject, I might suggest to those of you who do not possess a Magic Lantern, that the camera itself might be used as one, requiring only a little alteration, which any one of common ingenuity might add. The diagram I hand round will fully explain my meaning. By the use of the camera in this way many a winters' evening may be amused.

There are many of the professions to which Photography may lend its aid, either now or in the future; for want of space and time, it would not do to enlarge upon them. I would just instance the Army and Navy, the Surveyor, the Engineer, and Machinist, the Designer, and many others which will probably suggest themselves to you. Much, however, remains to be accomplished before Photography can be considered a perfect art. The first difficulty that presents itself to our notice, is the peculiar and I may call it opposite effect of different colors on the sensitive surface. Many colors, which in nature are lights, such as yellow and red, &c., are, in the photographs, dark, while blue, which may be called a shade in nature, is always white in the Positive photograph the rich tints of Autumn, the glowing color af ripened corn, and the brilliant hues of many birds and flowers, so beautiful to the eye, are in the Photograph sombre and dull, giving a contrary effect to that of nature and spoiling the general character of the picture. Then again the high lights, such as the reflection of water, the glistening of leaves lighted by the sun, the polish of any metal or stone, in fact any surface which strongly reflects light, are at present often brought out with such startling force and abruptness as to be disagreeable and offensive to the eye. The best of our photographers have remedied this defect to a certain extent, by only taking pictures in a suitable diffused light, and indeed this is the only method we have of artistic working, yet even with this, the defects still exist, and until they are removed, Photography can never take the high place among the arts to which our wishes aspire.

This, of course, must continue until we arrive at a better knowledge of the action of the actinic force, or rather I might say at what is the real cause or foundation of the molecular changes which take place. Another bar to progress, and a very strong argument in the hands of those who wish to decry our Art, is the want of originality, and the miserable servility of imitation adopted by so many would-be professors of the art. I often hear people say, "Oh, Photography is all very well in its way, but there is no Art in it; it is all mechanical; you can only copy. If your chemicals work, you must get a picture, and then what pictures some of them are, when you have got them—nothing but patches of white and black!"

Much of this is unfortunately true, as I remarked before, it is not every man who plants his camera in the neighborhood of some charming spot, that is an artist; he may be a clever manipulator, but if he lacks the artist's feeling, he will do no good. Fifty men may go to the same place, and but one bring back a really artistic picture. Why is this? Because the forty-nine are content to place the camera in the first convenient spot, while the one studies his picture, chooses the most favorable point of sight, weighs carefully the amount of light and shade, calculates the bearing of part upon part, and judiciously aranges and selects his foreground. The true artist aims not at mere picture making. Loving his work he endeavors to render his subject pleasing, he throws his soul into his Art, and whether Painter, Sculptor, or Photographer, true genius will shine forth in the productions.

In the future what great changes may we expect will take place in the practice of photography, how the materials with which we now work, will probably be superseded by others of a far more sensitive character, and perhaps at the same time more evenly, (if I may so express myself) impressionable to *all* the rays of the spectrum. The recent suggestive experiments of Niepce de St. Victor open up an interesting field for speculation and enquiry into new and unthought of properties of light. We find that there is latent light as well as latent heat, and the uses to which this property of light may be applied are very numerous. And there are doubtless many other properties of light, which must be studied ere Photography can take its place as a perfect Art.

With regard to our printing processes much remains to be done to secure a really permanent method of fixing photographic impressions. We may probably hope great things from the promised communications on the printing in pure carbon; should this be successfully carried out we shall have quite a new phase in photography.

Photo-galvanography and photo-lithography are both important steps in the advancement of the art and deserve all encouragement, yet they are but the dawn of what may be accomplished, and I think we may hope to see the day when prepared plates, impressed by light in the camera, shall be quickly engraved by chemical or electrical agency, and ready to place in the hands of the printer in a few hours,—nor is this hope devoid of foundation; you have only to look along the surface of a collodion negative, to discover, that it is in fact engraved and consists of raised and depressed portions. I trust that ere long the Copyright Act may be in some measure applicable to photographs, for there are many who have sacrificed time, labor, and expense, in procuring negatives of distant places, only to have them pirated as soon as published, by some unprincipled person.

There are many other interesting speculations into which we might enter, did time allow, but I draw to a conclusion, and I cannot close this paper more fittingly, than with an allusion to the aim and object of all true photographers, the production of photographs in the natural color.

Few who have carefully watched the progress of our art will venture to deny the possibility of this illumination. I believe that it will be accomplished. Faint gleams have already shown themselves, in the experiments of M. Testud de Beauregard and others, and I have in my possession a collodion positive in which one color is naturally impressed (the blue of a lady's handkerchief) but how I cannot tell. This desideratum accomplished, photography will step at once into a new existence, and revel in a new world. A wide field is here opened for us; there is ample room for all to exercise their genius. Then let me exhort every true photographer, to cast aside as puerile, the exhibition of petty jealousies which have of late so much disfigured the pages of our Journals, and each contributing his mite towards the common stock, strive to advance the progress of our delightful art.

SYRUP, IODIZING SOLUTION, AND COLLODION.

To Editor of Liverpool Photographic Journal:

Sir,—Will you kindly give me a reply to the following queries in a future number of your *Journal*.

1st.—How long will honey syrup (honey and distilled water equal parts) keep in a good working state? (Temperature below 70°). 2nd.—To which iodide do you give the preference for iodizing collodion employed in the honey process? 3rd—Having a large stock of an old un-iodized positive collodion, how would you advise me to proceed to render it available for negatives. I am, Sir, yours faithfully,

George Haydon.

[1st.—Almost indefinitely; in hot weather it will probably ferment slightly and become charged with carbonic acid gas, but if this occurs, pour it backwards and forwards from one tumbler to another several times, to dissipate the gas, and it will work as well as at first. If it becomes turbid filter it until clear. 2nd.—If pure, iodide of potassium, but iodide of cadmium will do. 3d.—Add from one half grain to two grains of pyroxyline to each ounce of collodion, then iodize with five grains of iodide of potassium, dissolved in one drachm of alcohol to seven drachms of the collodion.—Ed.]

From Photographic Notes.

RECOLLECTIONS AND JOTTINGS
Of a Photographic Tour, Undertaken during the Years 1856-7.*

BY J. W. G. GUTCH, M.R.C.S.L.

We found nothing that suited us in Lynton, and therefore soon wended our way down the steep ascent that had required six horses to draw us up the night before, and when fairly down, we were as much delighted with the scenery which met our eye as we had been at Lynton, and congratulated ourselves on the chance that directed our steps to this most favored spot. Were I to make a comparison, I should say that the two places I have seen closely resembling it, only on a far grander scale, are the Baths of Lucca, and the Baths of the Lady, in the Carpathian Mountains; but in England I should think it unique, at least I have never, in all my ramblings, seen anything like it. Here we determined to rest, and were soon comfortably housed in what was formerly the hotel, now removed to another part of the village, the influx of visitors requiring now better accommodation. No description, in my humble opinion, can do justice to the beauties of Lynmouth. He who has sung its praise so well, and who has described the numberless beauties so truthfully, (I mean the late Mr. Eagles), still fails to give any idea of such scenery as this, which must be seen, and which no words can paint, not even so skilful and able an artist as he whom I have named. Its beauties are truly endless, for turn your steps which way you will, fresh ones meet your eye; the host of artists that are each summer to be seen, dotted about in every direction, and under every description of grotesque and picturesque form, testify to the truth of these remarks. Now too may be seen mysterious machines, mounted and unmounted, on stands; even flys, fitted up with yellow blinds, and laden with boxes as unlike the ones our forefathers used to travel with as possibly can be, in fact gentlemen photographers, who hide their head, not under a bushel, but a black apron, and who, with watch in hand, seem ever anxious that time should pass away faster than it does. I one day, in the valley of rocks, counted no less than six of these perambulators, each carrying away portions of the valley, and seemingly quite satisfied with the spoilation they had so harmlessly effected, leaving those picturesque rocks intact, and ready to be taken again and again for many generations to come. May they long remain, and never be subject to worse treatment, for they seem well nigh to defy the all-devouring hand of time, and though grown grey and covered with moss and lichen-wort, still no crumbling is visible.

I am inclined to think the wonders of the Valley of Rocks, at Lynton, a little over-rated, although, under certain atmospheric effects, it is certainly very grand. The North Cliff Terrace Walk, too, is perhaps almost unique in England, and wanting the deep blue and cloudless sky of Italy, I was almost reminded of the road to Castelanan. The glorious feature of the landscape, the Castle rock, and the far-off hills of Wales, with the billows breaking at the foot of the cliffs, hundreds of feet below, produces an effect that is not often met with in our precious island.

I remember, on my first visit to Rome, I was scarce half an hour in the Eternal City before I found myself wending my way towards St. Peter's, and so at Lynmouth, directly that lodgings had been found, we started off to the well-known and often described place of Waters Meet. We were enchanted with the road thereto, but must I own to a feeling of disappointment, on reaching the termination of our walk, and like many others of those localities, so lauded in the printed descriptions, found the reality by no means equal to the description.

Having nothing to hurry us away from this really most lovely and favored spot, we lingered on for nearly six weeks, and took between forty and fifty good negatives of the place. For a description of its scenery, I would advise any one to purchase the Sketches, written by the Rev. John Eagles, of Bristol, and detailing, in most graphic language, all the marvellous points of beautiful scenery here to be met with.

Although there is no great difficulty in reaching this place, yet, as often now occurs in those localities, distant from any railway, there is much trouble in getting out of it, from the hilly nature of the country, heavy luggage, (and the boxes of a photographer are never very light), is objected to, and charged heavy prices, and must be sent before. In short there are many of these little obstructions to be overcome, and no little extortion attempted. However we at last tore ourselves away, and proceeded *via* Barnstaple, to Dawlish, wishing to pay a visit to the many watering places along this part of Devonshire coast, formerly most fashionable, and still much frequented. Dawlish is a pretty, bright and sunny place, and quite worth a visit; the red sandstone cliffs, which are pierced above by thousands of rabbits, and the sand-martin, and below by the railway tunnels of the South Devon Coast Railway, standing out in bold relief, and from the wash of the sea, forming most picturesque headlands, and isolated rocks in every direction, and all coming out well, in any picture that I took. Here I managed a dozen, and some of them very nice. An easy ride conveys you on to Teignmouth, having all the appearance of one of those watering places that in former years attracted its crowd of visitors. There is the pile of buildings so necessary to the requirements of our respected parents, the Assembly Rooms, and the Circulating Library and Reading Rooms, with, for ought we know to the contrary, its wonted collection of Pamelas and Penelopes, but the place now looked, to my eyes, deserted, and like Weymouth, seemed as if its glories had passed away. Nor did I see anything very tempting for camera work, so instead of loitering on my road I determined on proceeding still further along the coast to Torquay. Here there is evidently much to be done, not in the town, but in the environs. Babbicombe is still very pretty, though this once secluded little nook is now, like others, being invaded by the mean and ugly villas that are, in every direction, in around Torquay, covering each acre of ground. It looked to me a hot and dusty place, and too large for any quiet or repose. In fact I felt disappointed with this my first visit. Totness next engaged my attention, and here several very nice photographs may be taken. Berry Pomeroy Castle, too, is close by, though, from its being so closely shut in by trees, it is not an easy matter to get any good view of this fine ruin, and which, from the neglected state it is allowed to remain in, is fast disappearing. I never saw a fine old ruin in such bad preservation, overgrown with brambles and nettles, broken tables and stools strewed about, the vestige of the last excursion train party, broken necks of bottles, and other remnants of the visit, being anything but in keeping with the hall where once a vastly different assemblage were wont to congregate and converse.

From Totness, a row to Dartmouth is of course necessary, and although I could see nothing in the scenery to permit its being called the English Rhine, still it quite repays the tourist, and should by all means be visited if only to permit an inspection of that most picturesque and quaint old town Dartmouth. Here a week will not suffice to take all that is worth taking;—old gables, the remains of the Castle;—nice bits of shipping and boats;—in short there is much here to repay the photographer, and very different from any other English town.

This formed the termination of my Photographic Tour in that direction, and I retraced my steps to Dawlish. I now proceeded in the direction of Exeter, to visit and photograph Powderham Castle, the seat of the Duke of Devonshire, and well worth taking; and Exmouth, where I did not find much of interest.

I now proceeded to a greater distance, determining on seeing Sidmouth before finally leaving the South Devon Coast, and here you have again recourse to the old four; or rather three-horse coach, and from its being some miles from any railway, it is apparently languishing, and looks deserted and poverty stricken; nevertheless it is a very pretty and picturesque bathing place, and the fine cliffs of sandstone which form the termination of the Bay, stand out with great effect. Near

* Continued from page 151, vol. xi. no. vi.

here is the restored Church of Ottery St. Mary's, quite worth a visit, and which makes a very good photograph. In the internal decoration, large sums have been spent of late, and for a restoration in the mediæval style, a more beautiful specimen cannot be seen anywhere in England.

The weather now getting cold and stormy, and the year fast waning, warned us to make the best of the remaining few weeks, and before packing up for the winter, and bidding adieu, till Spring, to the pursuit, which of all others, to my mind, gives a larger allowance of health and enjoyment, one other place remained on the list marked out for the Summers tour, and that was Weymouth; so bidding adieu to the warm and relaxing climate of Devon, we soon found ourselves among the chalky downs of Dorsetshire, and entering the old town of Melcombe Regis, so favorite a resort, in former days, of old George the Third. It has not in any way changed in appearance; it is just the same as it was in his palmy days. Here, from the dreary country around, there is little to interest the photographer, Sundstert Castle and the Island of Portland being the two principal points of any interest. The new Breakwater gave me some very good pictures, and the dreary and wild scenery of the back of the Island, with its weather-beaten cliffs, afforded some beautiful studies of cliffs and rocks, so admirably adapted for Photographic display. This concluded a nearly seven months tour, pleasurable, profit, and health-giving; and here, for the present, I shall conclude this long account of my rambles and proceedings in 1856, promising, if you so desire, at no long interval to forward you the account of 1857, and which, from its more extended and varied route, may perhaps prove the more interesting of the two.

In 1856 I became possessed of 170 good negatives, viz., Cheddar 8; Dawlish 8; Lynmouth 36; Lynton 5; Weymouth and Portland 26; Wells 4; Weston 10; Sidmouth 10; Teignmouth 2; Malvern 32; all of which, notwithstanding the rough roads they have been over and the rough handling they have received, and the number of copies, over 2000, that they have afforded me, are still, I am happy to say, as perfect as when they were taken, and are still, I hope, destined to do me good and profitable service. I last year, 1857, obtained 180 negatives, and from these, with four copying frames only, I obtained 2800 positives: this consumed 3lbs. 6ozs. of nitrate, four pints of collodion, and a ream of Marion's paper. And now, to prove that after this long story what I have stated is correct concerning the success of my mode of manipulating, I send a few examples of positives, selected at hazard from my portforlio of duplicates, which, I am happy to say, is never allowed to become overstocked, and abide your decision as to their merits, again most conscientiously recommending the "Archer Camera," as being the only one that combines *every* requisite for field-work; and I would say to the sceptic, make trial, and I feel quite sure the result will give you satisfaction.

PROCESS FOR PRESERVING THE SENSITIVENESS OF COLLODION PLATES.

To the Editor of the London Times:

Sir,—Having lately made a series of experiments to find out some less complicated process than any at present in use for preserving the sensitiveness of collodion plates, I have discovered one which is so simple that I venture to hope you will deem it of sufficient value to the photographic world to give it publicity through your widely-circulating journal.

The plate, being collodionized and sensitized in the usual manner, is washed with rain water, and after draining for about half a minute, I pour on the collodion film some plain albumen, which has been obtained by well beating up the white of one egg with a quarter of an ounce of water, and allowing to subside. After half a minute the albumen is washed off under a gentle stream of rain water, enough remaining in the pores of the collodion to answer the purpose of preserving its sensitiveness. The plate is then allowed to dry, and is fit for use.

The advantages of this process are:—

1. Absence of blisters.

2. Absence of bubbles in the albumen, these being washed off with the surface albumen.

3. The resulting negative is remarkable for softness.

4. The plate only requires once sensitising.

5. With some collodions, which will be mentioned in the next number of the *Journal of Photography*, much less exposure is required than by any other keeping process known to me.

6. The negative only requires a few minutes in developing by using (after previously moistening the plate) from 1½ to 2 grains of pyrogallic acid to the ounce of water, and the usual amount of acetic acid.

The only disadvantage I have yet encountered (and that not often) is a tendency of the development to get under the film. As yet, however, I have only had one picture slightly impaired, but not soiled by that circumstance, and I think the evil may be entirely prevented by rubbing the edge of the plate, after the last washing, with the finger dipped in a little albumen.

From six to nine drops of liquor ammoniæ added to each egg, seem to increase the sensitiveness of the film, but, at present, I recommend trying the plain albumen.

I believe plates can be kept an indefinite period when prepared with care. I have kept some a week, without the slightest loss of sensitiveness.

I have the honor to subscribe myself yours obediently,

Thomas Fothergill.

8 Inverness-road, London, April 24.

From Photographic Notes.

INSTRUMENTS FOR TESTING NITRATE OF SILVER BATHS.

To the Editor of Photographic Notes:

Sir,—Is it not to be regretted that we still see so many advertisements respecting Hydrometers "for testing nitrate of silver baths." It must occur to every one, who reflects for a moment on the matter, that this form of instrument is entirely incapable of estimating the amount of silver existing in a bath which has been even a short time in use.

Without taking into account the ever-varying amount of alcohol and ether reducing the specific gravity of the collodion bath, each plate, as it removes its dose of iodide of silver, leaves an equivalent of nitrate of ammonia, potassa, or cadmium, as the case may be, which of course is indicated by the so-called "Argentometer," and produces an error in the calculation in direct proportion to the equivalent number of the base contained. In fact the only use of an anhydrometer is to show us what we know quite as well without it, that our bath decreases in strength by being worked.

I have devised a very simple form of apparatus for testing all aqueous solutions of nitrate, or ammonia-nitrate of silver; in which, however, it must be observed, there is no new principle involved; my only claim is to have carried a well known instrument and process to their last degree of simplicity.

A glass tube, 5 inches long, and ½-inch diameter, has welded to one of its extremities another tube not quite ⅜-inch diameter and five in length;—the former has fitted to it a piston, which constitutes it a syringe, the total capacity of which is equal to that of the lower portion; which is graduated into 25 *divisions* each subdivided into five graduations, each one minim; the inferior extremity is drawn out to a capillary orifice.

I make the best liquid by dissolving 69 grains pure dry chloride of sodium in 1000 minims, (2 fluid ounces plus 40 minims) of distilled water.

Take any fraction of a fluid ounce of the bath to be tested, mix it with an equal volume of nitric acid and twice or thrice its bulk of pure water, fill the instrument to the top mark, (the zero), with test liquor, and gradually depressing the piston, allow it to run into the bath prepared as above and kept vigorously stirred.

At first the precipitate (chloride of silver) subsides very readily; but, near the point of saturation the supernatant liquid remains much longer milky, and more caution must be exercised. When the addition of one drop no longer occasions a precipitate the operation is complete. The number of graduations left empty indicates the number of grains of nitrate of silver contained in the liquid under examination; a graduation of five minims being one *division* of the instrument, as before observed.

J. B. Hockin.

[Mr. Hockin does not seem to be aware that the Argentometer advertised by Mr. Wood of Cheapside acts on the same principle as that which he has described. Every photographer should possess an instrument of this kind, and a quantity of the test solution of pure chloride of sodium. Common salt will not do, as it contains the chlorides of calcium and magnesium, and the sulphates of lime and magnesia.

Pure chloride of sodium is made by adding pure hydrochloric acid in excess to pure carbonate of soda, and evaporating to dryness.

It is very slightly deliquescent, when pure; the deliquescence of common salt being occasioned by the pressure of chloride of magnesium.—Ed. P. N.]

From Photographic Notes.

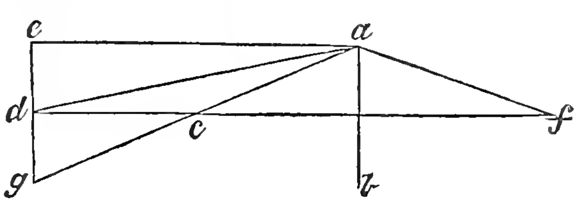
PROFESSOR PETZVAL'S NEW LENS,

EXPLAINED BY HIMSELF IN A LETTER TO MR. PAUL PRETSCH.

(*Translated and finally corrected by Mr. Pretsch*)

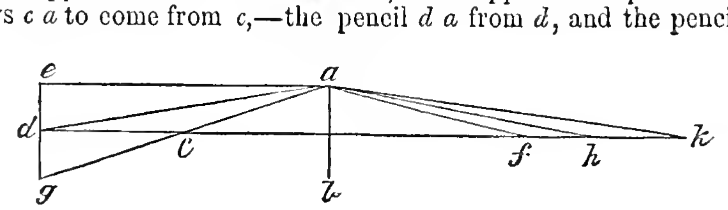
"After having finished my new lens, I introduced it to the public by placing the same before the Imperial Academy of Sciences in Vienna, and by explaining its qualities and abilities in certain lectures. These lectures have been published in two pamphlets, but, as a matter of course, they are published in German; a few copies of the same I have sent, through Mr. Pretsch, to England, and I hope to see them shortly published in a good English translation. It is therefore not my fault if the English Photographic world is so little informed of the real qualities of this lens. Some views expressed in public papers have induced me to mention this fact again; moreover, there appear to be some competitors trying to make the public believe that their inferior imitations are the only genuine ones. All these matters stimulate me to publish again some observations on this subject in the hope that I may not lose the attention of the public.

"I consider it very dangerous to the success of any new production, if people expect to find in it certain qualities which it has not, and which it neither can, nor pretend to possess. I will therefore candidly state all the abilities which the public might expect, but which my lens cannot possess, afterwards explaining those which in reality it *does* possess.



"No lens, nor combination of lenses, can be so constructed as to reproduce objects at long and short distances on one and the same plane. This is an absolute impossibility in optics. To suppose such a thing possible is an absurdity, which can be easily exposed in the following manner:—

"Suppose *a b* to be such a lens, and suppose the pencil of rays *c a* to come from *c*,—the pencil *d a* from *d*, and the pencil *e a* from a very long distance. Now some people perhaps would demand that all these pencils of rays should be united in one place or dot *f*. Suppose it could be done, consequently we could imagine *g d e* as one object, and we shall perceive that such a lens (if its production should be possible) would reproduce all the parts of the object *e d g* in *f*, and would therefore give no image at all, but only an illuminated dot in the focus *f*.



"On the contrary, if the pencil *e a*, after its refraction, cuts the axis at *f*, it is an indispensable necessity, that *d a* cuts at *h*, and *c a* at *k*. It can also be added that the difference of the spaces *f* and *k*, is quite independent of the curvatures of the lens, or of the system of lenses, and also of the arrangement of the constituent parts of the lens; but it depends upon the focus of the lens or of the system of lenses, and the difference of these spaces *f* and *k* increases in the quadrature of its proportion, namely, if the focus becomes double the length, the space *f k* increases to four times its original value.

"It is needless to explain here how it happens that we nevertheless can take equally sharp pictures on one and the same surface, from objects at short and long distances, and even with full aperture, because this has been explained by Mr. Grubb, in the Journal of the Photographic Society; and I cannot add anything of importance to these observations, except that he has estimated the difference of distances a little too short, and that he did not consider the circumstance of the real aperture of the lens being not 3 inches, but $2\frac{1}{3}$ inches. He treats therefore the image a little too slightly, which can be proved to anybody by examining the photographic picture by means of a magnifying glass.

"We may here repeat the very simple but important rule to photographers going to take an equally sharp, or perhaps an equally unsharp picture, to rely not only on his lens, but also on his experience, and on the construction of his camera; and especially I consider of great importance the inclination of the surface of the image to the axis of the instrument. In the camera which I have sent you as a specimen, this is provided for by a certain contrivance for the purpose, and it would be very desirable that every photographer should possess knowledge of the simple formulæ in optics for the purpose of finding out easily, without searching a long time, in each case, the required inclination of the surface of the image. I am very sorry to be obliged to confess that unfortunately, and against the taste of Englishmen, this specimen of a camera is made of light-colored wood, not of poplar, as supposed, but of 'Ahorn,' (maple, false plane-tree).

"The second capability which ought to be discussed, is the mode of obtaining a perfectly flat picture. The construction of such a lens would not only be possible but in fact I myself possess tables for the combination of lenses which are able to produce pictures with less curvature, and also tables for the construction of lenses which are capable of producing perfectly flat pictures. But it appeared to me, that the curvature of a paraboloid of revolution, with about 80 inches radius of curvature at the vertex, would be just suitable to the greater number of practical purposes. My new lens, with 3 inches aperture, possesses this peculiarity, and it remains constantly the same, whatever the distance of the object from the lens may be, therefore, also in the case if the object to be taken is situate at a great distance from the lens. Consequently the lens possesses, and ought to possess, the capability of reproducing from a flat picture, an image curved in the mentioned proportion; but it will reproduce from a picture, curved in this proportion, a faultless image of the fifth order.

"I have preferred this curvature of the image instead of a perfect evenness, because it happens very seldom, or not at all, that we can take views of objects placed in a straight line. On the contrary, it happens very frequently that the objects to be taken are placed in a curve whose concavity is directed to the camera.

"In tactics we possess certain rules for the battle-array of the various troops, but not for the purpose of adhering strictly and only to these rules, but for the purpose of giving a general view of the advantages which might be gained by a certain arrangement. Every photographic apparatus possesses also its tactical rules,—namely, the position of the objects to be taken; in fact, such a position as is capable of rendering an equally sharp picture on a flat surface placed vertically to the axis of the instrument. It is advisable to understand this position.

'If the objects in the centre of a picture are to be seen at a very long distance, but if there are at the sides, or in the foreground, objects nearer situated, perhaps at a distance of 80 or 100 steps, we obtain an equally sharp and flat picture.

"The best mode of taking groups of persons is, to place them in the periphery of a circle which is made by the radius of seven feet from any point of the axis of the instrument. The more we deviate from it, the more we shall be troubled by the unsharp parts of the picture, and the more necessary will become an inclination of the surface of the image to the axis of the instrument.

"But I do not intend to say that we can take a picture only in this position;—this rule ought to be applied, for instance, in this way. The photographer going to take a view, tries whether he can find out a spot from which the objects to be taken are seen in the above-mentioned position. Has he found such a spot, then he can take a picture on a surface vertical to the axis of the instrument, and can do it without a diaphragm. If no such spot can be found, then he ought to ascertain whether he can obtain the desired effect by inclining the axis of the instrument, in which case he can obtain by a corresponding movement of the surface of the image, a sharp picture without a diaphragm. The same mode can be applied, if we are going to take objects at near distances, objects which we can place if we choose at the required distance, and mode, from the instrument. But if we are obliged to take objects in unfavorable positions, perhaps in quite a contrary position to that required, near and far objects on the same place, or near to each other, in this case we can only obtain a good picture by using a more or less small diaphragm, and allowing a longer time for exposure.

"I may here as well observe that a camera with a long focus is sensible to unequal distances in the quadrature of the proportion of the foci, namely a lens with 26 inches focus in comparison with such a one of 11 inches, supposing the quantity of light to be the same, will show this difference, in case of an irregular position, five times more.

"The human eye is also a camera obscura, but a very little one. The limits of its efficiency are from 8 inches to an indefinite distance. A lens of 11 inches focus will reach from 20 steps to the indefinite;—a lens of 26 inches focus from 120 steps to the indefinite;—and if we should construct an instrument of still greater dimensions, perhaps of 52 inches, we should be enabled to take, without a diaphragm, pictures of objects whose distance from the instrument is from 500 steps to the indefinite. These are the troubles in photography which are indispensably connected with the production of large pictures.

"However, I must also state that there might be some cases where lenses reproducing images with other curvatures, or with plane, or even reproducing convex images, might render better service; in fact I myself possess them already. But the present lens possesses a certain curvature;—that is to say, the combination for portraits reproduces a curvature of 15 inches; the combination for views a curvature of 80 inches;—therefore the last one is five times flatter than the first;—and people finding the pictures of the first one tolerably flat, will find also no doubt the last one not too much uneven.

"Having made these observations about the abilities which my lens does not possess, and cannot possess, it may be permitted to me to state also something about the advantages which the same in reality *does* possess, and which are founded on the principles of sound theory.

"1. A PERFECTLY CORRECT PERSPECTIVE, which has already been observed in some of the English papers. Therefore straight lines will remain so, and will not become curved. It has been stated that Voigtlander's 'Orthoscopic Lenses' show slightly curved lines; this might be easily explained by the great haste which he was obliged to use in carrying out his imitation. The 'Orthoscopic' procedure executed by him differs an immense deal from the wearisome mode which is applied and used by real science for the production of a novelty. This 'Orthoscopic' proceeding does not want long formulæ, carefully calculated tables, troublesome examination of the properties of the glass, exact execution of the curvatures according to the given radius, &c., &c. At all events it is easier, and not so troublesome. It is very simple, and executed in the following mode, viz., Waiting quietly till Professor Petzval has executed laboriously any new production in optics; there is obtained a specimen of it; the lenses are taken out of their mountings, moistened, and tried whether they fit one of the many grinding dishes of iron, of which every optician possesses a great store. The grinding dish which shows the most contact, is the right one.

A difference of some inches in the radius of the curvatures is considered in this kind of proceeding of no great importance. There is also a store of glass; a specimen of it is chosen as most likely to suit the purpose. No investigation is applied because it is too wearisome, and requires time and knowledge. The only care to be taken is that the lens of crown glass is not made of flint or *vice versa.* This expeditious mode of making an invention does not quite originate with Mr. Voigtlalander; on the contrary, it is very old. His merit is chiefly in having invented the name 'Orthoscopic.' It is a very nice name, and the want of it has been felt long ago, because the Latin *plagiare plagiatum,* is too vulgar, and has been applied only to common scrawlings of *soi-disant* authors. But 'Orthoscopic' is pleasant and elegant, and sounds well almost in every language. For instance, how agreeable sounds the advice to a young assistant in optics, 'Try and make some invention in the Orthoscopical way,' or 'I am now occupied with making Petzval's lenses Orthoscopical.' It seems therefore quite sure that the invention of the name has been more wanted than the invention of the lens. However, in spite of this beautiful name, there are remaining some little faults, the straight lines get sometimes crooked, there is something left of the chemical focus, and some other little amiabilities. At all events the 'Orthoscopic procedure' has been so far successful, that a committee of several names of the first photographers *de la grande nation* have paid acknowledgment to his production of the fine art of 'high Orthoscopy.'

"*The second ability* which my lens possesses, is the *considerable sharpness of the picture.* You will be able to obtain a better idea of it, if I state that I have constructed a telescope, mounting two of these view-combinations together, one with three, the other with five inches diameter, to which is added a terrestric eye-piece; the first one allows a magnifying power of 40 times, the other one of 80 times, therefore about as much as we demand from the best telescopes by the given proportion of aperture. Dietzler is now engaged in constructing such a telescope for yourself, and you may expect to receive it shortly. But please do not believe that these lenses were selected by myself, that they are isolated cases, which are expressly done for the purpose of rendering such excellent services; not at all,—on the contrary, all the lenses which you have obtained, and which you will obtain from the manufactory of M Dietzler, and which are marked with my initials, are quite as good and perfect. Those telescopes require a careful rectification, they are what we call dialytic, and possesses the well-known peculiarity of being exceedingly sensible to the distances between the two constituent lenses. One hundredth part of an inch shows a very remarkable difference, and another eye-piece, or another diaphragm requires also an alteration in this distance. It was therefore necessary to mount the two constituent lenses in a mode that they are movable, like what is done in the dialytic telescopes, and even in such an exact manner that the centration of the lenses is not lost. A peculiar construction of the mountings is required for the use of those lenses as a telescope.

"To speak with numerical certainty, the picture of the view-combination, being carefully rectified, is so sharp that it can be examined by a microscope of $\frac{2}{3}$-inch focus, or it allows the application of a magnifying power of 12 times. Should you think perhaps this to be a superfluous degree of sharpness, then please to consider—

"1st.—The full extent of this sharpness is only quite available in the centre of the field of view, and decreases a little to the edges of the picture.

"2nd,—It was my aim to construct the lens for the purpose of copying maps to the fifth part of their scale, and even in such a manner that by copying, nothing be lost of the details of the original, in so far that we are able to observe in the copy distinctly all the contents of the original by means of a microscope of five times magnifying power, or almost 2-inches focus.

"3rd,—In using an instrument for photography, there is always something to be sacrificed;—therefore we must possess something superfluous for the purpose of being able to sacrifice something.

"*A third quality* of the new combination of lenses is *the equal strength of light* from the centre to the utmost corners of a surface of the image of 16x12-inches, or of a circle of 20-inches diameter. If we compare the same in this respect with the combination for portraits, we shall find a superiority of 1:10, because the picture of the combination for portraits has only a round spot in the centre, of about a little more than 2-inches diameter, where the light is quite full and equal;—from there to 6-inches the strength of the light decreases to half of its maximal value, and passes from there very quickly to 0.

As I observe in the Journal of the Photographic Society, two members of this respected Society have examined my view-combination with respect to the field of view, and strength of light,—both of them, I think, have examined too slightly. I am obliged therefore to observe, that we can understand, under field of view, various matters. For instance—1st, the angular extent of the space where the strength of light is constant;—2nd, the larger angular extent of the other space where the strength of light decreases, without a diaphragm, to half its value. But we must well observe that this can be only supposed if there is no other obstacle or wrong influence, for instance, any interception by mountings too long, or by cameras too small for the picture, &c. An examination of the field of view in this precise meaning, and a comparison of the same with other lenses, would lead, no doubt, to other results.

"I would also request the favor of the other member of the Society to try again, in spite of the inferior strength of light, my new combination for taking portraits and groups of figures, under favorable circumstances. It is quite sure he would be remunerated for a longer exposure of 2½ or 3 times more, by the sharpness, correct delineation, and plastic appearance of the picture.

"However, it was not my intention at all to dispose of a former production of my own by a new combination of lenses; on the contrary, I wish only to increase the richness of optic means. I have not calculated this lens expressly for the purpose of taking portraits, and I do not demand to use it for this purpose. But I myself would, under favorable circumstrnces, always use this instrument, and only use the first combination in lack of light, or on objects which cannot be taken too quickly.

"These are the abilities which I desire to be searched for in the new production of optical science. I watch still the execution of them in Dietzler's factory, and all these productions are examined by myself, whether they really possess the required qualities. But you will perceive that I cannot take this trouble for ever, but only until the photographic public may become sufficiently aware of the abilities of the instrument, and be able to judge for itself. I wish, therefore, that you would make known the contents of this letter to the English public.

"I has not been approved that I did not publish a description of this new lens. This will account for it. It has been done because no one is able to judge from the description of an optical instrument, whether it is good or not. Its theory ought to be compared with its execution. Such a description would have been useless so long as the object in question could not have been examined in reality. Now I will give it.

"The combination for views, groups, &c., consists of two achromatic lenses. The first one, whose constituent parts are cemented together, is almost plano-convex, the convex side turned to the object. The second achromatic lens is placed at a distance from the first one of about one-sixteenth *of the focal length* of the first. Its first constituent lens is bi-concave, the slighter curvature turned to the object, the stronger one to the picture; the second constituent lens is concavo-convex, the concavity turned to the object, the convexity to the picture. This description may serve for the purpose of directing any photographer how to place the lenses again in their mountings if he should have taken them out to clean them. Any other use of such a description of an optical instrument can hardly be expected.

"Some of the fighting men in public life might perhaps ask, why I have not yet published the theory of this new production of mine? The reply is, the theory is a corollary of the general analytical researches which ascertain the course of a pencil of rays through a system of any number of refracting or reflecting surfaces of revolution. It will occupy about two volumes of the three of my new works upon Optics, the publication of which will begin, after the publication of my 'Integration of the Linear Differential-equations' has been finished. As a matter of course I cannot easily separate the theory of a single optical instrument from the great structure of science.

"You have also mentioned to me, that complaint has been made that the camera does not possess any contrivance for moving the lens up and down, and to and fro. I do not consider it in this case very practicable. I have preferred to give a larger surface to the ground glass, and to obtain the same result by a movable set of compartments in the sliding frame, but without demanding that any else should have just the same view as myself.

"I have the honor to thank you very heartily for the active mode with which you have so kindly assisted me in the propagation of clear and precise conceptions in Optics

"Petzval.

"Vienna, April 12th, 1858."

From the Photographic Notes.

VOIGTLANDER versus PETZVAL.

To the Editor of Photographic Notes:

Sir,—Enclosed with this, I hand you a copy of a letter I have received from M. Voigtlander, in answer to the letter of Professor Petzval, addressed to Mr. Paul Pretsch, and which appeared in the *Photographic Notes*, of the 15th of April. I shall feel much obliged by your inserting it in your next number. Yours, very truly,

George Knight.

2 Foster Lane, London, May 1, 1858.

"TO GEORGE KNIGHT, ESQ.

"Dear Sir,—I have received yesterday the Journal which contains the letter of Professor Petzval, and though very unwell and scarcely able to write, still I hasten to forward my answer to it, and beg you will cause it to be inserted in the same Journal. I have written it in English, so as to prevent any misconstruction taking place by a translation, and hope, as a foreigner, to meet with indulgence for any grammatical errors. When writing my letter to M. Lacan, in Paris, about the lens of Professor Petzval, a translation of which will be found in the *Photographic Notes*, No. 45, I was fully aware that it would meet with an answer from Professor Petzval, indeed I was expecting its coming down upon me, crushing and thundering, like an avalanche; but my astonishment has been great, when, prepared to encounter a giant I only met a dwarf. The letter of Professor Petzval, instead of containing precise and clear statements, is nothing but a compilation of sarcastic attacks, which have nothing to do with the object in question, and such assertions as will be easy for me to prove as founded upon nothing, and opposed to facts and truth. The dislike to enter into any controversy with Professor Petzval, which has caused me to keep silence for 14 years, on various matters connected with him, not even asking him any explanation about his more than strange conduct towards me, would induce me to take no notice of his letter, should my high regard for public opinion compel me not to act differently. Without wishing to trespass upon the patience of the reader, I must needs go to a certain length to give a clear view of the whole case, and must, for that purpose, touch on my former connections with Professor Petzval.

"It may have been a year after Daguerre's discovery, that, when calling upon Professor von Ettingshausen, I was asked by that gentleman whether I could determine the refracting and dispersing power of different sorts of flint and crown glass? Answering in the affirmative (having been occupied for a long time in determining these questions), I was informed that Professor Petzval had made the calculation of a Photographic Lens, which could not be executed for want of the qualities of the glass to be employed. Professor von Ettingshausen asked me to call immediately on Professor Petzval, giving me a letter of introduction to him, saying, that by furnishing the means to execute this lens I was rendering to the world a great service; and securing for myself a high reputation; I presented the letter to Prof. Petzval, was well received, furnished the abovementioned qualities of the glass, which formed the foundation of the calculation of two combinations of lens executed by me, the one well-known since 17 years: the other, the same as now presented to the world by Prof. Petzval as newly-constructed; the original drawing of these two lenses, from the hand of Professor Petzval, together with the statement of the curves, *is still in my possession.* Both the lenses were examined by Prof. Petzval, but not finding them as perfect as he wished them to be, they were put aside, when, sometimes afterwards, urged by me to have the lens for portraits practically tried by M. Marten, and the results having been found surprising, I was authorised to make this lens known. Professor Petzval intended to apply his new theory to all optical instruments, and I was to do the practical part; our connection grew a very intimate one; we made another quick-working lens, a dissolving view apparatus, and the opera-glasses, with achromatic eye-pieces, well-known, particularly in England. I then also constructed lens of a larger size; besides all this work my whole time was devoted to Prof. Petzval, in assisting him in his researches, inasmuch as I made all the various apparatuses necessary to him, when his conduct towards me became so very strange and inexplicable that I could not find it any more consistent with my honor to pay further visits to him, and our connection was broken up, without my knowing for certain what the motives of Professor Petzval were, though I may have had some vague ideas about it. He then allied himself with another optician, whom he soon deserted likewise, and is now connected with M. Dietzler, a very able mechanic, who, when still in Vienna, made part of the brass mountings of my lens. Since the time our connection was broken off, (during some 15 years), with the exception of an improved dissolving view apparatus, nothing new appeared, only from time to time a pamphlet was launched into the world promising wonderful things, which were to come; the last of these reports were declared in England to be 'a tremendous flourish of trumpets,' and they are regarded much in the same light in Germany. I said nothing new appeared till last year, when the so-called 'new lens' came out, and which I recognised immediately as alike in principle and with little differences of the curves to the one I had made 17 years ago, which discovery caused me to address to the Academy of Vienna a memorial, in which I raised a protest against this lens being called new. I claimed my right, not only to the priority of the first execution, but also of my partnership, in some measure, to the scientific part of the work. I offered to show that this lens, not new in principle, was to be called identical with the one constructed 17 years ago, in spite of the apparently great difference of some of the curves, as the effect of both lenses was much the same, only the focus of the new lens is shorter, and a mere revisal of the former calculation of Professor Petzval, or even a new calculation, could never vindicate for this lens the name of new. The way to obtain a certain object may be new, but that denomination cannot be transferred upon the object itself, if this remains in both cases much the same. I chiefly wished to show by this memorial that Professor Petzval was guilty, in my eyes, of an injustice, by not mentioning that this lens had been made 17 years ago by me. As to his appearing with the lens at all, he was certainly at full liberty to do as he liked, and I further wished to prove that by appearing now with this lens I was not guilty of an infringement of the rights of Professor Petzval.

"This is the outline of the historical part of the affair, in chronological order,—a preface to my now passing on to the letter of Professor Petzval. I shall touch on the various points of it in the same order as they present themselves. Regarding my assertions about the new lens, I refer to my statement on that subject. I protest against having mentioned the new lens amongst the 'unsuccessful' trials; in my memorial I said that both the lenses have been put aside, not being found *quite satisfactory;* in that memorial I never mentioned Professor Petzval not being satisfied with my productions; the copy of that memorial is before me, but I cannot find even the slightest allusion to it which might be misconstrued; this would be contrary to truth, little flattering to myself, and carrying modesty rather too far. I must declare this as an invention of Professor Petzval. With regard to the observation of my speaking of the differences of the curves as little things put forth in such a *railing* manner as to show, as it were, my ignorance in such matters, I must assist the memory of Professor Petzval, and remind him that some time before I had the advantage of his acquaintance, I had already made telescopes according to my own calculations, and by means of my apparatus, telescopes which have been pronounced by men like Gauss and Schuhmacher, and others, as amongst the best they had ever seen, and in some points even superior to those of Fraunhofer. Professor Petzval will therefore oblige me by not assuming towards me a language which may be excusable when addressing a mere mechanic, particularly as he is aware that I have constructed such instruments as will give me the means of executing any given curve up to 0·005 of an inch, by which it may well be inferred that I know perfectly what I am about when pretending that the differences of the curves of the two lenses in question are of no importance. I am now coming to a part of his letter which I might well call amusing, should I not wish to avoid falling into the same fault as Professor Petzval. *I* am to be the inventor of the chemical focus. "I am *not* working according to his calculations," and by mentioning his name in my list of prices I have made myself guilty of an *ingenious method* of putting his name by the side of mine.

"Regarding the first question, Professor Petzval allows that I have made the first lens according to his calculations. Now it is a fact well-known, that soon after the first portraits were made, we found that, when setting the eyes to the point, the ears became sharp, which induced Mr. Marten, not to set to the point on the face at all, but to do it on a print held just on the nose of the person whose portrait is to be taken; some time afterwards, Professor Stampfer, an authority in such matters, observed to me that, in order to get the copy of an engraving very sharp, he found that the lens was to be screwed out, after having been set to the point, which proved the difference of the visual and the chemical focus; later, when constructing my 3-in. lens, of course that difference became more apparent; it was then simply called 'Chemical Focus,' but not by me: and men like Claudet, Zantedeschi, and others, began to write about it; now, in the name of all that is reasonable, I wish to know how *I* can be called the 'Inventor of the Chemical Focus? *I*, who, as far as concerned the working of the lens, was only the instrument of Professor Petzval. The best of all is, that, in an indirect way, I can prove that this first lens could not be free from the chemical focus, by Professor Petzval's own statements; in one of Professor Petzval's reports to the Academy of Vienna, he says that a Photographic Lens can only be free of the chemical focus when the achromatism was determined differently, as is done for the object-glass of a telescope; in another passage he pretends that all the lenses made according to his calculations have no chemical focus; now combining those two assertions, every one should naturally be led to the conclusion that the achromatism of the front lens must have been determined in the way pointed out by Professor Petzval; but, as has been seen in the beginning of this, this part of the work has been done by me, and it was done just in the way I always followed when constructing an object-glass for a telescope; it is pushing the thing rather far to pretend that all the lenses made according to his calculation were free from the chemical focus, when there are still hundreds of lenses of the very first period existing, which may prove the contrary, *and in the same report I mentioned: Prof. Petzval allows even his new lens having a difference of focus for a very sensible eye.* I should indeed like to know how Professor Petzval could have been able to avoid that difference in the first period when nobody was yet well aware of the great difference in the chemical action of the differently colored rays. With reference to my not working according to his calculations and putting his name in my list of prices, I have simply to say that I was authorized to do so at first, and as all my other lenses have been only the result of multiplying aperture and curves of the first lens with 1·5, 2, &c., I could not consider them changing, by this simple process, their nature, and not being any more according to Professor Petzval's calculation. Should I perhaps have said they were calculated by me? I suppose in such a case Professor Petzval would have been amongst the first to proclaim this as the height of presumption, and with perfect right too; it is very obvious that, after having sold thousands of lenses, now up to the number of 7,200, I might well have dispensed with his name, had I not continued to put it on my list in justice to him. I cannot find it fair to put such misconstruction upon an act of mine done in deference to Professor Petzval. His next attack is nothing but a very poor attempt to ridicule me, there is little merit in such a proceeding and no difficulty at all, for as the French proverb has it: *du sublime au ridicule il n'y a qu'un pas.*

"I have never laid any pretensions to my having *invented* that name. Should Professor Petzval not be aware of the fact that this name has been introduced by M. Kellder, of Wetzlar, a very able optician, for his achromatic eye-pieces, I must take the liberty to tell him so. I have adopted that name as it seemed to me well applied. I have done so with the particular object in view, to distinguish this lens at once from the old combination, and I am happy to say that in France and England the name was considered well applied.

"Professor Petzval goes on saying that I had declared his camera not *necessary* at all, since *every* thing can be obtained by an ordinary camera, I beg the reader will take the above-mentioned Journal in hand and read my letter, in which, after speaking with great deference of Professor Petzval, I only say, 'I cannot understand why,' &c., &c., and 'some very fine results may be obtained,' &c., which, as every man must allow, is quite a different meaning. Either Professor Petzval is not sufficiently conversant with the English language to understand that difference, in which case I should advise him to look out in future for a good translation, or I must consider his proceeding, if not as a malignant interpretation of my expressions, at least as a forced construction on my words.

"To deduce from the circumstance of my being ignorant of the arrangement of his camera, the proof that I could not have known for 17 years his new lens, is more than common sense can understand. I am feeling quite at a loss to find any answer to such new logic, but shall leave it all to the numerous photographers in England, already in possession of my Orthoscopic Lenses, whether they cannot obtain very good pictures without Professor Petzval's camera, by which fact an indirect proof is furnished, that without being aware of the peculiarities of this lens, it may still be used. I find that I have passed over the question 'why I have not made that new lens when known to me 17 years ago?' to which I have to reply that the success of the lens for portraits has been such to make it impossible for me to take any more work in hand, and having been allied at that time with Professor Petzval, my actions in this respect were dependent upon him. Latterly, I forgot the whole affair, as I explained in my memorial to the Academy.

"Hitherto the optician has spoken to Mr. Petzval the Professor, with a certain restraint I considered due to his superior knowledge, but the scene changes entirely when touching upon a passage in his letter which, combined with his whole language, appears to me to be so very personal that I shall not hesitate to meet him on his own grounds. I refer to his saying: 'I might be glad to put my name beside his,' I must take the liberty to ask him whether by this he means to consider an alliance with me dishonorable to him, either as regards my position as an optician or my quality as a gentleman, I must desire him to come manfully and openly forward, speaking out what he has to say against me, or to desist from using such equivocal expressions, otherwise I should consider myself at liberty to designate such proceedings by their proper name; as I am inclined to believe that Professor Petzval, standing so long a time upon a somewhat self-erected height, has made him lose the faculty of seeing the realities of life in their proper colors, I must take the trouble to remark to him, that, with the exception of his great superiority over me in all abstract sciences, in point of good breeding and general education, I consider myself fully his equal, and that in point of honor, I am still as susceptible as I was fifteen years ago, when forced to call him before the magistrate, to give some explanation about some disrespectful expressions he was reported to have used regarding me. He then denied ever having said any such thing, adding, to confirm the truth of his assertions, that it was absurd to suppose he would make use of such expressions with reference to a gentleman like me. I beg to state to Professor Petzval that I must insist upon being regarded by him still as the same gentleman. Professor Petzval, making an indirect comparison between our names, I venture to observe to him that his name is of a standing of some 20 years, during which time, with the exception of his own certainly eminent work, he has enlightened the world only by promises of wonderful things, whilst my name has been handed over to me by my father and grandfather, who both, for more than a century, have done honor and credit to it, to whose efforts I have joined mine, and I flatter myself not without success. I shall further permit myself to say that *my name* has never been subject to a public reprimand, which has been the case with *his*, about a year ago, when reporting to the Academy of Vienna about the work of another man of science, he allowed himself to use such an expression as called forth the indignation of the assembly and caused the reprimand I was speaking of in the Journal which gave me an account of that meeting.

"Lastly, I beg Professor Petzval to consider that he has thrown me the glove in a country where, even as a foreigner, I may enjoy the greatest of all earthly blessings, that of freedom of speech. I certainly am not seeking for a quarrel, as my having kept peace for 15 years may show, and I am now ready to decide the differences of our opinions about that lens in a more becoming way than giving to the world the, at all events, displeasing spectacle of two men quarrelling, who were well fit, by their united efforts, to greatly promote science and art. However, if Professor Petzval throws me the glove again in a like manner, I shall not shrink from taking it up, but, when entering the lists again a second time, I may most likely change my defensive position into that of the aggressor, and he will yet have to learn that, very far from having exhausted my strength at this first onset, I shall as well know how to attack him as I have known how to defend myself.

"I had very nearly forgotten that I have yet to repulse the last of Professor Petzval's attacks, viz., 'my memorial having been rejected by the Academy as an absurdity.' It is quite true that my memorial was not accepted, but when this was noticed to me it was accompanied by a somewhat detailed explanation, and the wish expressed I should get by this the conviction that the Academy was not in a position to act differently, inasmuch as the whole object did not come within the sphere of its operations; and it was stated, that if such a memorial had been presented even by a member of the Academy it could not have been accepted, the Academy never entering into such discussions; besides this, I am in possession of some letters from one of its members, from which it appears that my memorial was very far from being regarded 'as an absurdity.'

"I cannot refrain from advising Prof. Petzval to get better information before he ventures the attempt to make his personal view of this case pass off as the opinion of a body of scientific men.

"I have now done with Professor Petzval.

"It has been reported to me that in England some persons have made it their business to spread about certain rumors regarding me, such as my having been cast off by Professor Petzval, my not working according to his calculations, my only having played the part of a common workman in that affair, being void of any learning, and some such things. I beg these gentlemen to desist from such endeavors, or I shall, on my next coming to England, treat them in the way calumniators deserve.

"Before I conclude I must address a few words more to the impartial readers; should some of them consider my language rather strong, they have to bear in mind that the language of truth like the path of virtue, is very often rough; they must allow that an honest man must needs feel indignant at being assailed by a compilation of vague assertions, ungrounded, untrue, and invented, well calculated to show the weakness of the cause instead of supporting it, and all this put forth in a manner little in keeping with the object in question. Let the reader compare this with *my* statements, and I hope the conclusions will not be found difficult. I will not refer to my name and to my social position in life, which to many will afford sufficient guarantee: but I am ready to prove every word I have said, by *witnesses, letters,* and *documents.* I am writing now a longer memorial on that subject, in my own language, (at which I feel certainly more at home), which I shall publish, and, should this affair be carried further, I shall perhaps come to England to plead my cause personally, and to give positive proofs of all my assertions to all those who take an interest in this case.

"VOIGTLANDER.

"Brunswick, April, 1858."

We enclosed a proof of M. Voigtlanders letter to Herr Pretsch, and in reply he begged us to insert the following remarks with respect to it:—

To the Editor of the Photographic Notes:

SIR,—Although I possess already quite enough of adversaries, and should therefore not like at all to begin a new controversy, still my name being connected with the introduction of Professor Petzval's productions into this country, and I am proud of it, I cannot abstain from making a few observations.

Professor Petzval's letter is a long one, but it contains much information, which will be, I think, acknowledged by many people. Mr. Voigtlander's letter is also a long one, but it contains chiefly explanations about himself.

I acknowledge that "freedom of speech is the greatest of all earthly blessings," but I think, like many Englishmen, that if we accost the public, we ought to consider that we do not accost a public-house.

In spite of such a very long "speech," it is undoubtedly proved that the lens in question is Professor Petzval's production. Mr. Voigtlander himself asserts, curiously enough, "latterly, I forgot the whole affair;"—I suppose he has been only put in mind of it by my paper, read in December last, before the Photographic Society in London.

Most likely Professor Petzval will himself reply to Mr. Voigtlander's letter. PAUL PRETSCH.

London, May 7, 1858.

From the Photographic Notes.

M. RENAUD SAILLARD'S PROCESS.

To the Editor of Photographic Notes:

SIR,—Permit me to make a few remarks about an article in the last number of your Journal. There is inserted a report of the French Photographic Society, stating, among other matters, that M. Saillard had made some improvements in the Electrotype part of my process, "Photo-galvanography." So far as I am able to gather from the given details there, and in the French original, and comparing some communications from M. Laulerie to myself, M. Saillard considers himself as having made an improvement by depositing copper immediately on the surface of my raised picture on gelatine. But this was executed by myself, many years ago, has been repeated afterwards several times, and is also stated in the specification of my patents from November, 1854. It is wrong to suppose that those plates do not require retouching; the degree of more or less touching depends partly upon the quality of the original, and partly upon the cleanliness and care with which all the various parts of the process have been executed.

Parasites are plenty, and there might appear some more. "Judge not, that ye be not judged."

The "break-down" of the Company is an episode which, sad enough, I am obliged to share with the inventor of lithography, Senefelder, whose personal exertions in Englsnd were not successful, and whose invention waited *many years* before it became approved of in England.

PAUL PRETSCH.

67 Great Portland Street, May 6.

From Photographic Notes.

POSTSCRIPT TO MR. BARNES' LETTER,

PUBLISHED IN APRIL 15.

To the Editor of Photographic Notes:

In all my experiments with dry collodion, I have aimed at perfection. If this cannot be obtained by simple means, we must unavoidably fall back upon others, seemingly or possibly more complicated.

Professional photographers require a process certain in its results and upon which they can at all times rely. In fact, it would be extreme folly on their part, to employ a method of working in which failures inherent to the process itself were to be feared or expected at every turn. Such processes (and the easier the better) will do very well for amateurs with plenty of spare time, little love for labor or trouble, and a genial temperament very easy to please.

In the first edition I advocated the use of collodion alone, unsupported by any other substance. The difficulty, however, experienced by beginners in preparing a collodion always suitable for the purpose induced me to lay greater stress upon the use of the albumen as a protective sub-stratum to the collodion, in the appendix published in December, 1856.

The use of old collodion is attended with this great disadvantage,—if, during the development the slightest excess of silver is employed, all the finer details of the picture are completely lost, and sky and water become dotted all over with minute holes, visible in the positive print.

In order to obtain perfect results upon dry plates, with perspective, distance, details well-defined, the collodion itself must be in a perfect state in every respect, very sensitive and newly iodized, but in this condition its contractibility precludes the possibility of keeping it upon the plate without some protective substance *underneath.*

During my preliminary experiments I used gelatine, both under and over the film, but I found that even by the use of the greatest skill and care it was absolutely impossible always to succeed, the plate being very liable to blister all over.

My views of the requirements are these: The great cause of failure is the blistering and tearing of the thin film of collodion. On re-wetting during development, the solutions permeate the collodion, damp the glass underneath, the collodion expands, slides about the plate, and finally, either blisters or breaks away in flakes. If you have a substance underneath, impermeable to water, the film will not be disturbed. The substance, *par excellence,* for this purpose, is albumen, to the use of which is not attached the slightest risk. Gelatine, when re-moistened, swells considerably, absorbs much water, and when used over the film it retards the sensitiveness of the already not over-sensitive old collodion, which it is necessary to use with it.

Objections have been taken to the use of camphor, as this substance is liable to spoil the nitrate bath when employed for the wet process. This effect certainly does take place when the bath contains a large proportion of alcohol, but not otherwise. In fact, at one time, my sensitive bath was constantly kept saturated with camphor, but no injurious effects were produced. I have disused it lately, my bath containing now a large quantity of alcohol, the addition which produces extra sensitiveness.

Collodion, it is well known, becomes slower by age, and a longer exposure has to be given. Much, therefore, depends upon the judgment of the operator. To lessen this evil, and facilitate the manipulation, an equalization of the collodion is necessary. This is attained by the addition of acetic naptha, which certainly renders the collodion slightly less sensitive, but it prevents, to a great extent, any further change; the after-loss of sensitiveness being so limited (even during three months), as to require no allowance to be made in the exposure of the plate.

Plates and Collodion, one week, or one month old, are equally sensitive, so that it is needless to keep separate glasses prepared at different periods.

Should the subject of Dry Collodion prove interesting to your readers, I will recur to it at some future time.

R. F. Barnes.

[We are inclined to think that all such evils as blistering and tearing of the film, and want of adhesion to the glass,* contractility, &c., may be avoided by using the *proper kind of collodion,* made as Dr. Norris has pointed out, with pyroxyline obtained with hot and weak acids.—Ed. P. N.]

From the Liverpool Photographic Journal.

NORTH LONDON PHOTOGRAPHIC ASSOCIATION.

At an ordinary meeting, held at Myddleton Hall, Islington, on the 28th April, 1858, G. Shadbolt, Esq., Vice-President, in the chair. The minutes of the previous meeting having been read and confirmed, the following gentlemen were duly elected members—Jos. Causton and W. Moens, Esqs.

Mr. J. A. Judge read the following paper—

"ON THE WET COLLODION PROCESS,"

and exhited a large number of specimens:—

I believe I may be justified in terming collodion the process of the day. It is the one most universally practised, and the results obtained by it surpass by far, both in the beauty and in the ease with which they are obtained, any other of the photographic methods.

It is for this reason I chose it as the subject of my paper, thinking that, whatsoever the manner in which it might be treated, it would be calculated to interest all parties. Before proceeding any further allow me to remind you that you are not to expect anything particularly novel or striking in the course of my remarks. I have been connected with photographic pursuits for some considerable time; I have read the greater part of the publications respecting the art; I have watched many good, more bad, photographers at their operations; and, bearing in mind the good old maxim—"*Bene facit qui ex aliorum erroribus sibi exemplum summat,*" I have rejected all those matters which were not, in my humble opinion, calculated to aid and assist one's progress, and have retained those only which possessed decided points of excellence. These it is my intention to offer to your notice in my paper, in the shape of an elementary one to the practice of the wet collodion process; and, if I shall only succeed in enabling you again to put in practice the aforesaid maxim, the time we shall pass together this evening will not, I trust, be deemed ill-spent. It will be needless for me to give a list of articles required—much depends upon the amount intended to be spent. The best plan is to get a photographic friend (and who does not possess one amongst the circle of his acquaintance) to accompany you to some respectable optician (avoid the "Cheap Jacks,") and then select your set. All I would suggest is, that you should not overburden yourself with knick-knacks, which would be rejected as soon as you had attained proficiency in the art.

The lenses should be burnished or fastened in their respective cells; if not so when purchased, you should get this done by some competent optician. If the lenses slip about in their cells, it will frequently occur that the centres of the corresponding lenses do not coincide, or are not in the same plane; and the pencils of light, instead of proceeding through the second, or back lens, will be distributed obliquely in various directions, according to the angle at which the lenses may be placed, giving rise a distortion of the image. Each lens should, therefore, be ground perfectly true at the edges, centred and fixed immoveably in its cell. I dare say it has been noticed by several here present that, after cleaning a lens, it has given much better pictures than before that operation was performed, this happy result being attributed to the polishing, whilst in many instances it is due to the altered and corrected position of the glasses. The lenses should be cleaned, when required, with a piece of fine diaper or chamois leather; silk, which is generally used, having the objection, as stated by Mr. Ross, of scratching the surface of the glass. They should be kept in winter in a warm situation, in order to avoid error in exposure, through becoming covered with condensed vapor on being taken into a room, the temperature of which is higher than that of the lenses themselves. It is well, also, if not likely to be required for some considerable period, to let them be exposed to the light; the Canada balsam employed to cement the front lenses together will not then be likely to become yellow, which it might otherwise do. Some samples of balsam are very sensitive in this respect.

The diaphragms, when used, should be placed between the lenses, and not in front of them. When placed in front, and if very small, the surface covered is much contracted; this is not the case when used otherwise. Mr. Mangey has just introduced a very ingenious method of altering the size of the internal diaphragm without removing the lenses; by merely turning a screw, the aperture is enlarged or diminished at pleasure, and to any extent—a method which will be found extremely useful for out-door operations in changeable weather.

The camera slides should be provided with silver corners, not merely wire, but pieces of silver, so placed as to prevent the prepared glass from touching the wood at any part. They should also have moveable frames, to be renewed when become soddened by use. It is never advisable to work wet plates in the slide itself.

The prepared surface of the plate, when in the dark slide, should be in the same plane as the focusing glass. To ascertain whether this is the case, cut a piece of card in the shape of a wedge, place a straight-edge across the front of the dark slide, open the shutter, and insert the wedge between the straight-edge and the glass, and mark the point of contact with the former. Proceed in the same way with the focusing glass, and if in both instances the wedge stops at the same spot, their respective positions are identical—if not, the requisite correction should be made. I mention this because it frequently occurs that, when the foci of a double achromatic portrait lens do not coincide, the correction is made by altering the glass; and if this fact is omitted to be mentioned to the purchaser, he may be very much annoyed if he attempt to use the camera and slide with a single lens.

The stand, if for in-door use, should be very firm and steady to prevent vibration, and should be provided with a moveable table, that can be inclined at a considerable angle. For out-door use the table is not required, and the legs may be as light as possible consistent with the strength of the material.

Having procured the apparatus, do not be in too great a hurry to commence until all is in perfect readiness and order; for although the tyro is invariably mightily pleased with his first pictures, however wretched they may appear in the eyes of a connoisseur, a series of failures, due to the incompleteness of the arrangements, is liable to discourage and annoy, besides causing sometimes a large expenditure of time and money.

DARK ROOM.

This room should, if possible, be on the north side of the

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* The "blistering, tearing, and want of adhesion to the glass," may be prevented by using glass with finely ground surfaces. The good qualities of the collodion are not interfered with by doing so.—Ed. P. & F. A. Journal.

house, and be lighted by a side window, in front of which the operating table or sink should be placed. The window should be covered with three thicknesses of the best yellow glazed calico, that at about 10½d. a yard. If the window is a very large one, it is advisable to entirely block out all the upper part of it with baize or other opaque fabric, and to concentrate as it were the light to that portion of it which is immediately opposite to and in a level with the eyes of the operator. With too much light it is difficult to properly examne the negative during the developing and fixing of it. If the apartment is to be permanently occupied for photographic purposes, or indeed in any case, the yellow calico should be nailed to a stretcher of wood fitting into the window frame, and attached to it by three or four nuts; it can be easily removed, and the window opened at pleasure. There should be no dust-engendering carpet or matting in the room. The boards should be bare, or covered with oil cloth. They should be frequently cleansed with a wet flannel, but never swept, at least, not whilst any of the chemicals, &c., are in the room. It is impossible to avoid at times spilling some of the saturated solution of hypo on the floor, the dry crystals of which when disturbed by the broom would fly about, and might insinuate themselves into the baths, collodion, &c., however well they might be protected.

Above all things do not let any of your relations or friends, who may be blessed with an experimental turn of mind, have the run of your room and chemicals, but keep your solutions in locked bottles, those with caps, the fastenings of which are outside the neck, and does not affect the liquid; you will soon save thefr extra cost, and your peace of mind will not be disturbed. In winter time the operating room should be kept as warm as possible, the chemicals will otherwise act but very sluggishly.

The developing measures should be kept whilst in use on a shelf or raised surface on one side of the developing dish, and the hypo solution on the opposite side, either being placed on a piece of blotting paper, which will absorb all moisture, and prevent any of the dirty solutions dripping on the plate and staining the negative.

The cloths used for polishing should be of the material known as "nursery diaper," which is freer from fluffy particles than any other fabric suitable for cleaning glass plates. They should be placed in a clean drawer or box when not required for use. When dirty wash with soap or soda and water, and well rinse.

A discussion then ensued upon the subject, in which many members took part, and a vote of thanks was passed to Mr. Judge.

A letter was read from Mr. Morgan stating his inability to attend and exhibit his camera and lens on the present occasion, but promising to do so at the ensuing meeting.

The following apparatus were exhibited:—

By Mr. Shave, a design for a very portable tripod stand—

By Mr. Foxlee, a trough for washing positive prints—

Mr. Hislop, F.R.A.S., exhibited a collapsing deal camera 10×8 plates, weighing, with mahogany collodion frame and focusing glass, under six and a half pounds.

He also exhibited and explained a stereoscopic camera (of which we shall give a description in our next number), fitted with his new converging adjustment, simply consisting of a single small screw placed at the end of the traversing table. Together with this camera was shown a dark chamber, suitable for working wet collodion in the field, or changing dry plates. When in use this is suspended beneath the camera tripod, and folds into a very small space for packing.

He next exhibited an apparatus for producing transparent stereoscopic positives, or mutiplying negatives by the wet collodion process without contact.

A remarkably compact arrangement of stereoscopic camera, with eight dark frames for dry plates, with Mr. Hislop's converging adjustment, by Messrs. Horne and Thornthwaite, was also shown. The weight of this apparatus, with extra view lens, &c. complete, being under five pounds.

Mr. D. W. Hill exhibited a developing hood, and Mr. Spicer a series of Indian views by the calotype process.

Votes of thanks were given to all the above-named gentlemen, and the meeting adjourned.

POSITIVES AND NEGATIVES.

Producing Transparencies—New Varnish.

To the Editor of the Liverpool Photographic Journal:

Sir,—I was prevented from sending my method of obtaining transparencies in time for insertion in your last number, but now take the first opportunity of doing so. I enclose you a large print from a negative, taken with my collodion in *positive time*, the light being very bad at the time it was taken; also a stereoscopic view of the river side, and another of the oil cake mill in this place, which was taken in three seconds on Good Friday, the plate having been kept two hours before exposure. The method employed was just the same as the one I now send for transparencies, which is at once simple and certain in results. The valuable properties of honey, in photography, as a preservative, photograghers have reason to thank you for suggesting.

I have taken views in less than a second with it, and can only say, that with this process it is the easiest thing possible to get good intense negatives with a thin collodion.

The reason I did not give the composition of my collodion in my last letter, is that I manufacture it for sale, but I send printed instructions for making it to those who prefer making their own (see advertisement). But photographers generally will find it difficult to make it well, as it requires a good deal of experience and observation to obtain really good collodion; one person may mix the ingredients together, and another may mix them in exactly the same proportion, and yet obtain quite different results, owing to the strength and purity of the chemicals differing, especially with regard to the pyroxyline. I shall be happy to give you a sample of the colllodion if you would like to try it. My meaning respecting the strengthening of pictures after they are developed and fixed, refers only to positives. I have always found that a positive that has been strengthened after having been fixed, becomes too intense in the high lights, and not enough so in the shades, but such would not have been the case had the pictures been developed for a negative at once, with the same exposure. My method is to develop with an iron developer, until the detail just begins to show itself in the shades, then wash off well, free from any trace of the iron solution, and continue the development until intense enough, by pouring on and off a portion of the following solution, with a few drops of the silver bath added to it just before pouring on. It is of great consequence that the picture and measure used for containing the solution, be quite free from any iron solution, and the fresher the solution the better will be the results. Water one ounce pyrogallic acid two grains, citric acid one grain, acetic acid (not glacial), ten minims, alcohol twenty minims. This will be found to give any intensity desired, universally good results, and I have used it for two years.

I will now describe my method for producing transparencies. In the first place prepare the following solutions:—

No. 1.—Pure honey two parts, in distilled water three parts; mix and filter quite clear.

No. 2.—A saturated solution of gallic acid in distilled water.

No. 3.—Distilled water one ounce, nitrate of silver fifteen grains; dissolve, then add sugar of lead fifteen grains; shake, and filter from the curdy precipitate.

No. 4.—Spirits of wine one ounce, gum-juniper one and three quarter drachms, gum Thus two and a half scruples.

Having arranged all your bottles, &c. on a table, turn down the gas, which should have an argand burner, with only one glass chimney, no outer glass.

Take a piece of common glass the required size, and coat it with collodion; immerse in the bath of nitrate of silver thirty grains to the ounce of water for about a minute, lifting the plate up and down several times after it has been in about a quarter of a minute, and remove as soon as the solution flows evenly; wipe the back and bottom edge of the plate with a cloth, and pour on enough of No. 1 to half cover the plate, and keep it moving about until it flows evenly, then drain off, and wipe the back, &c., as before. Now cut two narrow strips of cartridge paper, and lay along the opposite sides of the prepared plate, and lay the negative face downwards on the two slips, so that the two coated sides come together, being only divided by the slips of paper. Now hold them firmly together, parallel and in a line with the gas, and allow the light to shine through the negative for thirty or forty seconds. You must have some one to hold a looking glass at the back of the gas, to reflect all the light on to the plate. Now turn down the gas, and proceed to develop.

Pour on No. 2, or lay the plate in a dish containing it for a minute; there will be no image seen, or scarcely any, if it has not been over exposed. Take it out, pour over it half an ounce of No. 2, with one drachm of No. 3, mixed together in a measure, keeping it moving about until intense enough; then wash and fix with hyposulphite of soda, and wash well; then dry at the fire, and when cool pour over the plate some of the varnish No. 4. As soon as it has ceased dripping, breathe all over the plate, and the varnish will immediately become like ground glass, and will keep so if dried without heat, but if heat is applied it dries transparent; the former is for stereoscopes, and the latter for magic lanterns. These may be colored over the varnish, and when nicely done, the effect is beautiful.

I am surprised that opticians and those interested in phantasmagoria lanterns, do not direct their attention more to this interesting branch of photography, as it can be done at night, in any weather, when photography out of doors is out of the question, besides being a nice amusement of an evening. I would here direct the attention to the varnish No. 4, which is a first-rate substitute for ground glass. It gives a coating not easily rubbed off, and without grain makes it very suitable for focusing on in case of breaking the focusing screen in cameras. I enclose you a portion of a transparency done in this way, so that you may judge of the effect.

I have the honor to remain, dear Sir,
Yours faithfully, ARTHUR MADDISON.

POSITIVE AND NEGATIVE COLLODION.

To the Editor of the Liverpool Photographic Journal:

Stockton-on-Tees, April 10th, 1858.

SIR,—As our *Journal* of the 15th March came late to hand we were unable to look over it till yesterday, and as we observed that you were somewhat sceptical relative to a statement there made by Mr. Maddison, that his collodion is adapted equally well for positives and negatives, or rather you doubt that *any collodion* would answer perfectly well for both purposes, we think it but justice to our fellow readers of the *Journal* to observe that we have used Mr. Maddison's collodion for both positive and negative processes, with success; indeed we regard it as superior to any of the collodions we have tried for negatives, as any amount of intensity can be got in the high lights, without endangering the shadows, which remain as clear as the glass itself; and yet this collodion is known to hold a very exalted position among the profession *for positives.* Perhaps it might fairly be questioned, if we have not been laying too great stress upon the terms "positive" and "negative," our experience leads to believe this, as we find many of the positive collodions will produce tolerably good negatives, although we certainly have not found any equal to the above-named in this respect.

Are we not gradually arriving at the conclusion, that we have been uselessly incumbering the art with unnecessary complications of "positive this," and "negative that?" We all know that only a few months ago most photographers believed that no negative could be good unless it had been developed by pyrogallic acid, or at least gallic acid. Now it turns out after all that the proto-salts of iron will soon replace these agents for negatives, just as they have done for positives, and thus reduce the number of bottles that crowd the shelves of our photographic dark rooms, to our serious annoyance.

And now, since we have a medium of communication with each other through the *Journal,* let each of us add our mite of experience towards the attainment of an uncomplicated yet effective method of practising the art.

We remain Sir, yours respectfully, J. & T. CLARKE.

[We publish the two preceding letters entire, in pursuance of our principle of allowing the *utmost freedom of discussion,* but we must also accompany them by a few comments. We fear both our correspondents have fallen into the very common error of comparing themselves with themselves, instead of with others. We are *more sceptical than ever* of the probability of any one collodion being *equally* adapted for both positive and negative pictures of a *high class*—certainly the specimens sent by Mr. Maddison are all *very weak* as negatives, the two stereoscopic ones especially. The large portrait is stated to have been taken in *positive time,* but the length of exposure is not given. Although this picture is more perfect as a negative, it still has the appearance of being *under exposed,* the details in the shadows being deficient. If Mr. Maddison manufactures collodion for sale, and wishes to make any remarks upon it *without giving the formula for its composition,* the advertising columns alone are the most appropriate place for them, but in the body of the *Journal* all should meet upon an equal footing. Mr. Maddison's method of development as here given somewhat resembles in principle that published by Mr. Hardwich, in our number of 15th March, in combination with that of M. Frank, which appeared in our last; but the details as given by Mr. Hardwich are preferable in our opinion. Mr. Maddison, however, appears to have practised it for the last two years, consequently for a longer time than Mr. Hardwich, and the two coinciding results are highly satisfactory.

The mode of printing transparencies here recommended is very old, having been published in this *Journal* shortly after its commencement; any preservative solution, being, however, quite unnecessary. The results obtained when a slip of paper intervenes are never so good as when dry plates are used in contact with the negative, the former being deficient in sharpness.

Judging from the small specimen received (about an inch square), the varnish alluded to seems to produce a pleasing and effective result; it is, however, of a somewhat yellowish hue, but this does not in our opinion detract from the appearance of the transparencies in the stereoscope—in fact, in some subjects it is an improvement.]

From the Liverpool Photographic Journal.

ON NITRATE OF SILVER FOR THE NEGATIVE BATH.

At a meeting of the Society in January, 1857, I read a paper on impurities in commercial nitrate of silver, and recommended the more general use of the fused in preference to the ordinary crystallized nitrate Fifteen months have elapsed since that time, and we have had an opportunity of proving how far the suggestion was a good one. The result, although confirming the views advanced in the paper, has not been altogether satisfactory, for both the fused and the crystallized nitrate are found occasionally to fail. Some samples appear good, and others bad, without any obvious difference between them being observable: of this I have lately had experience. I prepared a bath from the commercial crystallized nitrate of silver, neutralising the trace of nitric acid, and acidifying faintly with acetic acid. We then took it into the field, with an ordinary landscape camera for plates nine inches by seven. The collodion was rather an intense sample, inclined to give red negatives, and hence I hoped to succeed without using any acetate. Everything, however, went wrong. On applying the developer, I saw at once, by the manner in which the sky came out, that I should not succeed. The silver was thrown down in the grey (a metallic) form, and there were numerous spots and brush-like prolongations from various parts, such as the spires of a churches, &c., giving the appearance as if the image were out of focus. Fortunately, a friend who lived near was able to provide another bath, and with this we took good pictures, free from spottiness and imperfections.

That nitrate of silver requires repeated crystallization, or treatment of some kind to fit it for use in the negative bath, will, I think, be allowed. Supposing the impurities to be volatile, the simple process of melting in a capsule ought to expel them. In what respect, then, does the fused nitrate of silver fail? Very often it succeeds perfectly, but sometimes it does not. When such is the case, there is a tendency to clouding of the film towards the latter end of the development; and the solution of pyrogallic acid, instead of assuming by degrees the color of sherry wine, becomes turbid. All this may happen even when the bath has been carefully rendered acid with acetic acid.

To ascertain, if possible, the cause of these peculiarities, I examined a particular sample of nitrate of silver, which seemed to be injured by fusion, and was led, by de rees, to the conviction that it contained traces of organic matter. This I inferred from the occurrence of markings of a peculiar kind upon the film, and also from an increased tendency to solarisation and redness of the negatives: both of which effects I am able to produce at will by adding organic matter of a certain kind to the nitrate bath.

At present I decline to give a positive opinion as to the source of the organic matter; but I would call attention to the fact, that in the assay processes it is usual to employ small fragments of charcoal to prevent "bumping" as the metal dissolves, and, in consequence, the nitric acid acquires a brown color. It is questionable whether one crystallization is sufficient to free it from a contamination of this kind Dealing with the commercial nitrate, however, as it is sent out, at a price barely covering that of the metal it contains, I find that I can purify it sufficiently in many cases by reducing the crystals to a fine powder and drying them in a hot air bath, at 350° Fahrenheit. The solution of the salt so treated corresponds in properties to that of the best fused nitrate, having an alkaline reaction to reddened litmus paper. I conclude that this must be the proper reaction of pure nitrate of silver since I invariably observe it in all samples when thoroughly dried. It is essential to begin by reducing the crystals to a fine powder, otherwise the acid is retained in the interstices. A copper bath, with a mercurial thermometer in the interior may be used; but a common plate, in the oven by the side of the kitchen fire, would, no doubt, answer the purpose. Forty degrees above the temperature of boiling water is amply sufficient.

At a higher temperature—viz., 300° to 350°—the nitrate is apt to brown a little on the surface if kept in the hot air bath longer than twenty minutes or half an hour. All substances likely to give off empyreumatic fumes must be removed. On one occasion I injured more than a pound of the salt by using a piece of wood as a support for the dish in which it was placed to dry. It changed color, and was spoiled, except for use in the printing processes.

Mr. Thornthwaite remarked that he thought Mr. Hardwich had overlooked an objection which existed to drying nitrate of silver in a kitchen oven, viz., that in all ovens of the kind particles of organic matter were sure to be found, and these would give off fumes that would be fatal to the object in view. He was anxious not to make remarks too strongly flavored of the "*shop*," but as the subject of nitrate of silver was before the society, and his firm had manufactured the article pretty extensively, he might be permitted to say a few words on the subject. When the silver had been dissolved in the nitric acid, the object aimed at was to get crystals as large as they could, in order to rid them as much as possible of all extraneous matter, these were picked out and washed with nitric acid, and subsequently dissolved in distilled water, and re-crystallized. It might give some idea of the progress of photography when he stated that his firm alone during the last year consumed upwards of *a ton and a half* of silver for manufacturing the nitrate.

Mr. W. A. Delferier then demonstrated his method of

"PRINTING TRANSPARENT POSITIVES IN THE CAMERA,"

and read as follows:—

Having experienced two obstacles in printing transparent positives on wet collodion in the camera—firstly, in equally illuminating the negative to be copied; and secondly, in obtaining a sufficient amount of light to give the necessary intensity to the positive—I determined, if possible, to overcome them, and the apparatus before you is the result of my experiments.

I must apologise for its not being more slightly; but as it is the same which I use successfully, I hope it will be acceptable. With the addition of the illuminating apparatus and a piece of board, the ordinary portrait camera is all that is required, with the exception of the illuminating apparatus, which consists of a wooden screen, with two double convex lenses inserted side by side, each lens being cut to a rectangular shape of the size of the size of one of the pictures of the negative, the centre of each lens being placed exactly opposite the centre of each picture. The focal length of the lenses is twelve inches. A ledge and spring keeps the negative in its place, and a mat, which may be of any form, is used to limit and define the outline of the picture. A moveable standard, carrying two argand gas burners, capable of adjusting to any height, and at varying distances apart, is furnished with a flexible tube, in order to convey a supply of gas to the burners.

The camera is the ordinary sliding camera, and the lens a portrait combination of three inches diameter. A stop of one and a half inches aperture can be used when necessary. This lens requires the focus to be taken on the extreme edges of the picture, to give the required sharpness all over.

The mode of proceeding is as follows:—

Place the camera at one end of a piece of board, four feet long, and the same width as the came; and at the other end the screen carrying the squared lenses and the negative; then the gas-lamp, one foot behind the screen. Place the cap on the lens, and see that both flames are well represented in focus; then make the picture of one of the flames overlap that of the other by regulating the distance between the burners; and you will find, on removing the cap, that both squares on the ground glass are equally illuminated. Adjust the camera so that those two illuminated squares are exactly the size of the picture required, focusing as sharply as possible, and the apparatus will be in its proper position.

Having proceeded thus far, it will be well to mark the position of the camera and screen on the board, and to screw slips of wood thereon, so as to enable you at any future time to place the apparatus ready for work, without having to go over the same ground again.

I have tried to copy the negative with two small lenses, but without success, as they require so small a diaphragm to cover the plate equally in focus as to interfere materially with the intensity of the light. I therefore copy both pictures with one large lens, by which means I obtain an abundance of light, with what I conceive to be a great advantage,—which is, that the right hand side of one picture, and the left hand side of the other picture, are copied in the same circle of focus of the same lens.

Any collodion that will give intensity under ordinary circumstances will succeed; but if you wish for transparent shadows, develop with pyrogallic and acetic acids only.

These two transparent positives [exhibiting them] are both printed from the negative I now place in the screen,—one positive on a dry collodion plate in close contact, the other on wet collodion in this apparatus, so that a fair comparison may be made between them. The time of exposure was two minutes and a half in the camera, but a less intense negative would not require so long.

The negative can be placed with the collodion side to the light without any difference in the result, thereby allowing the positive to be mounted on a piece of ground glass (as the late French slides are) without reversing the picture.

In daylight I place the screen close to a window having a north light, for, if the sun shines directly upon the lenses, a piece of ground glass must be used between them and the window; also n piece of thin board, one end resting on the camera, the other on the screen, and a piece of black cloth thrown over so as to exclude the extraneous light.

In conclusion, I must remark that I find it impossible to focus so truly without the lenses in the screen, independently of the advantage of intensity of the light gained.

The thanks of the Society were accorded to Messrs. Hardwich and Delferier for their respective communications, and the meeting closed.

From the Liverpool Photographic Journal.

BIRMINGHAM PHOTOGRAPHIC SOCIETY.

A meeting of the members of this Society was held on the evening of Tuesday, April 27th, at the Oddfellows' Hall. The chair was occupied by William Howell, Esq., one of the Vice-Presidents.

The Rev. Wm. Law, of Marston Rectory, an honorary member of the Society, read a paper entitled,

"A FEW STRAY NOTES FROM MEMORANDA OF PHOTOGRAPHIC DIFFICULTIES."

He commenced by remarking on the importance of their meeting to report and exhibit failures and difficulies, however offensive it might be to the *amour propre.* A hospital for lame photographers would seldom want occupants, and yet the judicious care of such doctors in the art as Birmingham affords ought to be gradually bringing it into more healthy condition. What he wished to see was a committee composed, say of twelve gentlemen, men of sound scientific acquirements, good chemists, and skillful in photographic manipulation, who should test the value of the suggestions and discoveries continually brought before the public. Such a tribunal might give offence to some, but this would soon evaporate, and the benefit to photographers would be great and lasting. Before such a tribunal mere empirics would find their proper level, the wide spread dissemination of unsound formulæ would be ended, and needless trouble and expense be saved. Proceeding with the subject of his paper, Mr. Law said that probably the choice of processes, either for portraiture or landscape work, where they had no dark operating room, presented one great difficulty to photographers. The chief desideratum seemed to be a dry process possessing the characteristic qualities of collodion. Whether any dry film will ever be discovered in which the iodide of silver is so *united*, and yet so ready to be disturbed by the momentary gleam of light as in moist collodion, seems problematical; but it is encouraging to know that amongst English photographers the discovery of such a process is considered quite within the limits of probability. He was happy to say that in a letter recently received from Dr. Hill Norris, of Birmingham, that gentleman mentioned that he was not without a hope ere long accomplishing this desideratum. Before going farther he (Mr. Law) might dispose of one difficulty, namely, that of selecting a really workable and certain dry process. In giving his own individual preference to some, he begged not to be understood as speaking to the disparagement of others. He had at different times experimented with almost all, and in every instance in which the *rationale* of the process seemed to rest on a philosophical and sound basis, he had succeeded in obtaining satisfactory results. Of all the wet processes, Mr. Shadbolt's was undoubtedly the best. The metagelatine process is good, but there is trouble in the boiling and re-boiling. It was important that the free nitrate used in any of these processes should be washed off, as the leaving of the slightest portion on the film would render the plates exceedingly liable to stain. The gelatine process of Dr. Hill Norris, and the discovery of a collodion with the requisite qualities for its use in connection with the process, were subjects well worthy of comment. From his own recent experiments he could fully confirm all that was said regarding their certainty, if not the slightest knowledge of photographic manipulation were combined with ordinary care. The difficulty of selection seemed to be betwixt this process and that of Taupenot. The results were the same, though the latter process was a trifle superior to the other in sensitiveness, but it was right to mention that he did not follow the doctor's directions, having used gallo-nitrate of silver for the bath. The dry collodion plate was fully developed in half the time required by collodio-albumen.

Mr. Law here read a letter he had that morning received from Mr. Keene, of Leamington, in reference to the new process discovered by Mr. Fothergill, which he said he had no doubt would soon supersede the other dry processes. With regard to the selection of a dry process for field work, there could be no doubt that paper possessed advantages they could never have in glass; but after all, he would rather run the risk than have the granulation which always accompanied a picture produced from a paper negative. For ordinary use, Turner's common paper was preferable, because, if you succeeded in getting a picture, the after process of waxing is very easy; while, if you do not succeed, you save yourself a monstrous deal of trouble and vexation. His (Mr. Law's) favorite process was the waxed paper process. He immersed Turner's negative paper (the patent Talbot) in a solution consisting of iodide of potassium, with bromine. It was left there for about two hours, and was then taken out and dried, and sensitized upon the usual bath for waxed paper.

He produced a number of pictures to show the beautiful definitions he had thus obtained. He also produced and explained a developing frame, for enabling the fluid to run evenly over the plate; a modification of Crookes's albumen filterer, indispensable to those who work Taupenot's process; an apparatus for securing absolute contact of the paper with the negative; a frame for draining collodio-albumen pictures; and a new camera box of most compact and complete construction.

At the conclusion of Mr. Law's paper and experiments (of which this is a very inadequate sketch, owing to the proximity of the meeting to the time we go to press), a vote of thanks was passed to the reverend gentleman, on the motion of Mr. Osborn, seconded by Mr. Morris.

Mr. Morris then introduced an American solar camera, for enlarging photographs, kindly lent him for the occasion, by Mr. Atkinson, of Liverpool, the mode of operating with which he explained. As Mr. Law remarked, there seemed to be nothing about the instrument to account for its cost (£20), and its probable manufacture for less than one-fourth that amount was hinted at. Mr. Morris also produced on invention of Mr. Atkinson's, for throwing a halo of any shape round the figure; and one of Voigtlander's lenses, capable of producing a fourteen-inch picture.

A vote of thanks to Mr. Morris and Mr. Atkinson closed the proceedings.

DEAL CAMERAS.

To the Editor of the Liverpool Photographic Journal:

London, 6th April, 1858.

Sir,—I am happy to see, by a paragraph in your last leader, that you are disposed to advocate simplicity and portability in our photographic apparatus, in preference to weight, show, and consequent high cost. The subject of the material for cameras, and also their form for field work, is one of the highest importance to the amateur photographer as an artist. It would form a very appropriate theme for a prize, if ever such a proposition were made in connection with our numerous societies.

You mention deal as a desirable material, except that it is "too hygrometric." I wish to call the attention of your readers to the fact that the well known Captain Kater was engaged for some time in searching for a material for the rods of his pendulums, which should be as invariable as possible. At length he adopted and recommended this very substance namely deal, as the least affected by moisture and temperature. After cutting it to size he simply coated it two or three times with linseed oil, and then varnished it. Thus prepared, deal is now used for the same purpose, and forms the best, because the most unchangeable substance that can be employed for an uncompensated pendulum.

I have recently had a collapsing camera constructed of French-polished pine, the body being made of India rubber leather cloth, and the base board of ash, made to hinge in two pieces. The size is for plates ten in. by eight in., and the weight of the whole including a Spanish mahogany collodion frame and focusing glass, is under six and a half pounds. I have no doubt from my own experience, that this camera will prove as durable as mahogany, while its lightness and cheapness render it a much more useful tool than one of the ordinary form and material.

I am, yours, &c., F. R. A. S.

[The late Captain Kater's requirements for a pendulum were fulfilled in the use of deal, because it varies very little in *length*, but this is not the case laterally. However, if treated as suggested by our correspoapent, we think it highly probable that it would answer perfectly for a camera. We consider Spanish mahogany as quite unfitted for any part, on account of its great weight, nor do we approve of ash. Where greater strength is required than is afforded by deal, plain Honduras mahogany, such as is used by coachmakers, is the article we should prefer.—Ed.]

From the Liverpool Photographic Journal.

ON THE PRODUCTION Of Direct Positives—On Printing by the Salts of the Uranic and Ferric Oxides, with Observations Climetic and Chemical.*

BY C. J. BURNETT.

With collodion, albumen, and other films, it would appear that we have the same choice of employing soluble or precipitated salts. With collodion we might either dissolve in it the uranic or ferric salts and precipitate by a vegetable acid, or reverse the order; and if we wish the soluble salt, the nitrate, hydrochlorate, and formiate of uranic oxide are soluble in alcohol and æther, and afford highly sensitive collodions, beautifully developable by silver with or without aid of accelerators or stimulants (or by gold or other developers as ferro cyanides) and in the case of iron (and possibly manganese), the sesqui-chloride and *pernitrate* seem not unlikely to give a sensitive collodion. With albumen, and for collodion and gelatine films for positives or negatives, we may also, if preferred, prepare the film without any sensitive mixture, and charge by subsequent immersion or immersions, and (solubility in æther or alcohol being not here necessary) a greater variety of salts will answer.

One great difference between the results given by the uranic and the ferric salts, with silver developments, appears to be the harsh black and yellow tinted lights, which (though I do not mean to say that this might† not be probably overcome,) we frequently get with the latter; while with the uranic salts we get purity of whites and a variety of reds, browns, greys, blacks, and other tints and shades, varying according to the solvent acids (a relation being here traceable to the colors obtained by the simple argentine papers prepared with the same acids), strength of solutions, acidity or alkalinity of the baths, length of insolation, mode of fixing, &c. Using generally *nitrate of silver*, or ammonio-nitrate or ammonio-oxide solution (though we may use many others), I have got good greys, browns, and grey-blacks, on the uranic nitrate paper, mouse greys, &c., on the phosphate, rich purple browns, &c., from the tartrate, and good colors from mixtures of the phosphate with citrate, tartrate, or acetate. The hydrochlorate, hydrobromate, hydrofluate, hydrofluosilicate, and some others, are apt to give unpleasant raw reds, toneable, however, as are all the others, to any extent, by solution of chloride of gold, platinum or palladium. In spite of obtainableness of good color, as indicated by adding a few drops of a ferric salt, as *pernitrate*, to the uranic nitrate solution, and in spite of so far proved durability, at least when kept from fingering, to which I have sometimes found them remarkably sensitive, I am inclined to recommend this toning with chlorides of gold or *platinum*, which costs only about 15s. per ounce, and which I have found answer equally well. These, or ferric, or ordinary prints, thoroughly platinum-toned, promise extremely well for burning into glass or porcelain. As to sensitiveness, I find the tartrate more sensitive than the nitrate; and the benzoic, succinic, formic, and oxalic papers, seem to be also very highly sensitive. Some of these solutions are a little troublesome to make directly from the commercial oxide, as boiling will sometimes produce deoxidation as well as occasionally alteration of acid.‡ The ammonia in the oxide enables us, however, to obtain a stronger§ neutral solution than we otherwise could.

The phosphoric solution gives a considerably less sensitive film possibly apart from its binacidity. But in most of these cases, from the exact strength of the solution of oxide not being ascertained, I do not like to speak too decidedly as to my proportionate sensitiveness till after further experiment. The nitrate, or salt of other acid, whose salt with silver is also soluble, has particularly in positive printing apparently some advantage in facility of fixing. If we could fix with distilled water alone this might deserve consideration; but if we use ammonia, or acid, or acid salt, or ammonia salt of the same acid in the water, or combination of any of these, as I recommend on account also of salts already in the paper, and of the tendency of silver to form organic combinations—this advantage disappears, and there are even cases, *i. e.*, where we intend calling in the aid, in development, of the salt of ferrous (or other lower) oxide, or of gallic acid or its allies, where the insolubility of the resulting silver salt, as in the case of the citrate, may be a great advantage. In the development of collodion or albumen positives or negatives on glass (enamelled glass or porcelain also), we may either pour on the acidulated stimulant (gallic, pyro-gallic, ferrous, or other), along with or after the silver salt, or we may first steep the glass for a sufficient time in the silver bath, and then place it in the stimulant bath. In paper (albumenized, plain, or collodionized or albumeno-collodionized), whether for positives or negatives, the proper plan of development on this system is clearly first to float the paper on (or immerse it in) the silver bath till enough silver is taken up, and then immerse in or float on the bath containing the acidulated gallic, tannic, pyrogallic, and ferrous or allied stimulant. Even for positive printing on paper this plan will be found, I believe, occasionally to have great advantages, and for negative-taking with the uranic or ferric papers, the use of one of these acidulated stimulants, either mixed with the silver solution, or in the separate bath, will evidently enable us to produce our pictures on collodion paper or other material by a much shorter exposure than would be otherwise possible, and still more as to the application of these stimulants to the paper or films before insolation, we must put a very small quantity of gallic acid or protosalt of iron into the collodion (we may add a little vegetable acid to it in this case), or protosalt to the albumen, or we may dip either of them in the acidulated soluble stimulant immediately before placing it in the camera (or there is even nothing to prevent our using them both before and after exposure). And on paper, either plain, albumenized, or collodio-albumenized, their application in these ways by mixture or floatation is equally simple. I have been trying to persuade our photographers here to try a few drops of alcoholic solution of gallic acid, or one of its allies, in ordinary collodion for instantaneous pictures. However, I am rather inclined, with uranium, to give the preference to the reserving of the stimulant action till after exposure in the camera, particularly in the case of paper. We thus save ourselves all trouble and risk of paper going wrong on our hands, and in warm climates especially, this is a matter of great importance. With uranic collodion some of my experiments seemed to indicate that the exact amount of exposure is not a point of such nicety as with argentine collodion; this might probably enable

* Continued from p. 189, vol. xi., no. vi.

† *E.g.*, prepare the paper plain, gelatinized, collodionized, or gelatino-collodionized by floating it on a solution of the ammonio-ferric-oxalate. Dry and keep in the dark. Expose under negative say two to six minutes. Develop by solution of nitrate of silver (we may develop also with gold or palladium). Transfer to an acid bath or bath of binoxalate of ammonia (or oxalate), and fix with that and plain water, or rather with the addition of a little ammonia to one or two of the later waters to make more sure of extracting the silver-chloride. Tone, and *protect* with a *platinum*, gold, or palladium bath. The ammonia-citrates or ammonia tartrates may be worked in the same way. I have also got an excellent print by sensitizing albumenized paper with the medical pernitrate, developing with ammonio-nitrate of silver, toning with platinum or gold, and dissolving out ferric oxide by hydrochloric or other acid.

‡ The saccharic acid seems easily changed, and the meconic acid I have found destroyed even without application of heat. Both meconic and saccharic acids seem deserving of attention in photography.

§ Some of the ammonio-acid salts crystallising well, and not being deliquescent, might be convenient for general use, also the acetate.

us to avoid the necessity of developing at the time. Uranic and ferric papers certainly keep admirably, and we may print upon both the uranic collodion and albumen dry, by juxta-position in the pressure frame. I have experimented sufficiently to find out that we may produce not only negatives and good transparencies on glass, with collodion, albumen, and gelatine, but also very beautiful positives on enamelled glass and porcelain, both by the silver and gold, and also by the ferridcyanide or palladium development of uranic salts. The albumen film imbibes very readily the uranic salts (and also the ferric); and, with gelatine, we may mix the two substances. In sensitizing and developing in such processes, the upright bath with dipper, is, on the whole, decidedly the most convenient, and one of gutta percha seems, *in most* cases, to answer well, but for some solutions, porcelain is probably preferable.* Albumen and collodion, on paper, give good positives.† We might, probably, have a dry collodion process with silver, uranic, or ferric salts, on paper or waxed paper, with or without albumen above or below, such a process would have great advantages in point of portability, and there would not, probably, be any impractability in afterwards transferring the film to glass if wished (say, by, in the first instance, cementing it to the glass with varnish, and then wetting the albumenized paper till it could be peeled off). The attraction for moisture of the uranic salts seems to help to keep the collodion open to penetration, even *without* the assistance of grape sugar. I have long been trying to persuade our practical photographers to give the uranic salts a fair trial with silver developments, both for printing, and still more especially for negative taking on collodion and paper in the ways indicated. Though my experiments have been made principally in the pressure frame, (and though I have been much interrupted by bad health, &c, during the last year,) yet still, they have been quite varied and numerous enough to entitle me to speak with some confidence. As to the comparative advantages of uranic and ferrric salts for silver development positive printing, I have stated that the results I have got from the uranic have been more generally pleasing and varied, (but could this be got over and apparently it may), the superior cheapness of the ferric salts would be an immense advantage. The getting rid, at once, of the hypo-sulphite of soda, (which, *whether it can be or not, is not likely, on a large scale, ever to be thoroughly washed out,* does much to remove the objection to the application of photography for purposes of book-illustration. Not that I mean to say, for my experiments have not yet *demonstrated* it, that there is any absolute necessity for having recourse to uranic (or ferric) salts, to enable us to fix without hypo-sulphite,‡ and tone with chloride of gold or platinum. Still, in the meantime, photographers might do *much worse* than pay a little attention to the silver and gold developments of the uranic, and also the ferric salts, both on paper, plain or prepared as indicated, and glass. The ferricyanic developments also, though of minor importance in one way, are, particularly with iron toning baths, well worthy of attention both for films on glass and on paper. I have developed the sesqui-salt papers also with salts of palladium. I have elsewhere suggested the use of uranic and other salts, along with gelatine or albumen, &c., for photographic and photometallographic processes, instead of bichromate of potash, as well as a combination with resins, as an experiment well worthy of thorough practical trial.

(*To be continued.*)

* Mr. Barnett has showed, publicly, specimens of both these developments on enamelled glass.

† For collodionizing paper for positives, when we do not wish the albumen-like shine on the surface, I prefer a weak collodion *containing a large proportion of alcohol* to prevent too rapid evaporation. This is a process which would be better conducted by a professional manufacturer than by the photographer. Such papers give good definition without unpleasant gloss or glare.

‡ See my paper of February last year in *Photographic Notes.* I have tried some not unpromising experiments for the fixing of the oxides or other aqueously insoluble dark or colored compounds (or mixtures) of manganese, coper, iron, cobalt, nickel, &c., &c., both on paper, and on glass and porcelain, for burning-in, (and textile fabrics), with the aid of gelatine or albumen, on this same principle. In the case of paper we may adopt either of two plans, the first being to precipitate the oxide or other compound or mixture in the pores of the paper by double decomposition, then saturate the whole with gelatine or albumen, mixed with the sensitive chemical, then solarise, wash out gelatine where unacted on, and dissolve out the oxide or other compound, where left unprotected, with acid or other suitable solvent; and the second plan being the application of three substances ground up with or covered by the gelatine, externally, and after removal on the same principle. The giving the paper a previous coating with albumen or similar substances, before application of the oxide or other compound, would much facilitate the removal of it, and might even make that possible without aid of acid. There has been some talk of applying carbon in a similar way, lately, but without the protection of the paper in some such way, the use of such a peculiarly adhesive powder seems to be out of the question. For porcelain and glass it is, of course, the second plan we adopt, and with or without acid or other solvents. All sorts of colors might be mixed in this way, and a good deal done in the way of shading both on paper and on porcelain, by a little dexterous management, the oxymel application of the colored oxides or other substances with the gelatine.

POSITIVE PRINTING BY DEVELOPMENT.

To the Editor of the Liverpool Photographic Journal:

Sir,—As a reader of your *Journal* from its commencement, allow me to trouble you on some points of positive printing. I am satisfied your knowledge and experience will be of advantage to all amateurs of the photographic art. I confess to being an admirer of positives printed on albumenized paper, also of obtaining pure white and black tones. These objects are not always easily obtained, especially by those who use an old solution of hyposulphite of soda and gold, which is readily given to tone purples, which afterwards rapidly fade.

To obtain pure white and black on albumenized paper, I lately unsuccessfully tried a new or different mode of printing which at first promised well, but alas! soon, like may sun experiments, disappeared under clouds.

But to the question. I took a sheet of the albumenized paper and floated it for two minutes on a solution of the bichloride of mercury, strength 1 part to 4 parts water, dried the paper, then floated for three or four minutes on nitrate of silver, solution 50 grains to the ounce dried, and next morning the paper which had remained still uncolored was exposed under a negative for one minute. The picture which had faintly appeared was washed well in water, then developed by a solution of protosulphate of iron, fifteen grains to one ounce of water, adding one grain citric acid.

The picture developed rapidly and intensely, giving clean whites and dense jet blacks, and when well washed appeared to give me what I wished, but, lo and behold my despair, on endeavoring to fix my picture in a new solution of hyposulphite of soda first, and at another period cyanide of potassium two grains to the ounce of water, to find my fine picture become ugly and defaced, whites becomes yellow, the blacks no color, in fact, the appearance of my positive was so altered that I removed it out of sight by putting it in the fire.

Now I hope great things from your superior knowledge, and will feel as one of many could you aid me how to fix my positive and yet keep the beautiful whites and blacks I can get by the process I have recorded. I hope you will pardon my long letter, and believe me, yours sincerely,

Glasguensis.

[We know of no means by which you can dissolve out the undecomposed chloride of silver without altering the color of that which has been reduced, unless it has been protected by a coating of gold either from the use of the chloride of that metal or sel d'or. The rationale of the process seems to be as follows:—bichloride of mercury Hg. Cl. 2 in connection with nitrate of silver Ag O. N. O5 in excess produces chloride of silver, plus nitrate of silver, plus nitrate of mercury, plus free nitric acid; the latter doubtless preserves the whites under the action of the developer, while the nitrate of mercury would probably be inert or nearly so, consequently we do not see how the material forming the picture differs from those ordinarily produced. We tried some experiments, and the best effects we were able to produce in this direction were accomplished thus: The paper being prepared and rendered sensitive as you describe, was exposed under a negative until all the details were faintly visible, then washed well in water, and floated on some of Mr. Hardwich's acetate of iron solution diluted with ten times its bulk of water. The development was complete in about two or three minutes; it was then washed in salt and water, and subsequently plain water; then fixed by immersion in diluted ammonia, washed and dried. The dark parts were then of a metallic bronze color and very intense. It was afterwards floated upon the solution of bichloride of mercury until the picture had *disappeared*, was well washed, and then immersed in very weak ammonia and water, when the impression again made its appearance, and when dry assumed a brownish black tint, and the glossiness of the albumen having been entirely removed—Ed]

From the Liverpool Photographic Journal.

STEREOMONOSCOPE.

We noticed some short time ago that Mr. Claudet had invented a new instrument in connection with stereoscopic phenomena; the following account of this instrument, which was exhibited at the Royal Society on the 15th April, is extracted from the *Athenæum*:—

"At the meeting of the Royal Society, on the 15th ult., Mr. Claudet presented a new optical instrument of his invention, called the Steremonoscope, by which, as its name implies, a single picture produces the stereoscopic illusion. In the centre of a large black screen there is a space filled with a square of ground glass upon which, by some light managed behind the screen, is thrown a magnified photographic image representing a landscape, a portrait or any other object. When we look naturally at that picture, with the two eyes without the help of any optical instrument, an extraordinary phenomen takes place: we see the picture in perfect relief as when we look at two different pictures through a stereoscope. It is not necessary to be at a fixed distance from the picture: it may be examined as well at ten feet as at one foot, as an ordinary picture, without the least fatigue to the eyes. Although considerably enlarged by the instrument itself, we may magnify the picture still more by using large convex lenses; and two or three persons at once can examine it with the greatest ease, being able, while looking, to exchange any remarks, or express the sensations suggested by the picture,—an advantage which is denied by the use of the common stereoscope. By this remarkable discovery, Mr. Claudet has solved a problem which has always been considered as an impossibility by scientific men,—for the Steremonoscope, by its very name, must sound like a paradox to the ears of all those who are versed in the knowledge of the principles of binocular vision, until they have had the opportunity of repeating the experiments by which the author has found a new fact which they had not noticed or explained before. This new fact is, that the image on the ground glass of the camera obscura produces the illusion of relief. But the phenomenon does not take place if the image is received on paper. When the medium is ground glass, the rays refracted by the various points of the lens upon that surface, are only visible when they are incident in a line coinciding with the optic axis. So that the rays emerging from the ground glass, and entering the right eye, are only those which have been refracted obliquely in the same direction, by the left side of the object glass, and those entering the left eye, are only those which are refracted by the right side of the object-glass; consequently, both eyes have a different view, and perspective of the object represented on the ground glass, and the single image is, in point of fact, the result of two images, each only visible to one eye, and invisible to the other. This is the main point of Mr. Claudet's discovery, which cannot be fully understood without reading the paper which he communicated on the subject to the Royal Society, the 8th May, 1857 (see *Proceedings of the Royal Society* for May, 1857), and without repeating the experiments described in that paper. The Stereomonoscope is founded on the same principles: it is nothing more than a camera obscura, before which are placed the two images of a stereoscopic slide, and by means of two object-glasses, sufficiently separated, the two images are refracted on the same space, at the focus of the camera obscura on the ground glass, where they coincide. By the same laws we have alluded to before, the right picture is seen only by the left eye, and the left picture by the right eye; so that, although only one picture appears represented on the ground glass, each eye sees on the same spot a different picture having its particular perspective, and, consequently, in order to obtain a single vision, the eyes have to converge differently to bring consecutively in the centre of both retinas the different similar points of the two pictures according to their horizontal separation on the ground glass, the criterion of their respective distances. This alteration of the convergence of the optic axis, according to the distances of the various planes, gives the same sensation of relief we obtain when we look at the natural objects, or at their photographic representations The invention of Mr. Claudet, in our opinion, is calculated to produce a revolution in the application of the splendid discovery of Professor Wheatstone to the exhibition of photographic pictures. At all events, it is one of the most curious facts connected with modern discoveries in optics,—deserving the attention of philosophers and the admiration of the public. We recommend the lovers of the arts and sciences to go and see the Stereomonoscope which is exhibited in Mr. Claudet's photographic establishment, Regent Street.

COLLODION NOT ADAPTED FOR BOTH POSITIVES AND NEGATIVES.

433, West Strand, London, May 3rd, 1858.

To Editor of Liverpool Photographic Journal:

Sir,—I am somewhat surprised at so much of your last and a former number being devoted to what I consider as little else than puffs of Mr. Maddison's positive collodion. I consider it a very bad precedent to insert letters professing to give general information, yet insinuating an eulogy on a particular collodion, especially when it proceeds from the maker thereof. As you have allowed a note to appear confirmatory of the supposed excellence of this particular article, allow a word to be said on the other side. I too have used this special collodion, pints of it, made it myself from Mr. M.'s formula, used it for months until I discovered better, and although admitting that it is good, decidedly give it as my unbiassed opinion that it is *not* the best in the market for positives, and not at all suited for the general purposes of negatives, giving too weak a picture with an iron developer, and impracticably slow with pyrogallic acid. As to the curious *melange* of honey, acetate of lead, nitrate of silver, and gallic acid, a collodion that requires such a mixture as this to develop it, may be at once put out of court for all practical purposes In fact, so far from its being equally adapted for positives and negatives, I consider that it is not well adapted for *either*, as a reference to its composition will, I think, satisfy all who have had any experience in making collodions. The formula is, "pyroxyline made from paper, to dissolve thoroughly, and dry transparent: *quantum suff.* Ether five parts, alcohol three parts, iodide of ammonium four grains per oz., a few drops of saturated *aqueous* solution of chloride of sodium (which fall to the bottom, and remain almost entirely if not quite undissolved, and which can therefore do little good or harm), and thirty minims pyro-acetic spirit per oz." This last addition prevents the collodion changing color and liberating iodine, *but it does not prevent its gradually losing its sensitiveness.* It is this addition of pyro-acetic spirit that spoils it for negatives, and the absence of bromides for positives.

I have experimented largely, and without the slightest bias in favor of any particular maker, honestly declare that his collodion is not so well adapted to give softness, gradation of half tone, combined with rapidity of impression, as the positive collodions of several makers in London, Birmingham, Sheffield, Norwich, and elsewhere.

The above remarks have been made certainly out of no opposition to Mr. Maddison, but from a desire that both sides should be heard, and to show that the merits of even a good collodion may easily be over-rated.

Yours, &c.,

C. J. Hughes.

[When we inserted Mr. Maddison's *first* letter we were ignorant that he was commercially interested in photographic materials; with his *second* letter we expressed our opinion of the impropriety of his remarks relative to his own collodion except as an advertisement; but as he offered other information without reserve, we saw no objection to any of the remaining portion of his communication. We certainly committed an error in not erassing Mr. Maddison's name from the letter of Messrs. J. and T. Clarke; but to carry out the principle of "audi alteram partem," we retain the name in Mr. Hughes' letter *for this occasion only*, but for the future we purpose being more circumspect.

We wish it to be understood that in our correspondents' columns amateurs, professionals, and dealers are all equally welcome, but all must stand upon the same footing. Let the motto be Liberty, Equality, Fraternity.—Ed.]

From the London Art Journal.

PAUL VERONESE.

WITH HIS SUCCESSORS IN THE DUCAL PALACE.

PART II.

What shall we do? whither betake ourselves? Why, since we have been recently moving about almost incessantly, and it promises to be too hot for slight exertion, even in this dustless and water-paved city of *la belle Venezia*, I think we can do no better than pass the morning quietly in the halls of the Ducal Palace, which are not only magnificently interesting, but shady and cool,—not only decorated with the full splendor of the sixteenth century, in the shape of Palladio's and Scamozzi's massy guilded ceilings and marble portals, and the superb allegorical and mythological canvases of Tintoretto, Veronese, and Zelotti, but free from everything that tends to hurry you along, and interfere with your deliberate enjoyment of these treasures. For here, liberally allowed to dispense with a guide, you may tarry as long as you please. You may take out your book, and, establishing yourself on the abandoned seats of "the Ten" and "the Forty," read and enjoy it; and ever and anon, raising your eyes from the record of some great embassage or council in Venitian history, you may feast them on the veritable scene of its occurrence, or on some vast and magnificent picture in commemoration of it, painted by order of the Dodge and the Senate. The only interruption, in all probability, will be an occasional troup of tourists, silent phlegmatic English, or rougher and more noisy Germans; but they will scarcely disturb you, since, in almost every instance, they stay only long enough just to enable the guide to bawl out the names of the principal pictures, and of their painters. Those names—"Jacopo Tintoretto, Paolo Veronese" (what a howl they make of the *Paolo*, to be sure!)—resound through the hall, not unfrequently accompanied by a profusion of the harshest *auchs* and *ichts* of the Teutonic dialect, roared in the most boisterous tones. But a momentary stare at the objects thus euphoniously indicated is almost always evidently deemed quite enough; and the party troops on in orderly subservience to the pompous guide, not much wiser than before, one would think; and you are left once more alone with the spirit of the illustrious past, to receive as much from it as your powers of observation, guided by your previous reading and reflection, will enable you.

Having adopted this recommendation, we were soon in the interior court, from which is the entrance to these state halls of the Signory by the Giant's Staircase. The architecture around, reared after a fire, in a Renaissance style (which, however, frequently retains the pointed arch), is wholly different from the noble Gothic of the exterior facades, and wholly inferior, though stately and magnificent, from that richness, solidity, and fine finish of details which are so eminently characteristic of the Venetian structures. The steps of the Giant's Stairs, for instance, are faced with beautiful arabesques in metal; and the marble balustrades and panellings abound with delicately cut grotesques, in that pseudo-classical style which the *Maestri Lombardi* cultivated at Venice in the sixteenth century, with remarkable grace, and minute Lilliputian vicacity of fancy. The present Giant's Staircase, though associated with Marino Faliero's execution, as much as Whitehall with the fate of Charles I., was not constructed until nearly 150 years after that catastrophe. Nevertheless, as we ascended, it was of course, bestreaked with sanguine shades: and, at the top, we saw a half-stripped figure of much anatomical magnificence waving a reddened scimitar, and holding up a hoary head, and crying out, "Justice has been done upon the traitor!" Yet, but for the grateful compassionate treason of one of Doge's minor accomplices, he would even now perhaps be crying aloud, "Justice has been done upon the herd of tyrants"—on the very dignitaries who now stand around with looks of immovable composure, suppressing every symptom of the revengeful triumph that is running riot in their hearts. Not that Faliero by any means merits the sympathy which Lord Byron, with his magnificent, but most undramatic rhetoric and special pleading, has labored so hard to awaken for him. He was not, it is true, a hoary madman, who would have drowned in blood the government of which he was chief, in mere revenge for a petty insult; but there is nothing to show that he was actuated by better motives than selfish ambition and the greed of power: and had that revolution been accomplished which he intended to secure by the indiscriminate massacre of the entire aristocracy, it is most probable that Venice would have gained nothing in exchange for her wise and prudent, though arbitrary obligarchy, but a single lord, or tyrant, altogether too much of the Visconti or Malatesta breed. After ascending the Giant's Stairs, before the place of the lions' terrible accusation-receiving mouths, you next pass along the upper arcade—a favorite promenade, no doubt, in the olden time, of the members of the Ten, when bent on quietly disposing of their victims in the dungeons a little beyond; or, if the secret code discovered by Count Daru was not a forgery, as there seems some reason to suspect, a lounging-place of the still more terrible and unknown Three Inquisitors of State themselves. Here they may have confabulated sometimes. Here they may have discussed that delicate point, occasionally, whether, by virtue of their legalised prerogative of assassination, they should dispatch one of their trusty bravos after some troublesome person who might fondly conceive he had found a resting-place in some remote country, far up the Nile, or down the Tigris. Fancies of this kind have, no doubt, been scandalously multiplied to answer the purposes of coarsely-horrible romance; but even the darkest reports of the Ten and the Three, it should be remembered, make them no worse than our own murderous parliaments in the times of the earlier Tudors, who, by their eager acts of attainder, so often hurried illustrious innocence to the scaffold, in basest and most slavish subservience to the will of the English Shah. From this whispering-gallery of the Ten, a second staircase, an interior one, ascends to the Halls of the Signory. Its slanting roof is very rich and striking, being massively banded with gilded garlands of fruit, enclosing white bas-reliefs by Vittoria, and little paintings by Il Semolei, of much merit, with something rather Michael Angelesque in them. The pannels and pilasters beneath, too, are *cinque-centoed* with stems or trees, which bear—as the thyrsus of Bacchus may be supposed to have done, obedient to his wish, on some given occasion—not simply pine-cones or ivory, but fruits of dragons' heads, dolphins, harpies, satyrs, and nymphs in teeming abundance, with frightful masks, and urns, and arms, and musical instruments. How such as these, swiftly bursting and rolling forth from the Wine God's wand, would have scared away the hinds who had stolen it, thinking to work with its power such wonders, but first of all, having set it in the ground, were dancing round it in a ring, in giggling triumph! The view down this sloping arcade, looking into the court far beneath, where a group of the female water-carriers was assembled in bright sunshine, round one of the bronze wells, as one which "gave us pause." The steps ascend in the opposite direction to the great Sala del Maggior Consiglio, the first of that very long and stately series of halls which are all ceilinged with such massy gilded magnificence, and are resplendent overhead and on every side with the immense canvases of the most powerful and brilliant Venetian painters, and their numerous followers. The plain and sombre panelling beneath in some of these halls, seems precisely suited for grave magisterial assemblies. But many of them are magnificently fitted up in every respect, and where not only Tritons and Nereids mounted on sea-horses hold across the ceilings the flowery wreaths enclosing the pictures of Tintoretto and Paul Veronese, but around you ascend pompous portals and chimney-pieces of costly marble, designed by Palladio and Scamozzi: *there* you will recognize a scene equally appropriate for the most superb state ceremonials—for the feasting-tables on the marriage of a young Dogaressa, such as we are told filled *several* of these chambers on the nuptials of Zilia Dandolo with Lorenzo Priuli, or for the reception of embassies from the Ottamite, or the Kings of France and Spain.

The Sala del Maggior Consiglio (and, indeed, most of the other halls are so) is covered with large pictures of the most famous achievements, some of them imaginary ones, in the romance of history of Venice: the suppostitious victory off Pirano, the reception of Pope Alexander III., the assault of Constantinople, the taking of Tyre, being conspicuous amongst the rest, with the strange old machines and weapons of war,—the mangonels, catapults, and perrieres,—the crowded galleys, the quaint habits, and the carpeted and tapestried semi-oriental pageantry on land. They are quite a rich and valuable storehouse of such romantic antiquarian imagery; only that, for the most part, it belongs to the times of the painters, and not of the events represented. They are the principal examples existing of that snowy, though somewhat mechanical style which was common to the immediate successors of Tintoretto and Veronese, when, partly from taking in a low sense the example but too often set by those great men, the art of Venice declined too much to what is merely decorative or ornamental, neglecting still more and more such things as tend to soften the heart, and raise and refine the imagination, for superficial pomps, which only flatter the eye, and touch not inward. Of this degenerate and waning period, the younger Palma, Leandro Bassano, Aliense, and Contarini are the most distinguished ornaments; and sometimes they rise above the level of the rest into a remarkable vigor and brilliancy of effect, and a fine execution of parts which is not unworthy of their great predecessors. The look-out from this superbly rich, but sombre old hall is, I should not forget to say, charming; and it was especially so when we were there, from its lively exhilirating brightness. The island of San Giorgi, just opposite, lay in the most brilliant sunshine beyond the calm pale blue water, which was bordered below by long lines of idle barques, each with its white awning or black cabin, like lines of dazzling spray and little dark rocks intermingled. Vivid green promontories of foliage, and little islands, with churches and other sparkling buildings, scattered the broad lagune beyond, and over the distant narrow line of Lido, we could see just the clear horizon of the open sea deepening like a sapphire against the silvery azure of that cloudless sk . The usual hum of life, the not unusal cry of men keeping time musically as they tugged at their cables, the wonted call, or bellowing of the gondolieri, gave animation to this delightful view. And whilst we were there, St. Mark's pigeons proved to us that they consider themselves perfectly free of this hall, as well as of the vestibule of the adjoining cathedral, for they came flying in at the window, and rested themselves very composedly on the cornice, where are the portraits of all the earlier Doges, except Marino Faliero, "decapitated for his crimes."

A painter worth attention, of the declining decorative period, Aliense, a Greek of the island of Milo, was banished the studio of Paul Veronese from jealousy—a high honor, which, however, we would rather had not been paid him by one who seems to have been usually of a noble and generous disposition. Aliense's picture here, of a certain city surrendering its keys to some Venetian general or other, is rich in pleasing figures, and conspicuously brilliant and vigorous in color. In the same apartment a Doge adoring the Madonna, by Marco Vecellio, the intimate nephew of Titian, and his companion in his travels, is highly remarkable for its very clear and fine silvery tone. The Sala of the Council of Ten contains a strikingly splendid painting by Leandro, the son of Jacopo Bassano, of Pope Alexander III. meeting Ziani after the victory over Frederick Barbarossa. The magnificent martial and ceremonial personages meeting together are well contrasted by the humbler figures lustily bustling ashore the spoils; and the painting is exceedingly brilliant and forcible containing passages, here and there, which for beauty of color and splendor of execution, would have done credit to any Venetian. Leandro Bassano, though seldom thought now-a-days, enjoyed, it seems, a brilliant reputation in his own time. The Emperor Rudolph II., a liberal patron of Art, wished to appoint him his court painter, and Doge Grimani made him his Cavalier. And we are told that Leandro supported his dignity in a sufficiently imposing manner. He appeared in public, nobly attired, decorated with the insignia of St. Mark, and accompanied by a retinue of scholars, one of whom bore his gold cane, and another the book in which was noted his very numerous and truly important engagements. His pupils attended him also at table, which was maintained in a very handsome and costly manner; and, as he was ever suspicious of poison, he had his tasters, like the greater personages; though they were ordered, it is said, to taste with moderation and reserve, for fear of exciting too much attention and ridicule. Whether from these apprehensions or not, he was subject to fits of melancholy; but it is added, for our consolation, that they were apt to give rise to comic rather than tragical scenes.

But here, in this hall of the Council of Ten, are some precious paintings, far superior to those of Leandro Bassano and his compeers—a few precious relics of that very rare painter Batista Zelotti, of Verona, a friend and fellow-worker of Paul Veronese, and one who alone seems to have succeeded at times in catching the delicacy and refinement of his excellences, some of which he has followed so closely in these pictures that they have been engraved as Veronese's own. They are in the ceiling, and consist, in each instance, of one or two allegorical figures of a truly captivating beauty and dignity. In these respects, and in delicate brightness of color, they vie with the very exquisite Veronese beside them; the conspicuous difference being that Veronese's picture has a most brilliant *silvery* tone, whilst Zelotti's tender coloring (as is said to have been usual with him) is warmer, more cowslip-like, more rosy, if we may so express it. Of absolute inferiority there is but little. The lovely frieze round this room is also Zelotti's. It represents naked little children amusing themselves in various ways with books and musical instruments, or tumbling about and caressing each other, and suddenly affrighted by lions. It rivals our own most innocent and lovely Stothard in such subjects; and one cannot easily pay it a higher compliment than by saying so. It was well—was it not admirably?—thought of to decorate the council-chamber of the severe and gloomy "Ten" with representations of cheerful loveliness and softening innocence, such as these. For who shall say that tenderly sliding into the upturned eyes of the doubtful thinker now and then, at the right moment, they may not have exercised a subtle influence over his heart, and so been powerfully instrumental to the defeat of the harsh decree, and the substitution of a gentler one. The seldom-thought-of-painter of these sweet things, though undoubtedly one of the first artists of his time, was not, it appears, even then known and esteemed according to his merits, from his having worked chiefly in fresco (in which he is said to have been more dextrous than Veronese), away from considerable cities, in villages, and country seats, and palaces, where his productions were most likely to moulder away in solitude, neglect, and oblivion.

Having thus, by mounting higher, approached the very kibe of Veronese and Titian themselves, we will proceed by saying Titian has in the Ducal Palace only one picture on canvas, and one fresco—his only fresco in Venice; the former Ducal Palace, which was rich in his works, having been gutted by fire the year after his death. The oil picture is certainly one of the grandest here. It is of immense dimensions, and represents the Doge

Antonio Grimani in armor, with an odd sort of white mob-cap on his head, kneeling with his arms uplifted, apart, with an expression of wondering admiration, before Faith, impersonated by a gradually handsome woman, who holds a cup and a crucifix, which latter is further supported by two very pretty little winged children, or converted Cupids. St. Mark, with his lion stands beside her, regarding the incident. The picture is one of great power, painted with a grand largeness, solidity, and force, melting in parts; most appropriately, into the true Titianesque softness and subdued richness of tone; and the two principal figures have a majestic and solemn air. This is the picture to which Mr. Ruskin specially refers as an evidence of Titian's utter want of religious feeling. Assuredly, it displays nothing of the *monkish* or *ascetically* religious feeling; yet, whilst moved by the grand emotion of Grimani, and the demure majesty of the noble figure of Faith, to whom he lifts his reverent eyes, I could not help thinking that it must be a rather fastidious and exceptious piety of the mere fancy which could pronounce them to be decidedly and absolutely of a non-religious character. It must be admitted candidly, nevertheless, that Titian has not given the warlike Doge the cloistral or seraphic expression of a St. Francis or a St. Dominick. The fresco, a St. Christopher with the Infant Saviour, is at the bottom of a mean, whitewashed staircase—a robust figure, with a fine, handsome, manly head, colored with a vigor not common in fresco. It has been copied in mosaic in the southern façade of St. Mark's Church.

To the works here by Tintoretto we have endeavored to do justice in another paper; but, after all, Paul Veronese bears the bell in the Palace of the Doges; and in the superb guard-room—where the Sclavonian halberdiers, pages, and officers were wont to wait whilst the Doge and the *Grandi* (his privy-council) received ambassadors within—is the Europa, one of his celebrated master-works. A fine-grown Venitian lady, in an interesting disorder of rich brocade, and crowned with flowers, and with a pensive melancholy in her countenance, is seated on a a beauteous, couchant, milk-white bull, who licks her foot, with languishing and love-softened eyes; whilst other handsome, full-blown madams are supporting her with much animation and courtly grace. A sylvan glade, leading downwards to the sea, forms the background, where some of the after circumstances of the story are anticipated. Of course there is nothing of classical antiquity—one does not expect it in Veronese; and but for a few stray Cupids fluttering in the air, for the pensive melancholy of the principal figure, and the perfect seriousness of her attendants, one might very well fancy that the Lady Morosini and her waiting-women, had, in a rather frolicsome mood, taken it into their heads to ride on some beauteous pet brute, of wonderful docility and tameness, round the paddock of her rural sea-side villa. The picture is magnificently painted; and though much untuned—disharmonised by restorations—rich and brilliant in effect, without one gorgeous color in it. A notable lesson is it of the splendor which may be produced by temperate means.

But now, before we proceed to the hall within, which is the very *sanctum sanctorum* of Paul Veronese, it will be advisable not altogether to overlook one of his most considerable works here—to go back for a moment to the Sala del Maggior Consiglio, whence we were somewhat precipitately led away by Zelotti, Leandro Bassano, and the others we have briefly noticed. This important work of Caliari's in the ceiling of the great hall, represents Venice crowned by Fame. Impersonated by a fine lady, in gold brocade, of the fashion of the painter's times, she sits at the top of the picture, between most superbly-ornate twisted columns, some very serviceable goddesses being grouped around her. Beneath runs a balustrade, crowded with ladies and their children gazing up admiringly at Venetia and her heavenly court; and under *them* are knights and cavaliers prancing on horseback amongst an animated crowd of the commoner sort—a splendid composition, most rich in picture incident; but now, lamentable to relate, spoilt by the restorations recently perpetrated. When I was here five years ago, this picture was absent for the purpose of being repaired; and Mr. Ruskin describes himself as having been "present at the re-illumination of the breast of a white horse in one of Veronese's pictures, in this palace, with a brush at the end of a stick five feet long, luxuriously dipped in a common house-painter's vessel of paint." Now as here is a horse, and, moreover, a horse with a very painty chest, I suppose we may pretty safely infer that this is the picture to which he alludes. At any rate a dull bad grey, a muddy brown, a leathery smoothness, are now in the work, as much as possible the reverse of Veronese's manner, and so much in the raw and crude style commonly cultivated now-a-days, that it can scarcely be rash to describe them as the slimy track of that organized body of picture-destroyers, the Venetian Academy. Restorations, ever of all things to be deprecated, are in the case of such a colorist as Paul Veronese, likely in an especial manner to be utterly fatal: where, as with him, every tint, up to its most delicate modifications, is suggested by the most refined consideration of the harmony and effect of the whole picture, colors superimposed by any less gifted hand, may, even in the first touches, mar the entire scheme hopelessly. You might just as well try to restore some highly-wrought poem, of which the most delicate passages have been all lost, as seek to repair the damage in any great work of Veronese's, such as this.*

However vapid and common-place the incidents of these allegorical works, it will not be supposed that the pictures resemble in general insipidity those of similar subjects by the lower order of artists. The noble truthfulness of the objects of which these fanciful compositions are built up, the excellent portraiture with which they are enriched—taken fresh from nature—the admirable grouping, coloring, and execution, give them high interest and value, and raise them indefinitely above all productions of the Verrio and Thornhill class, for instance. As an example of the Venetians' matter-of-fact way of filling up their allegories, their personifications of Venice itself may be cited. They do not, turning up their eyes to the clouds, ask them to lend a hazy lady for the purpose; but, looking around, choose some comely maid or dame at hand, very probably in part from courtier-like motives. Her they enthroned in the very dress then worn on state occasions; and really it is not quite easy to see how, in the absence of that higher imaginative power which these painters did not possess, Venice could be more satisfactorily personified. It is to be wished, we think, that our own artists, until they can bring to the task more poetical invention, would modestly content themselves with representing Britannia on the same principle; for who ever looks a second time on the impostor they have hitherto substituted for her?—a dull, cold, lifeless maid, with nothing British about her—a hybrid creature of illegitimate Athenian descent, who, having no wit or art to equip herself in any way honestly, has disgracefully, most derogatorily to the nation, stolen Minerva's helmet and Neptune's trident. Shame on her; fye! Brittannia surely should be not only honest, and original, but most emphatically English in features, physiognomy, dress, and every ornament and accessory; and therefore, no doubt, it is highly desirable that the felonious false Minerva should be summarily and contemptuously banished on the first convenient opportunity. And until some imaginative figure thoroughly characteristic of the heart, intellect, and beauty of England descends from the high heaven of invention to succeed her, why, it were surely better, on occasions where Britannia cannot by any means be dispensed with, that the artist should faithfully copy for the purpose, the damsel whom for her right good English face he admires the most; and if his subject will not admit of his seating her in a green

* It may be as well here to say a word or two on the other Veroneses in our own National Gallery. "The Offering of the Magi" is, in all likelihood, his composition, but so poor in character, color, and execution, as to betray, in almost every part surely, the hands of assistants. Our old picture—"The Consecration of St. Nicholas"—is, on the contrary, very fine and genuine, and in the beautiful composition of light and shade, play of delicate color, and light freedom of execution, most characteristic of the master—*in these respects* preferable to the Pisani picture. Much in his del ghtful manner is the variegated brightness of color (fresh greens and rosy hues especially), touching dispersedly, or as it were tipping the transparent greys on which the picture is based, like emerald moss and pinky flowers glancing about some shadowy fall of waters.

field among the primroses and forget-me-nots, or where the free eglantine, of its own sweet will, wreathes itself into a beauteous orderly canopy, or crowning wreathe for her fair head, he may (as Paul Veronese would assuredly have done) promote her to a velvet state-chair, arrayed in the most tasteful and harmoniously-tinted millinery that was seen at the last drawing-room of our sovereign lady the Queen. At any rate, this would surely be far better than equipping her, as we have hitherto done, in the cast-off things of a cold and superannuated antiquity. There is not much doubt, we think, of her proving sufficiently interesting, enthroned side by side with a Parisian grisette, her French national counterpart, decked in the Empress Eugenie's most delicate lace and jewellery; the two together receiving the homage of Russians, Cossacks, Tartars, and a rich variety of other barbarian figures, on the occasion of the fall of Sebastopol; the news of which, arriving here on the very day when we last contemplated these pictures, manifestly excited no unpleasant sensation amongst the loiterers at St. Mark's, Austrians as well as Italians. With something of invention and true poetry dedicated to the purpose, it is scarcely to be questioned that the too much depreciated allegorical style might be employed with much *pictorial* advantage, in commemorating the events of the recent war, in the halls of our new Houses of Parliament, or in the vast dome of the new Reading-room of the British Museum. For (as Mr. Ruskin, I think, somewhere observes) no other mode of treatment admits of grouping together such magnificent varieties and contrasts of picturesque objects—ideal beings; of course, we do not mean the trite ones; but novel creations conceived with witty sapience and sagacious fancy, human portraiture, animals—the symbolical ones, as well as others—and for backgrounds, glimpses of any events, or landscapes, which, however remote in *place*, are associated in *idea* with the principal part of the subject, or may be supposed as present to the minds of the persons introduced. Thus might be presented lovely visions of home, for instance, neiving Crimean heroes; or as an antithetical background to the indomitable heroism of that humbler rank and file, on whose few bayonets the reputation, and perhaps the lasting weal, of Britain, depended for some hours at Inkerman, some of our most accomplished senators at home, blinded by Faction, or lost in the mazes of their own sophistries; and one or two not the least shrewd of their body led floundering into the mud by Mammon: or certain of our lordliest captains, under the generalship of Pride, galloping blindfold up and down a long lane of blood, and death, and horror. Or there might be drawn elsewhere, in some quiet corner or other, a heaven-sent Nightingale, singing in "the perplexed shades" of the very Wood of Error, and charming away Pain and Grief with her clear melodies; or better far than any such light conceit, we might, unknown to her, snatch a veritable portrait of the noble Lady herself, and show her, even as she was, led on by Faith and Charity, with healing power, into appalling places; whilst cold, formal, calculating Duty stops far behind her. And might not Humor itself, in which, by-the-bye, in Art the British—of course including the Irish—are unequalled, be introduced with capital advantage in these allegories, embodying with refined skill such incidents as we sometimes admire in the cartoons of *Punch*, which display, doubtless, a shrewd and lively invention not often seen in the works of our finishing painters? If wholesomely satirical humor, equal to that of Leach, were set forth with highly-wrought Art having one tithe the skill of Veronese, why then, indeed, might the ceilings of our new senate-house be adorned with something so interesting as very desirably to draw attention away from the cramped, stiff, pettily-ornate architecture, which from certain points of view, at least—in the opinion of a certain cynical friend of mine, which, however, I could not myself venture wholly to indorse—seems more suitable for a vast bazaar for all the milliners and bijouterie in London, than for the Parliament House of certainly one of the most manly and energetic nations the world has ever seen.

And now let us return from this light allegorical digression to the Venetian Hall of the Ambassadors, the door of which is ajar, and the space within most happily custodeless. A sumptuous chamber! But, first of all, look out of its windows, and see the cupolas of St. Mark's clustering close opposite, above the fantastic spiral roof and statuary of the Porta della Carta; and beyond them the Campanile soaring into the cloudless azure, its shadows ærially and tenderly reflecting it. Look on this picture, window-enframed, and painted by the brightest hand of Noonday all with azure, and silvery white, and grey, and then contrast it with the warm, deep glow of the shadowy hall within—the Doge and Council's vacant seats of cedar hue, touched delicately with gold, the portal and the mantlepieces of costly marble, and, over them all, the sumptuous ceiling by Da Ponte (the architect of the Rialto), of wreaths of fruit and flowers, studded with masks and other grotesques; these the frames of Paul Veronese's most cheerfully charming works. Here let me sit by the hour, or rather by the morning, and read, in the simple and lively language of some old historian, such as Knollee or Contarini, the narrative of that great war with the Turks, which, beginning with the loss of Cyprus, but ending in the victory of Lepanto, is especially commemorated by Veronese's paintings in this hall. Let me read of the Nicosian matron, who slew her child to save him from the Turks, and of the noble captive maid who blew up the galeass which was conveying herself and her companions (a supercargo of Cypriote loveliness) to the Sultan's harem. Let me familiarise myself thoroughly with the glorious though unsuccessful defence of Famagosta; and between whiles, now and then raising my head from the book, let me gaze around the very room where the Doge and his Council received with calm firmness that fierce and haughty challenge of Sultan Selim's chaoosh, or envoy, which led to the war, and where, after the mighty victory at its close, the last great Venetian painter wrought on the ceiling those three lovely works of "Justice," and "Faith,"—the main pillars of the Signoria during the frightful struggle,—and "Peace," the ultimate reward of its self-devotion and heroism. They are amongst Caliari's most beautiful productions—somewhat small pictures, with not more than three or four figures in each, grouped in his exquisitely way, and colored to the height of that delicate brilliancy in which he is supreme. Romantic designs are they, conceived in a highly graceful and cheerful spirit, and set off with a right royal splendor. In the centre oval some magnificently-clad figures kneel around an alter, with white-robed Faith above them in the heavens. In the second picture Justice and Peace, kneeling too, most courtly, offer respectively the sword and olive-branch to a young lady (Veniero or Moncenigo, who can tell which?) in white satin, brocaded with gold and ermine, seated on a throne under a canopy, and impersonating *la Bella Venezia* quite satisfactorily, one cannot help thinking. But the third painting—though one has the same difficulty in choosing between them that the Knight experiences in selecting from the three lovely Sisters who, arm-in-arm, greet him in the lonely castle-hall—is, I do verily believe, my favorite. Here a shaggy Neptune and a cavalier in armor, representing Mars—the two, of course, signifying the strength and spirit of Venice—with her winged lion between them, recline most leisurely under a soft and balmy blue sky, where the Venetian Campanile rises with an ærial tenderness rivalling that of the real building which appears through the window; whilst two lovely children are flying through the air, one carrying away Mars' helmet, and the other bringing him a pretty veined shell to play with in that sweet-resting time of peace. This is surely one of the most beautiful pieces of bright but delicate color that ever gladdened the sight, vying, if I mistake not, with slopes of roses descending through the tenderest silver air down to the bosom of some becalmed blue mere, which mirrors softly the purity of the resting heavens.

Here one would willingly believe the Mars to be a portrait of one of the heroes of Lepanto: at all events the whole picture, painted shortly after that victory, commemorates in a delightful manner the peace which followed it; but the enthusiasm and glory of the exploit itself are illustrated on a far more magnificent scale by one of Veronese's chief masterpieces above the throne at the end of the hall.

In this picture Venice, personified in the usual way, is conducting the leading Instruments of the victory, her generals, to the Saviour, who, having descended, is seated with a globe in His hand, amidst a jubilant spreading and profusion of angels and cherubs bearing palm branches; white-robed Faith, kneeling below, with her cup in her hand, being represented as the successful suppliant to the Real Vanquisher—as the link between the earthly and the heavenly beings. The admire, Sebastian Veniero, afterwards Doge, and the *Proveditore*, Agostino Barbarigo (who, though slain in the fight, is finely, not the less, introduced here as sharing in the triumph), are habited in martial state, their mantles supported by graceful pages in white and gold. Speaking portraits! Veniero, a wrinkled, white-bearded, but fervent-looking old man, and Barbarigo (who was mortally pierced by an arrow whilst cheering his men during an unequal conflict with six Turkish galleys), and handsome in the prime of life—a noble example of a Venetian high-born and high-thoughted cavalier. Behind Veniero significantly follows a beautiful and dignified female, bearing that ducal bonnet which rewarded his deserts five years after the victory. And, lastly, the nature of that victory is shown by a crowd of galleys covering an horizon of sea extending across the foot of the picture.

Of the composition, coloring, and execution of this work, it would be difficult to speak too highly: the coloring his Paolo's characteristic wide range of brilliant, lovely hues, pervaded by much of his delicate silvery tone. It has all his melodious magnificence, as it may with but a slight figure of speech be called; and the effect, before it was somewhat faded and deadened by time, must have been something superlative indeed. Kugler says of some of these pictures, that "they touch the heart of the spectator like heroic music;" a kind of comparison which may here, perhaps, without deviating into what is fantastical, be dwelt upon a little, with characteristic variations. Some of the pictures we had been recently enjoying, such as Giorgione's "Bassanio at the Caskets" (as we ever call it), and Titian's "Gentle Shepherd," both in the Manfrini Gallery, may be likened to some simple, deeply tender air played on one instrument, a pipe or violin; but this is like a fine animated overture (one of the Rosini's best, for instance), with many melodies running through it, played grandly by a full-toned orchestra; consisting of many instruments of various kinds and powers, not any of them lost to the ear, yet all consenting to one brilliant and magnificent tone. This is not a *single* flower, culled for the tender bosom of some thoughtful maid, but a triumphal wreath of many, exquisitely matched, and gathered for the festive brows of Victory and Joy.

It is indeed every way worthy—as the representation of the Saviour descended amidst His adorers is significant—of the plenitude of enthusiastic faith which inspired the Christian combatants on the occasion; when the vessels were decorated gaily for the fight as for a jubilee, or rather as if the victory were already gained, and all the galley slaves were freed and armed, and all animosities melted away in magnanimous tears, like delusions of night before a divine dawning; and not only the priests, but many of the captains, hurried from stem to stern, with crucifixes in their hands, exhorting the multitude to look above all to the Saviour,—to fight fearlessly and with joyful confidence for Him who had died for them, and who, as He had more than once in former times descended visibly to confound his enemies, was now, no doubt, mightily present in the spirit amidst them. What could be looked for after this but the frequent boardings and re-boardings which ensued, and the prodigies of valor, and the sea discolored with blood, tossing shoals of corpses, and covered for miles with the wrecks of the Turkish navy, almost entirely destroyed; and such trepidation at Constantinople that the Turks already meditated the abandonment of the city, and traversed their streets in despair, asking the Christians whether the victors, on taking possession of the capital, would permit them to remain and live there according to their own laws, on payment of a tribute? The Christians, however, were too much weakened by their losses at the time, and too much divided by their petty jealousies afterwards, to follow up their glorious and complete success; and in a few months the Captain Pasha sailed forth again with a powerful fleet to menace and insult the Christian seas, just as if no defeat had been experienced. "In this vain exploit," observed a captive pasha, smartly, "you Christians only shaved away the Sultan's beard, which has speedily grown again quite as thick, bushy, and handsome as before; but in Cyprus the Venetians have irretrievably lost an arm, and so become crippled for ever."

The only addition one cannot help wishing for in this splendid monumental picture is, in some corner of it, a portrait of Miguel Cervantes, who, though he lost an arm at Lepanto, gained there, it may be, new power to his soul, in the glorious heightening of those generous and heroic feelings which so often glow through his satire on the follies of knight-errantry, like brilliant sunrays streaming through rents in the fantastic clouds. But this is an irregular excursion of my fancy, and it is enough that Venice alone should be honored here.

This Chamber is as the inmost heart of the fine old city, where its heroic emotions seem most to linger. These memorials of her last grand achievement, painted by her last grand painter—and they are amongst his masterpieces—compose surely, one of the most dignified and deeply interesting national monuments existing, to be fitly ranked, I think, not very far beneath those others in which Art still pleads in honor of extinct heroic races of men and powers, from the Rock of Pericles and the Seven Hills of the Cæsars. But the full majesty, the national sanctity (if I may use such an expression), of this Venetian Hall of the Ambassodors, has not, perhaps, been sufficiently apprehended by us. My fancy often returns, often dwells there to contemplate those many-colored glories, which bring home to us the greatness of the past; enriching our imaginations with noble and fervid thoughts, here emblazoned for the instruction and delight of after ages also, not perishing, not sinking into the grave with the great and gifted hand that traced them.

PROPORTIONS OF LIQUIDS AND SOLIDS.

To the Editor of the Liverpool Photographic Journal:

Sir,—In common with many others, I also am desirous of drawing a little from your well-stored literary stock. May I, therefore, request the solution of the following difficulty?—Occasionally, nay I think I may say frequently, an ambiguous kind of description of quantities of chemicals is made use of in the *Liverpool and Manchester Photographic Journal* difficult, at least to the tyro, to understand, in consequence of the articles consisting both of solids and liquids. An example of the case in point will be found at page 101 of your last number, about two-thirds from the top of the first column, where the latter part of the sentence runs thus: "pouring off the liquid into a glass vessel, we have added five or six drops of acetate of lead, dissolved in distilled water, in the proportion of *six per cent.*" The doubt exists in the scored words. Am I right in reading the sentence thus: Six grains of sugar of lead dissolved in a hundred *grains by weight* of distilled water? If so, it would, as a general rule, have been much more intelligible to the general manipulator to have given the quantity of salt in grains, and that of the water in minims, *fluid* drachms or ounces, as each formula might require. Or should I be correct in always considering the grain of solids to be equal to the minim of liquids?

Yours most truly,

Esculapius.

April 19th, 1858.

[The concluding portion of your letter is so complimentary that we had not the courage or vanity to publish it, but we thank you heartily for your good opinion and kind wishes. It is generally the practice amongst our photographic brethren in France to quote the strength of a solution at so much per cent., but in translating we *generally* give the approximate quantity, according to the English method; but when preparing the last number we were suffering severely from an affection of the head, having literally risen from a bed of sickness in order to do it, and we therefore overlooked the point. Your surmise is correct, one minim being regarded as equivalent to a grain,—consequently six per cent. would be about 28½ grains to the ounce. A simple rule to follow is to multiply the per centage by *five*, and that will give nearly the number of grains to the ounce; and if all the solutions employed be treated alike in this respect the relative *proportions* are still adhered to, and the absolute strength very slightly varied, so little as to be immaterial in practice.]

For the Photographic and Fine Art Journal.

HELIOGRAPHY;

Its powerful agency in, and its great importance to, the development of human civilisation and refinement.

Mr. Editor,—I am glad to see, by one of your late numbers, that the "good work goes bravely on"—the work of vindicating the dignity of the Heliographic Art, and its title to a rank among both the fine and the *useful* Arts. You may possibly remember, that, in my occasional contributions to your Journal, during the last three or four years, I have been accustomed to *press* this point with considerable earnestness and at the hazard of some repetition. The truth is, that our Art bore a reputation, not at all agreeable to myself as one of its practitioners—the reputation of being a merely mechanical process—and incapable of even rising to the rank of an Art. This reputation has manifestly been owing, not so much to the nature of the Art itself, as to the character of a large number, if not a *majority*, of the persons, who had taken up its practice. It was an obvious matter of fact, that these persons were marked neither by native artistic *genius*, nor acquired culture and accomplishment. As a general rule, they excelled, if at all, in chemical and mechanical manipulation *solely*, but were incompetent to produce pictures distinguished by liveliness, grace, *pronouncedness* and *individualising expression*. On the contrary, the specimens produced were, chiefly, flat, tame, lifeless, *wooden*.

Of course the reputation of the Art suffered through the *incompetence* of the bulk of its *casual* operants. But such a state of things could not *permanently* exist, nor could impressions so essentially false prevail, when the subject became better apprehended. In Europe both the amateur and the professional cultivators of Heliography have been, *generally*, men of education and acquirement, and to no small extent men of *genius*. By consequence, the true quality and just claims of the Art could not very long remain obscured,—especially at a time of such unparalleled rapidity of progress in the Sciences and Arts. So that, for some time past, the foreign heliographic journals have teemed with essays designed to authenticate the artistic dignity and worth of this Art. It may, perhaps, be well to give a brief enumeration of the *grounds*, upon which the claims of the Art under review are based, although they may not be *novel* to the reader. And

1st, The Sciences, on which Heliography rests, and with which it has to deal, are among the most magnificent and practically important within the domain of human knowledge. The sunbeam, which is not alone the secondary creator of universal beauty, whether in the inanimate and animal kingdoms, and the face and form of man, but the fountain and ever-active agent of all material growth and development,—chemistry and mechanics, on whose laws the ongoings of all life, whether that of this solid globe, or of the infinitely multiplex vegetation springing out of it, or of the myriads of animal and human creatures moving over it are every instant dependent—electro-magnetism, that mysterious and seemingly, *omnipresent* principle, in which new marvels and new uses are daily coming to light, and which may yet be discovered to be that *central unity*, of which *all* sciences are but different and kindred *offshoots*,—these sciences, to name no other, are the agencies, wherewith the Heliographer must daily and momently work—are, to a great degree, the very *materials* and *tools* of his craft. Without a considerable knowledge of these sciences, any large measure of proficiency and skill in Heliography is unattainable—and that an individual without mental discipline and education should stand before the community as a practitioner of the Art, is an absurdity, which public opinion cannot much longer tolerate. Now that the general attention is aroused to this matter, the individual of a profession, dealing with agencies so important, will soon be *constrained* to furnish proofs of the same general and thorough culture which are demanded in the other so-called liberal professions.

2nd, But I pass to a few remarks on the various *special* benefits rendered by Heliography to the world. The portrait-painter may derive very essential aid in taking a faithful and spirited likeness, from having by him an excellent Heliograph of his sitter. In fact such a Heliograph, being an exact transcript, will serve him, as well as the *present original*, in getting the drapery and all the outlines of face, head and figure—thus saving, to the sitter, the time and tedium of several sessions, he being present but just long enough for catching the individualising *expression*. This last was, with Lawrence, the work of an instant—that felicitous instant, when the soul, concealed perhaps before, gleamed radiantly out! I have no doubt, that the portraitists will thus reap a benefit wholly beyond his present conceptions.

And the Heliographer in turn will be benefitted by the portraitist, who, skilled in wielding the pencil and in the appliance of colors, can touch up the product of the camera with those fleshy tints which make the picture an all but *literal double* of the original.

Another incalculable benefit, which Heliography is rendering and is hereafter to render still more extensively, to mankind, is its supplying them, at moderate rates, with exact transcripts of the natural scenery, the noted edifices public or private, the localities memorable for great deeds or events, and the distinguished personages, male or female, either in our own or in distant or foreign lands. By this means we gain all the advantages commonly derived from extended travelling, without the fatigue, the danger, the expense, and the loss of time incurred by the latter—without, indeed, ever passing our own thresholds. What an inexpressible advantage that, throughout every community, the families even of moderate means may have their walls of their domicils, or of their public buildings covered with beautiful representations of the sublimest and loveliest things and of the greatest and noblest persons, which any portion of the globe, in any age, has contained—and that thus, while the eye is fed with visual beauty, the heart is thrilled and the mind enriched with the most inspiring emotions and most precious thoughts! Must not a community wherein such a state of things prevailed, advance rapidly in the growth of refined tastes and the development of a love of the beautiful? And must not a community improve also in *moral* respects, which is abundantly provided with these *guiltless* intellectural pleasures together with a *love* for such, in lieu of those sensual enjoyments, which in times foregone, have almost alone been within reach of the *masses* of every country?

Microscopic Heliography, again opens to the universal view an infinitude of wonders and beauties, which to the naked eye are utterly invisible. It was an inestimable discovery, which first brought these unknown worlds within our ken. How is the value of that discovery *enhanced* by our ability to represent, on plate, paper or glass, these invisibly tiny scenes and creatures, wearing the same bulk, as when witnessed through the magnifier, and thus to have them perpetually suspended before our eyes! It will easily be seen, too, what facilities for enlarging our *knowledge* of the incalculably small is furnished by these microscopic Heliographs of specimens of the same.

I might mention also the advantages to be derived, in every department of science, and every branch of study or pursuit from Heliographic representations of specimens or objects pertaining thereto. In the anatomists study, and in the lunatic asylum, such representations of subjects dead or living, have been found useful, not less than similar representations of living faces and forms, of Assyrian, Egyptian, Grecian, Roman, Gothic or Saracenic sculptured or architectural specimens in the studio of the painter, the statuary, or the architect. And may not even the infractor of society's laws be driven *out* of the "broad" destruction-ward road *into* the "straight" and secure path by the fact, that his Heliograph, taken in the Penitentiary where he was confined, can at once be multiplied and universally diffused, so that he must be *recognised*, wherever he appears, while the telegraph can, within a few moments, scatter the tidings of a crime perpetrated from Maine to Florida?

A thousand appliances, of similar kinds, will at once occur to all and verify a remark, previously made, that Heliography is entitled to a rank in the *useful* as well as the ornamental Arts.

My space, however, being exhausted, I must close for the present. M. A. Root.

Philadelphia, June 10, 1858.

From the Liverpool Photographic Journal.

ON THE OPTICS OF PHOTOGRAPHY.

BY REV. W. J. READ, M.A., F.R.A.S.

[Read before the Manchester Photographic Society.]

The title, "The Optics of Photography," he remarked, did not limit them to any particular branch of the science of optics, except so far as regarded the size of the lenses employed. All the calculations and all the results of optics depended upon very simple principles, and he should make it his endeavor to state as simply as possible what those elementary principles were, showing their application in the lenses which they were in the habit of using, not attempting at all to enter into the abtruse or difficult calculations which could afford no interest to very many. Light proceeds generally in straight lines when it is traversing a uniform medium; but when it passes from one medium to another a change takes place in its direction, not variable, but according to a constant law as ascertained by experiment. Mr. Read here referred to his diagrams, without which we shall not be able to follow him closely, but will point out the main features of his demonstrations. He showed clearly the deflections of rays of light on passing through different bodies, such as air, and glass of various densities. It is found also, he said, that different substances exercise different dispersive effects upon a ray of light; this gives the power of producing a colorless pencil of light, and deflecting it which way we please. A ray of light passing through a compound prism might re-appear on the other side with a change of direction, but achromatised. Mr. Read proceeded to apply these principles to lenses. A ray of light passing through a prism is, in all cases, bent towards the thicker part of the glass. Mr. Read pointed out the cause of what is called "spherical aberration," and added, that it is possible, by properly choosing the curves of the lenses, to bring such a set of curves together, so that the greater deflection of the outer part is counterbalanced by a smaller deflection elsewhere. This was acertained by intricate and difficult calculations. For the correction of spherical aberration it is not at all necessary that different kinds of glass should be used; the same glass might be employed, but the curves might be so choosen that the deflection of the ray on passing the subsequent surfaces shall be more or less in an opposite direction from that which occurred at its entering the surface. Light might fall in any direction upon a lens; when it falls in an oblique direction, there are certain curious and somewhat intricate results following. Photographic images consist not of a series of points one upon another, but of a series of circles of least confusion lapping one over another, of a breadth that may be calculated. To avoid a confused image, it is usual to place before the lens a "stop,"—that is the name given to it by workmen, and he preferred it to the scientific name "diaphragm." According to these principles all the lenses which are used are constructed. With some of them they were no doubt familiar, such as the ordinary portrait lens invented by M. Petzval, and that made by Chevalier, of Paris. Mr. Read described this lens by the aid of chalk, and remarked that Chevalier had improved this by adding another lens. The reason why the back lenses of the portrait apparatus are separated, is, that the *aberration* could not otherwise be corrected. Chevalier placed two lenses in front, and he was thus able to take large pictures, but in a longer time. As Mr. Ackland was present, he would say nothing about M. Petzvla's most recent invention, the "caloscopic lens." Mr. Read proceeded by desire of the company, to describe an invention of his own in reference to the "stop," by which some of the defects of landscape photographs are remedied. The stop in an ordinary view lens is placed parallel to the surface of the lens, and consequently the sky is brighter than any part of the foreground. Hence it was that skies are so often "overdone," or "solarized," or "burnt out." In many cases it is necessary to paint out the sky, so as to get an effect and be able to print from the picture. The sky had become transparent from the continued action of light, before the foreground had produced its full effect. He proposed, instead of using a "stop" placed parallel to the lens, to use a stop placed at a certain, or perhaps he ought to say an uncertain, inclination to it. By using a stop of this kind they might cut off as much of the sky as they pleased, thus adding to the amount of light received upon the foreground, and preserving the relative proportions of light in the distance In this way he thought they would be able to get what photographic landscapes long wanted, namely, something *like* clouds along with the landscape. Mr. Read produced what he called a "rude representation" of this invention, and demonstrated its action to the company. In Mr. R.'s model the lens is placed in a square tube, in which a square partition is fitted so as to move on a centre turned by a button on the exterior, the bent portions at the top and bottom are of thin springy cardboard to shut out the light; a collar of velvet surrounds the front and shuts out extraneous light. This was merely a rough model, and is of course capable of improvement. He had not been able to bring any pictures as a result from want of time. He had tried it, however, and found its effects abundantly evident, it being possible to shut out the whole of the sky, while the foreground continued as bright as before, if not somewhat brighter. After exposing the picture, the stop should be turned up for a few seconds, just the length of time necessary to take the sky alone, and then the effect of the clouds would be produced along with the landscape. He also thought of proposing a new form of copying lens, which would enable copying to be done more accurately and readily by the use of the present apparatus.

WHITE POSITIVES ON GLASS.

To the Editor of the Liverpool Photographic Journal:

Sir,—In your *Journal* for 1st March I observed a letter from Mr. W. Anderson, of Bradford, wishing for information on the whitening process. I have seen a specimen of the pictures he mentions, the whites of which were pretty good. On seeing this I made several experiments to gain the effect by re-development. The one in which I have been most successful is this: take a picture in the usual way, and after fixing, lay it in a dish containing hot water, and let it remain there about three minutes, then take it out, and wash with cold water, drain it a short time, and place it on a levelling stand; now pour on the re-developing solution, composed of

1 ounce distilled water,

12 minims saturated solution of bichloride of mercury in muriated acid,

20 grains protosulphate of iron,

12 grains nitrate of potash,

½ drachm alcohol.

On the first application of the solution the picture will almost disappear, and then gradually become more and more developed. Let it remain in this position until you have gained the desired effect, which will take from twenty to thirty minutes; then wash thoroughly with water, and dry by the fire. But then the picture wants varnishing, and I have tried many kinds of varnish, but have net yet succeeded in finding the right one, for the general kinds, especially the French, turns the picture into slate color. The best method I have adopted is, after the last washing, and whilst the plate is still wet, pour on a solution of isinglass, ten grains, warm water one ounce, filtered, on which, when dry, you may color, and with care produce some very beautiful results.

Hoping this will be of service to some of our photographic brethren, who will, I trust, make a further advance in this branch of the art and report their success.

I am, Sir,
Yours respectfully,
J. B. R.

P. S.—I shall be glad to hear of a suitable varnish.

[Try gum arabic thirty grains, water one ounce, glycerine ten minims.—Ed.]

For the Photographic & Fine Art Journal.

SUGGESTIONS
For the Organization of a Photographic Society.

H. H. Snelling—*Dear Sir*—Why have we not a Photographic Society? This, Sir, has become a most important question, and reasons have been given explanatory of the cause, the principal ones of which are: there is too much jealousy on the part of our artists; they are too selfish, few, if any, being willing to communicate to a brother artist a single result he has ever obtained in any experiment he has ever made. Why is this, Sir? The answer can be found in the letter of Mr. Breckenridge in the June number of the Journal. There are those in our profession "who have taken up the trade of *picture*-making because they found themselves totally unfit for everything else;" consequently the true artist, holding such in contempt, resolves to keep his own counsel and experience to himself. I have never seen any suggestions made of a plan by which we could be enabled to overcome this resolution, and my object in writing to you now is to throw out a few ideas which, in my opinion, if they could be made practical, would do much to eradicate this jealousy and selfishness. But let me in the first place, for a better understanding of my plan, review the condition of our art at the present day. All over the country and in every city are to be found parisites sucking the life blood of the mighty tree, Photography—sapping its very roots to that condition that were it not for a few tenacious tendrils, the noble monument would inevitably fall, wither, and be forgotten. Many of them are not willfully perpetrating this infamous outrage, but are of necessity compelled to follow in the wake of the ignoble band of illiterate blockheads who have degraded our art, vitiated public taste, and reduced the compensation of our labor to a miserable pittance. The first step of one of these newly fledged *artists* when he finds he lacks brains sufficient to make him a *superior practitioner* on the high road to fortune after a weeks' instruction, is to reduce the prices and advertise "pictures taken without shade." By this means he gains customers—people who are unable to judge a good picture from a bd one, and Apollo help us their name is legion. He gives the same case at half the price as his neighbor, the true artist, next door, and poor creature, he can see little beyond that, for if he only makes them white both sides of the face it is all satisfactory. Now, Sir, how does this operate on those men who pursue the art for the love they bear it, and are contented to make both ends meet? Why their business for the time is wonderfully cut down —if they can afford to wait it works all right in the end, but if they cannot afford to wait, if they have families around them depending on their efforts, what is the course they are compelled to pursue. They must either descend to the pecuniary level of their *artistic* friend, or abandon the art for something more stable, and leave the incubus master of the field, and a prop is dislodged from the fabric. There is another devotee of Photography, who, I am sorry to say, is equally, if not more, injurious to it than the one I have just mentioned. He is the skillful manipulator described by Mr Root in the June number whose cold, dull, rough, morose manner renders him totally unfit for the practice of the art. He produces work of superior quality, but the expression of every sitter speaks but too plainly the want of that magnetic influence so essential to complete an otherwise excellent picture. The entire want of this quality deprives him of patrons, and, as he says, he too must live—down comes the prices, in rush the customers, and another prop is gone. These are sad thoughts, Sir, but the experience of years has taught me they are true ones. With such instances as these before us can we blame the respectable members of our profession for their jealousy, their selfish? No! Is their business not daily in jeopardy? Why should they be communicative for the benefit of those who will fawn upon them to-day, and undermine them to-morrow? Most assuredly they should not, but were there a plan by which this undermining could be prevented, then the man who could withhold the results of his labors would be selfish indeed. A severe disease is engrafted upon our art; let our remedy be to pluck it out. The plan I would propose for the organization of Photographic Societies is this: let there be a principal one in New York and branches in every city; for the country I would propose all those artists within a a circuit of twenty or thirty miles to form a branch. Let those societies resolve and fix a minium price, below which no pictures shall be taken by any members thereof, and the better to ensure the success of this rule, no member shall purchase of any manufacturer of, or dealer in stock who is not a member of the society, or or who will sell to any one who disposes of his pictures at a price below the minimum. This would force the manufacturers and dealers of necessity to enter into the ranks of the society and also the artists to seek the same protection. It might be urged against this that were all the manufacturers and dealers to unite with us to carry out this scheme that new ones would spring up to supply those who were still desirous of grovelling in the mire. My answer is—it would not pay.

With such an organization the superior artists would throw off his fetters and become communicative. The inferior one would profit by the details of his experience, and cultivate those essential qualities necessary to perfection, which would enable him to pursue the profession without injury to his neighbor and with honor and profit to himself. The art would thereby be elevated in the esteem of the people, and they would be led to feel and appreciate the importance a short time would give it, and willingly remunerate the artist for his labor. Taste would be cultivated and thin "ghastly shadows" be forgotten, or only live in the memory (to be smiled at) of those who had been taught to admire the true and the beautiful. Their places would be filled by the clear, round, artistic, and life-like representations of the "human face divine," and Photography would at last be placed in the highest niche of the temple of art. I have no doubt that judicious modifications and improvements could be made on this scheme, and principally for this purpose have I penned these suggestions. If I succeed in drawing into the arena one more lover of the art, my object will be gained, and if the ball that has been started can only be kept rolling, the time is not far distant when it will reach the much wished for goal.

F. J. E.

MINUTE HOLES IN GLASS POSITIVES.

To the Editor of Photographic Notes:

Sir,—Since I have arrived here from the North I find that all my positives go into small minute holes. Last year, when here, they did the same. I consider that it is owing to the Lime in the water, as the silver tests show abundance of it in the water.

In your first volume I wrote you about the same thing, signed "Chemical." Since then I have been in several towns, and always find, when Lime is in the water, that, in a week or less, the pictures go into minute holes. I do not admire varnishing the pictures, but I can find no other remedy.

"Chemical."

From the Photographic Notes.

THE CARBON PROCESS.

BY THOMAS SUTTON.

Once more we would earnestly call the attention of our readers to Mr. Pouncey's method of printing positives in carbon. What is to be done in this important matter? In a letter just received, Mr. Pouncey informs us that he will dispose of the process for a hundred guineas; but also that on his last visit to London he registered it provisionally with the view of taking out a patent. Here then is a definite proposition which we are able to submit to our readers; Mr. Pouncey offers them a method of printing permanent photographs in carbon, for one hundred guineas, a sum which could be raised at once if every one of them would subscribe a shilling. Surely the process is worth that. There cannot be one of our readers who would not gladly give a shilling to know it. Well then, shall we see if we can all combine and purchase it?

Here is a plan for that object;—

Let every one who feels inclined to give a shilling for Mr. Pouncey's process forward to us his name and address. We will file all these addresses. If we get a sufficient number we will purchase the process, and publish it in a shilling pamphlet. All we now require are written orders for a sufficient number of copies of the pamphlet when it comes out. It is evident that if we purchase the process on our own account, and incur a great deal of trouble by so doing, a guarantee is necessary, because it would no sooner be published than it might be copied verbatim into any public journal; the pamphlets would then become waste paper, and we might whistle for our hundred guineas.

If then we can secure a sufficient number of orders for the pamphlet, we will purchase and publish Mr. Pouncey's process. Should this attempt fail, it seems that photographers will have no help for it but to wait patiently for six months, until the Specification of the process is made public; and then the patent will be binding on every honest man. Besides, it might be worth while for some of us to consider how many shillingsworth of silver would go down the sink, and how many perishable prints be added to our portfolios during these six months. Let the past history of Photography answer these queries; and let no one grudge his shilling for a process which appears to combine economy in the material with permanence of the proof. Admitted that the color of a carbon print is black, and not red, or purple, or any fancy tint; and also that there may possibly be in Mr. Pouncey's prints a little want of half-tone; but it is equally certain that the whites of the paper are perfectly preserved, and very probable that a black pigment such as carbon might be replaced by others of a great variety of beautiful tints; nor is it improbable that the want of half-tone in the early specimens of a new process may be remedied by improved manipulation. These considerations should, we think, weigh with reasonable men, and a whole season not be allowed to pass away while they remain in ignorance of the most important step in Photography which has been recorded for some years;—in a state of ignorance which may be terminated in a few days, by merely writing a letter and paying a shilling for a book when published.

Do these remarks savor of "enthusiasm," or are they not rather consistent with common sense? Time will show. Meanwhile we leave it to our contemporaries to record, if they prefer it, the *minor* improvements in Photography—to run the changes eternally on the preservative syrups, the modifications of waxed paper formulæ, the vexed questions in optics, which a week's application to the geometry of the subject would settle at once and forever; and so on, *ad nauseam*. We are surprised certainly, but not less pleased to find ourselves the sole advocates of M. Petzval's new lens, and Mr. Pouncey's carbon printing.

But before we quit this subject of carbon printing we must mention that a few weeks since we received from Herr Pretsch a print, supposed by him to be in carbon, and printed by him in the year 1852 by the following process, as described in his own words:—

"The print is executed in the ordinary way like another positive, but instead of salt or ammonia, carbonate of soda is used. If I recollect right I used at that time a fixing bath of hyposulphite, to which was added a concentrated solution of acetate of lead, till it became dull, well stirred up, and then again added till at last it became clear."

With all due deference to Herr Pretsch, whom we respect highly as an intelligent and enterprising photographer, we do not believe this print to be a *bona fide* carbon print, but on the contrary a silver print, toned with sulphur and lead. Unfortunately it was got possession of and either mislaid or destroyed by a little rogue named Arthur Sutton, who lays hands upon all such photographs as are not deemed pretty enough for his papa's portfolio; and as this print was the only one of the kind which Herr Pretsch possessed, the accident is much to be deplored.

From the Liverpool Photographic Journal.

STEREOSCOPIC CAMERA, &c.

To the Editor of the Liverpool Photographic Journal:

Will you give me your advice under these circumstances:—I am about to give orders for a stereoscopic camera, having, as you recommended in page 65, No. 5, a number of separate dark slides. My principal wish is to take *views*, and from the negatives to print *transparencies*. This involves me in some difficulties, which are these,—

1. If I obtain a camera with *two* lenses, can transparencies be printed without first reversing the two pictures? Suppose the plate exposed in the camera with the collodion slide *from* the lens instead of *towards* it, would that do away with the necessity of transposing the pictures obtained?

2. Although my main object is to take views, and therefore as I am told that *single lens* are much superior for this purpose, I feel almost inclined to get them, besides they are somewhat lighter, and portability is a matter of consequence, however, as I might occasionally like to take the stereoscopic portrait of a friend, I wish to ask whether, if the portrait lenses were so stopped down as to take pictures in the same time as the single lenses, (I suppose with an equal stop they would take much more quickly), the single lens has *any* advantage. If there be the *slightest* advantage on the part of the single lenses I should prefer them, as my object is principally to take views.

3. What is the proper distance between the two lenses? Is the question yet fairly settled by scientific disputants whether they should always be the same distance apart, no matter how far off, or how near the objects to be taken, are from the camera; and should the lenses be mounted with their axis parallel or converging.

I am now exposing a stereoscopic plate prepared by Long's process, giving a quarter of an hour to each picture, making half an hour for every negative I take or spoil. This seems a great deal, but I know from previous results it will not be at all overdone. It seems very necessary then, that if a twin lens camera will give as good results as when the two pictures are taken singly, it should be used with a dry process.

I hope you will be able to get me a reply inserted in next number. I intend starting on a tour very shortly, and want to give orders for the camera as soon as possible.

You hint that you will soon have a paper on stereoscopic cameras,—I hope it is ready. Stereoscopic photography seems to be the great rage, though but little space is given to it in any of the journals, and yet how many open questions connected with it there are for discussion.

I remain, truly yours,

NEOPHYTE.

[In replying to enquiries we prefer to give our *reasons* with the advice, but we fear that in the present instance we cannot afford the necessary space, we will, however, endeavor to meet your views. You say *you have* a number of dark slides—but you omit to state the size of the plates that they carry; are they $5\frac{1}{2}$ by $3\frac{1}{8}$, or $6\frac{3}{4}$ by $3\frac{1}{4}$? Upon this will depend the possible distance of the lenses from one another, if two be employed. 1st. You can print transparencies from negatives taken by two lenses without reversing the pictures, provided that you print *two at a time*, and that the negatives are on the same sized glasses as you use to print upon. In this case if the plates be $6\frac{3}{4}$ inches long, and the width of each for stereograph $2\frac{3}{4}$ inches, as is usually the case, the centres of the lenses should be four inches apart thus—

$2\frac{3}{4}$	$1\frac{1}{4}$	$2\frac{3}{4}$

Taking the negative with the collodion side from the lens would give a final result of a picture as seen reversed in a mirror. With two lenses, whose centres are four inches apart, and the collodion towards the lenses, the negative taken would give a printed positive, thus—

R		L

To print transparencies place two dry sensitive plates end to end, thus—

and cover with the negative, thus—

	R		L	

protecting the two *outer* halves of the plate with black velvet; expose to the light, then reverse the position of the two plates on which you are printing replacing the negative and velvet as before, again expose and the result will be, with the collodion towards you, thus—

	L	R	

on each plate, which is what you require. We recommend you to have a camera with two single lenses, placed four inches apart, and by having a shifting front you can at any time replace them, either by one portrait combination to slide over both segments or two combinations, as desired. The double lens does not preclude the possibility of taking the two pictures at any distance, by moving the camera, but, of course, when this is resorted to, the two pictures cannot be taken at the same moment. Read the remarks in our last leader. Portrait lenses, stopped down to the *same aperture* as single ones, *if of the same focal distance*, do not work any quicker. Your exposure is enormous—in a good light from one to three minutes ought to suffice; what you call *Long's* process is only Dr. Norris's spoiled.—Ed.]

From Photographic Notes.

SPOTS ON COLLODION POSITIVES.

To the Editor of the Photographic Notes:

My Dear Sir,—I beg to submit to your opinion the accompanying glass photograph; it is as you may observe partially covered with small black spots, resembling pin points; it is one of many that have turned so after remaining apparently free from defect for about two weeks. They then presented faint spots which for some days became deeper, and having reached the stage of the one I sent you, got no worse. I do not think the cause is in the collodion, as all sorts give the same defect: neither has the washing anything to do with it. I wash well; and in order to obviate the spotting, have soaked the plates in water for hours together, after being fixed, but all of no avail. I appeal to your scientific and practical knowledge to point out the cause of this, and by doing so you will confer another boon on an unfortunate

"Photographic Leopard."

[We have had many queries lately with respect to these spots on collodion positives. To us they are not familiar, and we can only offer conjectures as to their cause. Are they owing to sulphurous particles in the atmosphere of smoky towns, which stick to the varnish; or to the film perhaps, while being dried before the fire? Or are they owing to impurities in the washing water, or to undissolved particles in the developer, or nitrate bath, which stick to the film? We can only suggest to filter all the solutions carefully, even to the washing water; or to use distilled water for the final washing, and to dry and varnish the plate in a place free from smoke, and then to enclose it at once in the case.—Ed. P. N.]

From the American Journal of Photography.

WHO MADE THE FIRST PHOTOGRAPHIC PORTRAIT?

BY DR. JOHN W. DRAPER.

University, New York, May 3d, 1858.

Gentlemen:

Your letter of April 29th has only just come into my hands, owing to my absence from the city for a few days. In answering it I cannot refrain, in the first place, from expressing surprise that any question should arise respecting priority in taking Photographic portraits. It will soon be twenty years since I took the first one, and during that time I have uniformly laid claim thereto in various publications,—in my chemistry, which is commonly used as a text book in schools and colleges, in the Philosophical Magazine, in lectures, and in various other ways,—and I have not learnt that there was any question upon the point. I will however, without any hesitation, furnish you with such facts as you ask for, and shall also be happy to give you any further explanations which your proposed enquiries may appear to render necessary.

It will shorten very much what I have to say, if you will refer to an article published in Mr. Snelling's *Photographic and Fine Art Journal* for December, 1854, p. 381. It contains a short statement of my early connection with Photography. From it you will learn that for nearly ten years before any one in America had turned attention to the subject, I had been occupied with the chemical effects of light, and had published in the Journal of the Franklin Institute and elsewhere, a good deal in relation to it.

For years before either Daguerre or Talbot had published anything on the subject, I had been in the habit of using sensitive paper for investigations of this kind. It was thus as you will find by looking into the Journal of the Franklin Institute for 1837, that I had examined the impressions of the solar spectrum, proved the interference of the chemical rays, investigated the action of moonlight and of flames, either common or colored, red or green, and also the effects of yellow and blue solutions, and other absorbing media. You will notice that in these experiments I was using the preparations of bromine, about which so much of late has been said. The difficulty at this time was to fix the impressions. I had long known what had been done in the copying of objects by Wedgewood and Davy, had amused myself with repeating some of their experiments, and had even unsuccessfully tried the use of hyposulphite of soda, having learnt its properties in relation to the chloride of silver from Herschel's experiments, but abandoned it because I found it removed the black as well as the white parts. This want of success was probably owing to my having used too strong a solution, and kept the paper in it too long.

To come to the point of your more particular enquiry,—When Mr. Talbot's experiments appeared in the spring of 1839, they, of course, interested me greatly, as having been at work on the action of light for so many years. I repeated what he published and varied it. This was whilst I was professor at Hampden Sidney College in Virginia, and before anything had been published by Daguerre. I tried to shorten the long time required for setting the picture of a house or a tree, by using lenses of large aperture and short focus, and this was the germ from which the art of portraiture eventually arose. I may mention among such experiments that, not being able to get a lens of aperture enough to suit me, I tried a reflecting mirror or rather a reflecting telescope belonging to that college, and I presume, is there still. It was a Gregorian one, the mirror from four to five inches aperture and perhaps 3½ feet focus. (I speak from recollection not having seen it for nearly twenty years.) My plan was to protect the small mirror from injury by putting in front of it a piece of a cigar box the size of a cent, on which the bromine sensitive paper was fastened. I expected to be able to focus by looking through the hole in the great mirror and moving the little one by hand, but on trial found it unmanageable and not answering so well as the common refracting camera. Nevertheless I could get images of any brightly illuminated object, though too large and too faint. There was no difficulty in getting the outline of a part of a person standing against a window, but then it was a silhouette and not a portrait, like those spoken of in Mr. Talbot's paper.

It was during my repetitions of Mr. Talbot's experiments that I recognized the practical value of the experiments I had made in 1835, and published in 1837 respecting the chemical focus of a non-achromatic lens, and saw that the camera must be shortened in order to obtain a sharp picture. It is the experiment of passing a cone of light through a known aperture on sensitive paper. It was from considering the difficulty of getting an impression from colored surfaces as red or green, that I saw the necessity of enlarging the aperture of the lens, and diminishing its focus, so as to have the image as bright as possible; for it was plain that in no other way landscapes could be taken or silhouettes replaced by portraits. And when I had failed altogether in these particulars, I knew it was owing to insufficient sensitiveness in the bromine paper, and waited anxiously for the divulging on Daguerre's process, respecting which statements were beginning to be made in the newspapers.

The first that I knew of the particulars of Daguerre's process was the publication of it in the London Literary Gazette, which contained Arago's report of the meeting of the Academy of Sciences on Aug. 19th, and this I saw at the time of its arrival in New York. I do not recollect the date, but it strikes me it must have been in September. However, it would be very easy to ascertain by looking in the newspapers of that time. I bought at once some of the common silver-plated copper, and next day tried Daguerre's process. I believe I was at that moment the only person in America who had any practical skill in experiments with light, but then I had had ten years' experience in such matters. Those of you who know the failures and disappointments incident to photographic experiments, can appreciate thoroughly the value of such a schooling, in a delicate operation like Daguerre's. I succeeded with no other difficulty than the imperfection of the silverplating in copying brick buildings, a church, and other objects seen from my laboratory windows.

I now returned to the attempts at portraiture, and upon the principles I had already ascertained before the publication of Daguerre, resorted to a lens five inches in diameter and seven inches focus, which I still have. I dusted the face of the sitter with flour and pushed the back of the camera to the violet focus. At this time I did not understand well the manner of illuminating the object, and making the trial in a room succeeded, however, in getting an impression, but observing that the dark parts of the clothing impressed themselves, I saw it was altogether unnecessary to whiten the face, and on trial found that the forehead and cheeks and chin on which the light fell most favorably, would come out first. By increasing the illumination and prolonging the time I could get the whole countenance. But as you will gather from the size of the lens I used, though it was a combination of a pair of convexes, nothing like a good picture was possible, so I exchanged it for one of four inches aperture and fourteen inches focus. As improvement went on from day to day, I found that a common spectacle glass would answer if the sitter was in the open air, and with such a one fastened into a cigar box I obtained many proofs; but since it was necessary with such an aperture to use so much light, all the proofs I had obtained were defective about the eyes.

At this stage the problem of portraiture must be considered as solved. It had become a mere question of obtaining a good plating. As respects the latter, I had for some time used a piece of pure sheet silver, which answered perfectly while it lasted, but with so often heating it on the spirit lamp it became crystalline, and broke to pieces.

About this time I became acquainted with Prof. Morse, and we subsequently had a building on the top of the University in which we took many portraits, at first with my four inch lens, and then with a French achromatic and French plates which we imported. We also gave instruction to a number of the earlier artists. I could relate to you many incidents of our conjoint trials, disappointments, and eventual success, which would doubtless interest you, but they are perhaps what you are not looking for now.

In March, 1840, I sent a note to the editors of the London and Edinburgh Philosophical Magazine, mentioning my success in solving the problem of portraiture, and in September the same year published a detailed account of the whole operation. I had sent to Europe, in the meantime, specimens, and had received letters of acknowledgment.

In 1840 I was informed that Mr. Wolcott had succeeded in making an elliptical mirror of seven inches aperture and fifteen or eighteen inches focus, and had obtained portraits with it. I alleged against it the limited size of the plate that could be worked, the impossibility of preventing its being stained in an open camera, its unfavorable position in front of the mirror, though admitting its advantage in correcting the lateral inversion of the image. But some years subsequently, one of his instruments coming into my possession, I found that I had been altogether misinformed as to his success in producing an elliptical mirror. It was only spherical, and was not as good as the telescope mirror I had myself used and rejected in making silhouettes. I do not think that any of those instruments are now employed, and believe that in the present state of mechanical art, even at this day, no one can grind and polish a piece of metal of such dimensions, to that figure, as was then asserted.

From what I have said you will therefore gather that my connection with portraiture dates back to the summer before the publication of Daguerre's process, and that both as respects the use of mirrors and lenses, that I met with various partial successes, but that within a day or two after the Daguerreotype was made known here by the London Literary Gazette, I had accomplished the object. If there is any question of priority it must be reduced to a few hours, and when your inquiry comes to that, I think you will find a reliable guide in ascertaining whether there was any one in the United States known, by the publications he had before that time put forth, to have the necessary practical skill in these manipulations to bring such a delicate operation as Daguerre's to a successful result without hesitation, and to apply it in a case in which Daguerre himself had failed.

Photographic portraiture, as we understand it, implies the use of a lens of large aperture and short focus, it implies a knowledge of the correction for the chemical focus, and perhaps the use of bromine. All these things I knew before the name of Daguerre was mentioned on this side of the Atlantic, having been occupied with experiments on the chemical action of light for ten years. How any doubt can be now entertained as to who took the first portrait, passes my comprehension.

Yours truly,

J. W. Draper.

Messrs. Stetson, Cohen, Seely,
Committee of Mechanics' Club.

Compound your Photographic Chemicals carefully.

Personal & Art Intelligence.

— As we predicted at their introduction, our photographic artists are becoming heartily sick of ambrotypes and the ambrotype business. The reasons for this are obvious; as pictures they are abortions, and nine hundred and ninety-nine out of every thousand taken in the United States are montrosities. The only uniformly good ambrotypes we have ever seen are taken by Mr. Judson, of Newark, N. J. Occasionally we have seen fine portraits of this style taken by other artists, but they have been very few. The public are becoming disgusted with them for their worthlessness, as mementos of departed or absent friends or relatives. This is because the cheapness at which they are sold induces nine-tenths of the operators to slight them in every way possible, consequetly in a very few months, and in some cases days, they either fade, the film peels off the glass, or the varnish becomes yellow. Were they not, at best, poor apologies for pictures, these last considerations will soon drive them out of existence and the daguerreotype will again assume that rank in the photographic art from which it was so unjustly thrust. We have always viewed the introduction of the ambrotype and the expulsion of the daguerreotype with disgust, and expressed such sentiments freely, wondering how any one of taste and refinement, could possibly give way to the adoption of the first at the expense, or in preference to the last, even on the ground of its being the "*latest discovery,*" and as in all last discoveries, or newest articles, run after them like a flock of sheep following the bell-wether; or as a pen full of swine each thrusts his nose into the hot swill regardless of the burnt snouts of his predecessors. This is not very refined language to be used in writing of art matters, but this peculiar subject is worthy of no other. To discard the richness, softness, delicacy of detail, naturalness and roundness of figure, with all the minutely exquisite gradations of light and shade which are the characteristics of the daguerreotype and of the daguerreotype only, for the harsh outline, rough exterior, and abruptness of shading of the ambrotype, speaks, certainly, very unfavorably of the taste and judgment of our people. Undoubtedly, if the dear public generally knew that the reasons why a certain class of operators are so strenuous in urging the ambrotype upon them, are simply because of the ease with which they are multiplied, and their almost costlessness compared with the daguerreotype, they, perhaps, would not have held them in such *high* estimation as long as they have. On the other hand, if all our first class operators had followed the example given by Mr. Gurney and Mr. Lawrence, of New York, and refused to introduce these abortions, called ambrotypes, into their galleries, and adhered to the daguerreotype for all small pictures, they would not now be mourning in sack cloth and ashes, their departed glory and their active profits. Instead of falling into the ranks of the abortionists, and putting forth their energies in endeavoring to make a bad thing passable, they had devoted the same labor to the improvement of the daguerreotype and striven to correct the only defect—that of the reflecting surface—their bumps of common sense (if they have such—ask Fowlers and Wells), would have been more noteworthy. We, however, take consolation in the conviction that one year more will witness the entire resurrection o fthe daguerreotype, and the final burial of the ambrotype.

We have another cause for surprise in the continuance of the ambrotype—leaving the daguerreotype out of the question—after the introduction of the *melainotype*, which, when skilfully made, is in most respects quite equal to the daguerreotype, while the facility of manipulation, as improved by Mr. Waldach, is not inferior to the ambrotype. The adaptation ot these pictures to small sizes, for lockets, rings, and broaches, should also commend them favorably to the notice of both artists and the public. The complaints that have been made in regard to melainotype pictures among artists are unjust. They are readily avoided by care in fixing and in varnishing. A thorough washing in the first instance, and the use of the genuine diamond varnish in the second, will satisfy any unbiased artist that the fault has been entirely with himself. Then those who, like ourself, cannot avoid disliking the disagreeable glare reflected from the polished surface of the daguerreotype picture, while they at the same time deplore it, should by all means give preference to the melainotype over the ambrotype. It possesses all the boldness of the daguerreotype, as well as the fineness of detail, and its want of the exquisite softness and richness of the latter, is compensated by its perfect visibility from every angle of view. To institute comparisons, we should call the daguerreotype the counterpart of a masterly executed pencil drawing; the melainotype that of the steel engraving, and the ambrotype that of the most ordinary style of lithography; and yet we do lithography an injustice by the comparison, for we should certainly prefer an ordinary lithograph of the *present day* to an ambrotype.

In these remarks, we must be understood as speaking of photography as applicable to small pictures. For all sizes over the 2-3 we shall always give decided peference to the paper pictures, and such gems as are now made all over the United States, speak in volumes for the process over all others. Too much cannot be said in praise of the prints that came under our editorial notice last month, and those for this month are, in the main, equally worthy of the highest regard.

— Mr. H. Lazier of Syracuse, N. Y., has sent us seven portraits that are perfect gems. We reget, that after so many requests made by us to have the name written on each picture in order that we might individualize them, and criticise understandingly, in this case, as in all others, it has been neglected. We must therefore, we can only say, generallize. In every point constituting *high* photographic *art*, as applied to portraiture, these pictures excel. The group, the full length lady, and two other heads have never been surpassed, either by the most delicate touches of the pencil, or by the most skillful photographer of this or any other country. They are mezzotint; but mezzotint elaborated and perfected. The steel plate never produced such exquisite points of excellence in boldness, delicacy, deep shade and high lights as are brought out in these pictures. We sincerely hope Mr. Lazier is fully appreciated in Syracuse. No field is too large for his genius. It would be the most depraved sacrilege to retouch such photographs as he has sent us. Mr. Gaudin of Paris, lately paid our photographers a high compliment, in a conversation with a friend of ours, who was on a visit to France. He remarked, that the old world could not produce such photographic portraits as came from America. "America," said he, "is far in advance of every other country in photography;" yet he had never seen anything equal to these pictures of Mr. Lazier.

— Mr. A. Bisbee, of Columbus, Ohio, has sent us two very excellent portraits which will compare favorably with the work of our eastern artists.

— Mr. J. H. Fitzgibbon has sent us several very fine views of South American architecture. We were not aware until we received these pictures, that our old friend had been so far away from home, and we are highly pleased to receive these tokens of his regard, for they are really and particularly valuable productions. Apart from the valuable information they convey as to the style of architecture adopted by the discoverers of the South American continent, in the fourteenth and fifteenth centuries, and the classical and correct taste, and the munificence displayed in the construction of their public buildings, the photographs are highly creditable to Mr. Fitzgibbon's skill as an artist. Some of them are equal to the best French landscapes. When we say this, our readers will understand the full meaning of the remark better, for our stating that it is extremely difficult to obtain photographs in the section of country where these pictures were obtained, on account of the yellow hazy atmosphere which constantly pervades.

— We take the liberty of inserting the following letter—although not written for publication—as it contains matter interesting to our readers:

Milwaukie, May, 1858.

H. H. Snelling—*Dear Sir*—The June number of the *Art Journal* will I hope, tell us who "Albert Smith, Esq.," is. Editor, Poet, Divine, Artist? Perhaps not to know him "argues oneself unknown," but, for the life of me, I cannot now guess who he is. He is certainly a splendid looking gentleman.

I am glad to see my old friend and instructor, M. A. Root, taking right ground in the right direction, as he generally does. Having heard similar sentiments from his lips in 1846, I know they are no *new* thoughts with him. There is another gentleman in Philadelphia who, I wish, could be induced to give his photographic brethren the benefit of his experiments and experience. Who can say how much our beautiful Art would be advanced if artists like him had imitated the little *wren*, who cheerfully gives up the best she has in the way of song, despite the *cutting* blasts of stormy weather. The gentleman referred to seems to me to be a really *scientific* operator, and did not modesty prevent, could greatly benefit our fraternity by an occasional contribution to your Journal. An amateur here has just invented, and I hope will patent, a most ingenious apparatus for using wet collodion plates in the open air. His plate holder fits, light-tight, upon the moveable frame of a box holding six plates, each in a separate water-tight apartment. The slides are drawn and the plate takes its position in the plate-holder; the slides return to their places, and the plate is ready for the camera. It is then exposed and returned to the water tank. The time required to take the plate from the tank, place it in the camera box, and return it to the water box again, does not exceed one minute. His stereoscopic camera box—also his own invention—is a beautiful thing. Both pictures are taken with one tube and lens, on one plate, in the proper position for exhibiting in the stereoscope, which, by a new and exceedingly simple method of adjustment, enables *any one* to *instantly* see the pictures in relief. In fact, it is *impossible* to see more than *one* picture, and that in beautiful relief. His transparent stereoscopic pictures, printed on wet collodion plates, from collodion negatives, are very fine. Merit is proverbially modest, or I should give the gentleman's name—but should any one wish to avail themselves of this invention, any communication forwarded to me will be handed to him. I send you some views which I have taken this spring, by Long's Dry Collodion Process. Also a "Boot-Black," the negative of which you will see I had the misfortune to break.

Hoping the reading of this will not tire you,

I am, yours truly,

H. S. Brown.

As to who Ralph Smith is we are as much in the dark as our correspondent. It is as difficult to get the contributors of our negatives to tell who and what they are as to find hen's teeth. We have never received the photographs mentioned. Let your friend patent his inventions, and send us drawings and descriptions for the Journal.

— Mr. Gebhard called upon us to-day and showed us some negatives taken by a camera, the lenses of which were made by him after M. Petzval's calculations, and which have created so much commotion in the photographic world of late. These negatives were very fine, on plates ten by twelve inches, and produced by an exposure of five seconds. The nearest object in the view was twenty feet, the farthest was two miles, and yet equal sharpness and detail were evident throughout the whole picture. The others were microscopic, and were equally excellent.

— We hear of another Photographic Society having been established in St. Louis, Mo., and we have been promised reports of its proceedings for the Journal. We sincerely hope it may prosper, and become a fruitful source of information. St. Louis has the material for effecting a vast amount of good to the photographic art, if properly applied.

— Mr. Rogers, of Pittsburgh, Pa., will find his letter answered in our leader of this month.

— Mr. Seely has commenced a new volume of his "*American Journal of Photography*," greatly improved in appearance, although reduced somewhat in size. It is the design of Mr. Seely to make his journal exclusively American. We sincerely hope he may be able to succeed. The number before us (June 1st) contains several original articles of interest. We copy one in our present issue, although we doubt the propriety of publishing matter in advance which is intended to make part of the report of a committee of investigation. As it has been published, however, we consider it no impropriety to copy it; but we must protest against this principle of taking advantage of position to forestall contemporaries. It is not fair, yet we exhonorate friend Seely from intentional wrong, as he is yet young in the publication business.

— There are many valuable papers in our present issue. The opening article does not give us anything decidedly new, although it points out various paths to distinction in photography in the right way. The *Jottings* of Mr. Gutsch are highly interesting, and the controversy between Professor Petzval and Mr. Voigtlander is not only entertaining, but highly instructive. We are informed by Mr. Gebhard that Prof. Petzval is decidedly in the right, and that Mr. Voigtlander has acted far from honorable towards the Professor. These personal matters, however, are of little moment to the great body of photographers, but the events to which the discovery, claimed by both gentlemen, tend, are of the greatest importance to every one engaged in the art. We have an excellent paper by Mr. Hardwich, which will command the attention of all who desire to excel in the art. Mr. Law's Notes on Difficulties will assist many who occasionally "get into a fog." Mr. Burnett's article should certainly be carefully read and investigated. Important results must eventually arise from the processes described. "*Stereomonoscope*" is highly interesting, while the *few* original articles should be perused with care. Several other articles make up the whole, and treat upon subjects which must always be not only interesting, but instructive to the reader.

— We see that the *solar camera* is highly spoken of by the English Journals, which declare it the best instrument for the purpose of enlarging yet introduced. We are likely to have considerable controversy on this subject, as others claim equal excellence for the instruments they have adapted to the purpose. We say *controversy*, but although our present predilections are in favor of the Woodward *solar camera*, we shall try others, if loaned to us for the purpose, and give our *unbiased* opinion in regard to the working of each.

— We regret to inform our subscribers that we are compelled to issue this number of the Journal without illustrations for the want of paper. All our readers are aware that paper has been almost impossible to get for the last six months, and the American mill, upon which we relied to supply us, having failed to do so, we are placed in the same category with the rest. We shall, however, give four pictures in our next, as we shall have paper in a day or two, and our facilities for printing are now equal to almost any quanity daily,

— Mr. L. H. Bradford has sent us a Photo-lithographic stereoscopic view, which evinces still further progress in this process, and is exceedingly fine.

— Mr. Churton, of this city, has invented an admirable stereoscopic camera, in which entire manipulation of the plate can be carried on, and yet the whole affair can be comfortably carried under the arm. We hope he will furnish us with an illustrated description of it for our Journal. Inventors in this country should follow the example of Europeans in this respect for their own as well as others' benefit.

— Mr. J. B. Hall has opened a photographic gallery at No. 283 Fulton St., Brooklyn, L. I. He has repurchased the entire patent of the Hallotype, and greatly improved the process, rendering it more easy and the coloring more brilliant.

— Messrs. Vance & Bradley have each sent us a fine negative portrait, which we shall issue in our August and September numbers. We have also received a very fine negative from E. T. Whitney of Rochester, representing the scene of the Little's murder, with which we shall illustrate our August number.

— We dislike to be obliged to call on our subscribers through the columns of our Journal, for the amounts of subscription due us, but so many are in arrears that we are compelled to do so. We have to pay cash for every item of expense on the Journal, and it is absolutely necessary that our patrons pay up promptly. Where so many are behind hand, it makes the matter a serious one with us.

From the Liverpool Photographic Journal.

MANCHESTER PHOTOGRAPHIC SOCIETY.

We now give the conclusion of the report of the proceedings of the above Society at their meeting on the 5th ult., which press of matter prevented us from inserting in our last number.

Mr. William Ackland, manager for Messrs. Horne and Thornthwaite, Newgate Street, London, thought the suggestion as to the stop one of the best he had heard for a long time, and intended taking the earliest opportunity of putting it into practice. Certainly photographers wished to prevent their skies being solarized. By the ordinary plan so much time has to be allowed for the foreground that the sky necessarily suffers, but with this contrivance the evil can be obviated. Mr. Ackland proceeded to describe the lens recently invented by Professor Petzval, of Vienna. Some parties had endeavored to prove that this gentleman was not the original inventor of the new lens, but there was not the slightest doubt of the fact; he, for one, must give him the credit of it. This form of lens is applicable only for landscapes, not for portraiture generally, that is, in towns or in ordinary glass houses. It might also be used to advantage for copying. Mr. Ackland described its construction which is very peculiar, there being three convex and five concave surfaces; the effect is to elongate the lateral rays and thus produce a flat image. The light collected by this lens reduces the time necessary for taking a picture by one-fifth. Mr. Ackland exhibited a specimen (a newspaper broadside, very sharp and well-defined), taken by it, and regretted that a fire on their premises had destroyed others. In copying, these lenses are said to be superior to any before used, and require only about half the time of exposure which an ordinary landscape lens does. Mr. Read had remarked that M. Petzval called them "caloscopic" lenses; erroneously however, as this distinctive name was given by Messrs. Horne and Thornthwaite.

The Chairman said they were much obliged to Mr. Ackland for his explanation of the new lens, with which many then present were not acquainted before.

Mr. Ackland stated that the shorter the focus of the lens employed the sharper will two objects situated at different distances from it be in the picture; also that it is a question not definitely settled as to the best focal length for a length for a lens to be employed to produce a picture of any given size. One of almost any focal length could be used, but we want *artistic* photographs; hence the question arises—providing we can get lenses of different foci to cover our ground glass, which is most advantageous with regard to artistic effect? It had been stated on very good authority in London, within the last few days, that a lens which produces a picture at an angle of forty degrees, is about the best that can be used, and this accords with his (the speaker's) own experience. Petzval's lenses take pictures at an angle of 41 degrees, so that by them pictures are taken moderately sharp all over, thus producing very artistic photographs. We have hitherto been accustomed to use lenses of too long foci, those of fourteen inches focus, and not more than 30 degrees, being generally employed to produce a picture nine inches by seven inches.

Mr. Ackland then introduced to the company a compact and ingenious stereoscopic camera that he had recently used in preference to the field box, which contained eight plates in eight separate backs, and weighed, with the eight plates, only six and a half pounds! He showed the mechanism of the camera, which is adapted for avoiding delay, mistakes of forgetfulness, injury, &c.

The Chairman remarked that there was a prejudice in Manchester against taking the pictures twice, the sitters being apt to move.

Another Member thought Mr. Ackland would not find many photographers using single lens stereoscopic cameras.

Mr. Ackland said that in London the feeling was the reverse.

Mr. Read said he was quite sure that they would all accord Mr. Ackland a very hearty vote of thanks for his interesting information regarding M. Petzval's lens, and also for the very ingenious and beautiful camera he had exhibited. He had no doubt of the correctness of what Mr. Ackland had said in favor of the lens, and they owed him their thanks.

Mr. Ackland remarked further upon the relative positions of MM. Voigtlander and Petzval, and the peculiar feeling which the latter entertained towards the photographic public. The new lens, he said, was first introduced to the English public by M. Pretsch, in a paper read before the London Photographic Society, in which he told them that such a lens had been made under M. Petzval's directions. He (Mr. Ackland) saw sufficient at once to convince him that there was something very good in the lenses, and on consulting with Messrs. Horne and Thornthwaite, he was commissioned to proceed to Vienna to obtain all the information possible. When he arrived he found that M. Petzval had made a prior business arrangement with M. Dietzler, and would not afford any information as to the theoretical principles upon which the new lens is constructed. Mr. Ackland, therefore, purchased one of M. Dietzler, and on examining it found it to be twenty-six inches focus to take a picture fifteen inches by twelve inches. Such a lens for photographic purposes would be, in his opinion, perfectly useless; so that, in fact, the lens had but very little improvement in it. The principles were there but they were not fully carried out. He (Mr. Ackland), therefore, determined to ascertain if it were not possible to materially shorten the focus and yet cover the same field. Then came the curious discovery that as he decreased the focus he increased the sharpness. He entered into the mathematical construction of it rather deeply, and succeeded in eliminating great principles. He thought he had discovered the principle upon which Petzval based his calculations; still he was not in a position to say that the lenses he had laid before them were made by any assistance he received from M. Petzval, who, having made a bargain, of course would not have been justified in departing from it; but it was to be regretted that he had confined it exclusively to one maker.

Mr. Ackland, at the desire of the meeting, promised to forward a specimen produced by this lens, and offered to send a lens to be tested by the Society, which offer elicited applause, and the Chairman said a committee should be appointed to test it and make a report.

The Chairman drew attention to another matter, which he said was becoming serious, namely, the fact that people were continually re-discovering inventions, so that it became quite a bore. He found that no less than four people had claimed to have invented the form of stereoscope made with whole lenses. Now here was a stereoscopic camera made with whole lens by Mr. J. B. Dancer, optician, of Manchester, in 1853, and used by him, along with Mr. Williamson, Mr. Grundy, and other members of their Society, both as a camera and as a stereoscope. He thought that this ought to be put on record, for, he believed, that M. Claudet patented the principle in 1854, and one or two other persons had patented it since. He also stated the constant use, during the past four or five years, of stereoscopic transparencies as slides in the magic lanthorn, about which people were constantly enquiring, as if it were a novelty, and there was some difficulty to be overcome. The thing was getting quite absurd; people were re-discovering processes as if they had never read the journals.

One other subject was mentioned by the Chairman. He said that members would remember that the other evening they had some photographic specimens on the table with a light line round the trees and buildings, giving a very curious effect or sort of halo. This phenomenon was remarked upon in the journals. He was speaking to Mr. Dancer upon the subject, and he had written to him as follows:—

"Those photographers who have had much experience in printing from glass negatives, will doubtless have noticed in some paper positives that dark objects, such as trees, buildings, rocks, &c., are sometimes surrounded with a light margin. This is seen most distinctly with a bright sky for a background. If the negatives of such pictures be examined, it will be apparent (generally) that the plates have been over-exposed in the camera, a corresponding dark line being visible around the trees, &c., &c. The cause of this appearance, in my humble opinion, has a very intimate relation with molecular disturbance (caused by the light) on the sensitive surface of the prepared plate. Those who have experimented much in electro-metallurgy will have noticed the thickened deposits which frequently occur at the edges of the reduced metal, when the conducting surface suddenly breaks off. Sometimes cracks occur, interrupting the conducting medium, and then a complete wall of metal will form itself on each side of the crack. These marginal effects of molecular arrangement appear to be analogous to those exhibited by magnetic force. Had time permitted I could have sent you several illustrations, but perhaps I may refer to them at some future period. The phenomenon in question has been noticed in some of the photographic journals, and one gentleman has explained the cause by supposing an interference exerted by the heated air surrounding the objects. This latter explanation does not appear to account for all cases, as the same appearance can be produced in a picture taken from an engraving; possibly an effect may be produced by some lenses being imperfectly corrected for their chromatic aberrations; in this case the violet rays would no doubt exert some influence on the outlines of objects Perhaps some remarks may be elicited by discussion, and I regret not being able to come and hear them."

The Chairman thought that Mr. Mann had some specimens with him.

The negatives were accordingly exhibited to the meeting.

A Member remarked that as in these pictures the sky was nearly gone, the trees had robbed some of the light of the adjacent parts.

The Chairman: But why should they rob it?

Mr. Ackland said he had noticed the phenomenon once, and he thought it was due to the lens.

Mr. Reed thought that was the principal cause.

The Chairman: Not in this case; because Mr. Mann has different sized lens and cameras.

The Chairman exhibited an ingenious contrivance for carrying in the dark two or three plates in small compass. It was made by a designer in the employ of their firm. The ingenuity of the contrivance elicited admiration from the members.

The hour of separation having arrived,

Mr. Cottam, the Secretary, stated that he should be obliged to postpone bringing under notice some interesting views or diagrams showing the relative heat of the sun, as measured by a mechanical contrivance.

From Photographic Notes.

MR. FOTHERGILL'S PROCESS.

To the Editor of Photographic Notes:

Dear Sir,—Allow me to bear my testimony in favor of the Dry Collodion Process, published in the *Times*, by Mr. Fothergill. It seems to me in point of sensitiveness to hold a middle place between Collodio-Albumen and Norris's gelatine, but I have not myself obtained, by any dry process, such soft and pleasing pictures as by this of Mr. Fothergill's. The plates so prepared develop beautifully under gallic acid and acetate of lead, as recommended lately in your *Notes*. I strengthen the picture sometimes with pyro-gallic and citric acid when the details are well out. I for one feel much obliged to Mr. Fothergill. As to collodio-albumen I find Mr. Ackland's suggestion of washing the collodion film in a weak solution of iodide of potass a very great improvement, the plates that have been so treated seem to develop with much more certainty, and the shadows are clearer than in almost any of the pictures that I have taken before without the said wash. From several experiments I should say that the latter process was from six to eight times more sensitive than Long's process.

J. W. Bull.

From the London Art Journal.

ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

The photographs selected by the committee for distribution amongst the subscribers to this most excellent association, are now exhibited in the Suffolk Street Galleries, with the Architectural Exhibition. This is a judicious arrangement in itself, and its good effect is considerably enhanced by the high character of the photographs. On the occasion of the opening conversazione of the Architectural Exhibition, the screens and portfolios, upon and within which the photographs are either displayed or placed for examination, were covered and closed, with the view to a special conversazione of the Architectural Photographic Association, which took place under the always agreeable and effective presidency of Professor Cockerell, R.A., on the evening of Thursday, January 7th. The rooms were well filled, and great interest was shown in the photographs, which then for the first time were submitted to the general body of the subscribers. So careful have the committee been to vary the subjects that they have chosen, as well as to procure photographs of different sizes, that every subscriber must be able, with the utmost facility, to select for himself such specimens as will prove peculiarly acceptable to him. The committee have also faithfully redeemed their pledge, that none but works of the highest excellence would be placed by them before the subscribers. The special adaptability of photography to the production of architectural pictures is demonstrated in a remarkable manner by this collection; and at the same time, the skilful handling of the artists employed, is no less satisfactorily made known. The only want is interior views. Groups of details, also, to a large scale, will, we trust, in future collections be found to occupy prominent positions.

The present collection comprises views from Constantinople, Athens, Florence, Pisa, Sienna, Lucca, and the Roman States; from Burgos, Seville, and other places in Spain; from Paris, Strasburg, Rouen, Chartres, Rheims, Louvain, Bourges, Heidelberg, and Ghent; from the cathedrals of Lincoln, Canterbury, Ely, York, and Peterborough; with some miscellaneous views from Malta, Switzerland, North Wales, Scotland, Yorkshire, and other places. Amongst the finest specimens are (Nos. 171 and 172 in the catalogue) small views of the Baptistry at Canterbury; No. 146, the central western doorway of Lincoln, which shows with truly graphic exactness the two eras of the Norman work of Bishops Remigius and Alexander; Nos. 141 and 144, which severally represent parts of the west fronts of the cathedrals of Ely and York; No. 104, the principal doorway of Rheims, with No. 97, the statues in the north door of the same cathedral; No. 92, doorway of Berne Cathedral, a photograph distinguished by the most exquisite treatment of light and shade; No. 95, the fine old Hotel de Ville at Ghent, and No. 38, the principal doorway of the Cathedral of Orvieto. All the works of the Florentine photographers, the Alinari, are indeed worthy of high commendation; these works include many fine examples of sculpture.

There is one point connected with these photographs that demands particular notice, which is the generally judicious selection of the points of view from which the pictures have been taken. Too much thought and carefulness cannot be bestowed on determining the spot, upon which the photographer is to conduct his operations; and it is evident that the committee of the association have thought seriously upon this subject. We hope to find that in their future productions the committee may be even more successful than they have been already in this most important particular. We venture also to repeat the expression of our conviction that, in future collections, it will tend in a great measure to promote the best interests of architecture, if each more important general view of any great building, or of any part of a great building, be attended by a series of views of details, given on a scale sufficiently large to exhibit *their* details with all that wonderful minuteness and precision which are the characteristics of photography.

It must not be forgotten that, in addition to supplying their subscribers with copies of certain photographs to be selected by themselves, the committee of this association are forming a grand collection of architectural photographs, which must speedily exercise a powerful influence upon the Art-education of all persons, who either practise architecture as a profession, or take an interest in it as a great and noble art. The photographs for each year's distribution, are also each year's contribution to national collections of works of this class. A few years may be expected to produce a really magnificent assemblage of these most beautiful, most interesting, and instructive pictures. And every fresh subscriber strengthens the hands of the committee for carrying on their work of thus forming, throughout the empire, national galleries of architectural art. It is to be hoped that this consideration, taken in connection with the great advantages offered to subscribers in the matter of their own collections, will very speedily cause the list of subscribers to swell to as many thousands as it now numbers hundreds: and that it will comprehend the names of the architects and lovers of architecture of America, and the continent of Europe, as well as those of our own country and her colonies.

From Photographic Notes.

ON THE TREATMENT OF OLD NITRATE BATHS.

To the Editor of Photographic Notes:

Sir,—In August, 1857, after six months of absence, I found my sensitizing bath of a deep brown color. I tried kaolin and filtering, *but in vain.* I put it by as useless, (says about 40 ozs., and call this *bath A*). I then converted an old nitrate bath which had been used for over twelve months, into a sensitizing bath (say 40 or 50 ozs.) I used it continually for about five months, cleansing it from time to time with kaolin (call this *bath B*). As this bath had originally been only a 30-grain bath (reduced by the iodide of potassium, when mixing it), it must have been very weak.

Having used a large portion of this bath, I mixed the discolored bath A with the remains of it, and used kaolin: the result was a PERFECTLY CLEAR BATH, which acted well, (call this mixed bath C). I took about 14 ozs of C, and added to it 6 ozs. of a 5-grain solution of nitrate of silver. Supposing C not to contain more than 18 grs. of nitrate per oz., this new bath (D), would contain under 26 grains per ounce. I divided a sheet of Sanford's albumenized paper into two parts.

I nitrated one in bath C and the other in bath D; the same time was given to both, they were dried together; a slip of each portion was placed on the same plate; they were exposed for the same length of time and toned together. This was repeated.

I send you the results. It would not be easy to distinguish which had been floated on the stronger solution; which on the weaker.

I began these experiments with a bath which had been discolored (I know not how), and which had been laid by for over a year. I forget the number of your journal in which I mentioned this. I drew the conclusion that time is, to a certain extent, an equivalent for strength, in nitrate of silver in sensitizing. I believe that I am right.

I now find that a discolored nitrate bath, though at first *incurable by kaolin,* if put aside for some months, and then cleansed by kaolin, may be made a most effective sensitive bath. I do not attempt to account for the chemical changes which must have taken place. All I know is that a bath which *kaolin* failed to cleanse, was, after lying by for five months, perfectly cleansed by *kaolin.* Nor was the cleansing result of mixture with the old clean bath; for before mixing the two solutions, I tried a small portion of A with kaolin, and only when the liquid became clear did I mix the two baths A and B together.

"N."

P. S.—Perhaps I ought to add that the color of the solution A remained unaltered until the last use of the kaolin.

[The strips sent by our correspondent are precisely similar in appearance, and the whites are beautifully preserved. The paper is certainly very good, and appears to be of English make. This may have something to do with it. "N." should procure one of Mr. Wood's Argentometers, and test his bath accurately. His results would then have more scientific interest.—Ed. P. N.]

From Photographic Notes.

PRINTING BY DEVELOPMENT.

To the Editor of Photographic Notes.

Dear Sir,—I have been trying your new modification of the development process with lemon juice, but have meet with indifferent success. I send you herewith two prints as specimens; one on Canson's Positive, and the other (the Church), on Hollingworth's thin paper. You will see that the former is very granular and terribly dirty, the view of the church is less so, but the sky-part had a strong tendency to discolor in the gallic acid, and I had to remove it before it appeared half dark enough; the development occupied perhaps fifteen or twenty minutes, and I may mention that both papers were similarly treated in every respect, viz., salted with chloride of sodium, 8 grs., and lemon juice, 2 drops, to 1 oz. of water, excited with Buckle's brush. *Clean.* Silver 40 grs., lemon juice, 4 drops, exposed five minutes to diffused light, which gave a faint impression, and developed with fresh gallic acid, the print forming a tray.

I think all these appears to be conditions which should give successful results, and cannot conceive the cause of failure, at least on the Hollingworth's paper, but apart from the dirty development, the color which the process seems to yield is not desirable. Now when I tried the process the first time, directly after you publish it, *Notes,* No. 15, I easily got fine deep blacks, but with this modification it seems difficult, if not impossible, as one print I took remained in the gallic acid upwards of three quarters of an hour without passing the red tinge; another difficulty seems to be that they change color in the hypo as a sun-print; this I did not observe to occur on those prepared with gelatine and chloride of barium.

Now a word on your recommendation of Buckle's brush; it is certainly a very desirable implement, as it saves a dirty dish, but is liable to leave various markings and isolated spots, which seem to say that the silver is not uniformly spread. Would a stronger nitrate bath or a double dose of the ordinary one, better obviate this. My time available for Photographic experiments being so very limited I prefer to impose these questions upon you. Your solution of them may probably benefit others as well as myself. "Phos."

[It appears that our correspondent only brushed the paper over *once* with nitrate of silver; it should have been brushed over a second time, about five minutes after the first application. The paper is therefore insensitive, and did not contain sufficient free nitrate to complete the development to the black tone; hence arose all the evils complained of.

There are some difficulties in this process of printing without a toning bath which should be clearly stated, and, as far as possible, understood. When these are mastered the process is an extremely good one.

In the first place, a good negative is an essential condition of success. There is no possibility of getting a fine print from a bad negative. The negative should be *sufficiently* dense, but not *too* dense, in the blacks, and the lights should be clear and free from all discoloration; the blacks should not be quite so dense as those of a sun-print.

The nitrate bath should be in good condition, and the gallic acid freshly made, and energetic in its action. The exposure should be correctly timed, and the development pushed as far as possible. The hypo not stronger than one part hypo to twenty parts water. All that is now required in the process is to find some substitute for hyposulphite of soda.—Ed. P. N.]

From the Liverpool Photographic Journal.

ON THE SIMULTANEOUS Photography of Variously Colored Objects.

BY MR. HEISCH.

[Read before the Blackheath Photographic Society, April 19.]

Mr. President and Gentlemen,—The subject to which I purpose calling your attention this evening is one of great interest to all photographers; and one presenting, as we all know, considerable difficulties—difficulties which I do not profess by any means to have perfectly overcome, but towards the surmounting of which I hope to be able to show you that I have made at least some progress. Long since, Sir J. Herschell stated his belief that if we wish to obtain good representations of foliage, that is, of green colored objects, it is to bromide of silver we must look as the sensitive agent. The images of the spectrum, obtained by Mr. Crookes, on bromide of silver, show that that salt is more affected by the green ray than the iodide of silver. But bromide of silver alone is too insensitive for ordinary photographic purposes, and it has been a pretty general custom, at least in paper photography, to employ a mixture of both salts, with a view of securing the advantages of sensibility both to ordinary and to colored, more especially to green light.

In the early part of the year 1852, I published a formula for waxed paper, in which I stated my belief that the best effects were produced when the iodide and bromide and chloride of silver were united in the proportion of four equivalents of the first, two of the second, and one of the last salt. Ever since that time I have constantly used paper thus prepared, and have compared it with that prepared by almost every formula that has been published, and six years experience has only served to convince me of its superiority.

The almost universal practice of using iodide alone in collodion, coupled with the broad assertion of some photographers, whose opinion is generally admitted to have some weight, that the green bodies met with in nature reflect so much white as well as green light that bromide of silver is not required for their reproduction, and indeed that if present in conjunction with iodide the latter will be solarized by the white light before the bromide is affected by the green, induced me again to take up the subject, with the determination of trying such experiments as should leave no doubt on the main facts, whatever room there might be for improvement in any particular formula. Before bringing the result of these experiments under your notice, I should like to say one word on the assertion above alluded to. It is taken for granted, by those who make it, that paper or collodion prepared with mixed bromide and iodide of silver contains those two salts simply in a state of mixture, and that the light acts independently upon each of them as it would were they separate. I do not believe that such is the case; and I will lay before you one or two facts which I can only occount for on the supposition that there is a chemical compound of iodide and bromide of silver on which the action of light is somewhat different to that on either salt separately. To place these facts most easily before you I must refer to the daguerreotype process, which I cannot but regard as a sort of type process, inasmuch as the discrepancies introduced by variations in collodion or paper, and the various solvents employed, have there no existence, and we can better determine the action of the pure silver compounds.

All who have practised this process are aware that in it bromine must be employed to obtain anything like sensibility. They also know that great attention must be paid to the precise proportions of the bromine and iodine; and that, if this be done, the plate will possess two, at first sight, contradictory properties, viz., great sensibility, together with the capability of standing a sufficiently long exposure to copy the darkest parts of an object without the lighter portions being in the least solarized. These properties depend not on the absolute quantity of iodine and bromine present, as a plate may be iodized to a light yellow and bromized to a pink, or iodized to a deep yellow and bromized to a plum color, and give equally good results, provided the proper proportion be observed between the two. Now, I can only account to my own satisfaction for the extreme nicety required in proportioning the two substances, and the great difference at once observable if either be in excess, by supposing the existence of a chemical compound possessed of the two properties before alluded to, which properties certainly do not exist in either of the salts alone. I known of no way in which positively to determine if such a compound be formed on the plate, nor indeed of determining the precise amount of bromine and iodine present, so that, in attempting to obtain the same desirable properties in paper or collodion, I was reduced to trying various mixtures, always taking care that they should be in combining proportions. Various considerations, however, induced me to think that the proportion of two equivalents of iodine and one of bromine would probably be the best, and experiment has at present tended rather to confirm that view, although I am by no means sure that there is not more than one proportion possessed of the desired properties. The addition of chloride to the iodizing solution for waxed paper gives, I believe, a certain amount of density not otherwise attainable. I at first thought that this too must be in equivalent proportions; but I incline now to the belief that if there be a sufficient quantity of the properly proportioned bromide and iodide present, the precise amount of chloride is not so material.

In order to make the experiments, the results of which I shall now show you, as crucial as possible, I sought for objects presenting as many and opposite colors (photographically speaking) as possible, and the first selected was the circle chromatique of M. Chevreuil, but, on photographing it, every color produced an equal effect, red, blue, and yellow all having the same tint, showing me at once that it was not among artificial, or, at least, mineral colors that I must look for objects for these experiments. I would here show to the Society a copy of a number of different colored porcelain tiles, taken by my friend Mr. G. Hoffman. The composition of these colors being known, some clue is given to the apparent mystery ot the result with the circle chromatique. You will observe that the presence of certain substances in a color, although producing but little apparent effect, materially alter its photographic properties. This is very remarkable in Nos. 8, 9, 10, and 11; the first three being various shades of cobalt blue, and the last a greenish black, produced by manganese, iron, and cobalt, yet they produce very nearly the same effect, seeming to show that the small quantity of cobalt present gives great chemical energy to the last color, *though its effect to the eye is slight.* I shall go on working at this part of the subject, and hope at some future time to have some curious results to lay before the Society. I next turned my attention to flowers, and found in them all that I could wish. The flowers selected for the experiments were white and red camellias and daffodils, thus giving me a mixture of the most brilliant white, dark green, red, and yellow. In the first pictures which I shall exhibit there are red and white camellias only.

The collodion, alcohol, &c., employed were, of course, the same, the only difference being in the proportiou of the iodizing substances. All the samples were iodized at the same time. The plates were exposed for exactly equal times, and in order to avoid any error from changes in the light, pictures were taken alternately on the various mixtures for some time. Thus, out of the negatives I now produce, six are on simply iodized collodion, some on collodion prepared with equal weights of iodide and bromide, some with one equivalent of each, some with two equivalents of iodide to one of bromide, some with the same and the addition of half an equivalent of chloride, and some with one-fourth by weight of bromide and three-fourths iodide.

An inspection of these will at once show that the presence of bromide is an immense advantage. In those prepared with iodide alone the white is overdone, and the green leaves still invisible, while the greens are well out in those containing bromide. I think it will also be admitted that those in which the iodide and bromide are in the proportion of two equivalents to one possess the property of sensibility to the red and green, with the absence of solarization in the white, more perfectly than the others. The pictures were all made on collodion which had been iodized some weeks, on which account the iodide gave even better results than it otherwise would. Those now produced were made on collodion iodized the day before, and here we see the full effect of the bromide. You will notice that the white camellia, in those prepared with the iodide alone, is not as in the former pictures simply a black, but is altogether gone and become quite transparent; while the greens, and even the basket containing the flowers, are scarcely visible; but in those prepared with bromide the whole are well preserved.

For ordinary purposes there is not either in collodion or paper photography the necessity for the same minute exactness in the proportions as in the daguerreotype. This is easily understood, if we remember the much larger quantity of silver salts present in former processes; for if there be a considerable quantity of the true compound, the admixture of a small excess of one or other salt could not make the same difference as when only a few hundredths of a grain are present in all; but when we come to the most difficult cases, such as those we have been considering, the nearer we keep to the strict proportions the better, I think, are our results.

In those pictures containing the daffodils it will be observed that the yellows presents the greatest difficulty; as although in the best with the bromide, every petal is depicted, while with the iodide the flower is a simple blot; still it is much darker than it should be. As an illustration of the working of the mixture on paper, I would bring forward this picture of the Roman Catholic Church, on Crooms-hill, Greenwich, in which we have a very white stone steeple standing out against the sky, and a number of trees and a bank of nettles beside the church. You will observe that the steeple does not merge into the sky; while the trees and nettles are perfectly represented.

I must remark, in conclusion, that I do not pretend to have arrived at a *perfect* result; all I wish is to point out what I believe to be the only road in which we can hope to meet with it, viz. by endeavoring to make chemical compounds, and not random mixtures.

As some of the members of the Society may like to know the precise iodizer employed in producing the best results, I subjoin it—

Iodide of ammonium	36 grs.
Bromide of ammonium	12 "
Chloride of calcium	3·5 "
Absolute alcohol	2 ozs.

One part of this to be mixid with three of collodion.

I wish it particularly to be understood that I by no means deny the *possibility* of obtaining photographs of foliage, &c., on iodide of silver alone; by prolonged exposure it is quite possible, provided there be no very bright white or blue objects present with the green. What I assert is, that when combined in proper proportion with bromide, it is far more sensitive, and that the whites do not solarize.

For the Photographic and Fine Art Journal.

AMBROTYPES IN COLORS.

347 Broadway, N. Y., June 28, 1858.

Mr. Snelling,—*Dear Sir*: My process for producing ambrotypes in colors, with numbers and letters correct, is as follows: Coat the plate in the usual way, place it in the holder, collodion side back, not allowing the spring of the holder to touch the plate. It is necessary to have the ground glass adjusted to the focus of the plate, which may be done in two ways, viz. one by inserting a strip of glass (same thickness as the plate used for the portrait) in front of the ground glass in the camera: or have two ground glasses, one set for the plate collodion side front; and one for collodion side back. There will be no difficulty in keeping the plate up to its place in the holder without the spring, as the suction caused by the solution on the plate, will cause the plate to adhere. This style of picture gives great satisfaction to firemen, military men, and in fact all portraits, where color, letters, and figures are to be represented properly. Yours truly, W. H. Kimball.

From the Photographic Notes.

RECOLLECTIONS AND JOTTINGS

Of a Photographic Tour Undertaken During the Years 1856-7.*

BY J. W. G. GUTCH, M.R.C.S.L.

As panteth the hart for the water-brooks so does the ardent photographer long to be "up and doing" with the occurrence of these few deliciously, bright, fresh, and healthgiving days which often occur in early Spring; but here, theory, as in other affairs of life, proves vastly more fascinating than practice, for they are not the days to commence the "gentle art," and the "longing lover" had better delay and curb his ardent aspiration, taking to himself for consolation that "discretion is assuredly the better part of valor." The sun has but little power, and the pictures share it from their fullness and want of force and brilliancy.

Family matters compelled me to break up my winter quarters earlier than I could have desired, and early in April of last year, (1857). I found myself wending Northwards and finally safely deposited in "auld Reekie," enveloped, as I entered, in as genuine a Scotch mist as I can remember, and all looking comfortless and giving anything but a warm welcome to the Southerner; day by day slipped away in the hopeless expectation of bright weather assuming. Easterly winds, mist, snow, rain, and hail, were the order of the day; the camera, of course never was unpacked, and the heart was sick with hope deferred; at last, however, a bright gleam of real sunshine began to show itself, and eager for the fray, at the end of April, I started by railway for Melrose, making this the starting point for what I would term an *Abbotsford Pilgrimage*, and one as well worth making as any, to Compestell, and if with camera and a fair share of success the traveller will not regret the trip. At Melrose most comfortable quarters are to be met with, either in the Inn, which is very good, or in lodgings, which are abundant. Of the Abbey, perhaps the finest scene in Scotland, I need scarce descant much. It has been praised and described in much more graphic language than I can boast of using; it has been painted by thousands on canvas, and yet neither verbal description or the cleverest limner on canvas, can I think, sufficiently do justice to its various beauties. Its location too, and accessories, are so truly beautiful. Waving away the garrulous old Custode and turning a very deaf ear to his oft-told tale, I began to frame in my own mind the several pictures I purposed taking; and I think, if I had rested there for weeks, instead of days, I could each hour have found out some fresh and undiscovered beauty. Summer, bright, fine, sunny weather, is, however, certainly the right time to see this scene in perfection, and not at the early period of the year when I saw it. It is well cared for too and most carefully preserved, as it richly deserves, and in its declining years propped up and supported when weak, and every attention paid to it to it to keep it as much as possible from falling under the ruthless hand of the destroyer Time. Several very beautiful views are easily attainable in the interior of the building, the light being very good, and some of the details of the tracery of the windows and the graining of the arches worth any pains being taken to ensure success; of the exterior every facility is obtainable for view-taking in the church-yard, and what is no small luxury to the church-yard being securely railed in, thus preventing the *small-fry* that generally buzz around the operator, from penetrating. I spent two delightful days, bringing away eight negatives. From here to Abbotsford is only an easy drive. Shall I own to a feeling of disappointment which I felt on first seeing this world-known house. I had expected much more from the situation. The hills, as all the Scotch hills are to my mind, wanting in verdure, and the fields wanting their hedgerows, present the same *un*-picturesque expanse of verdure that one sees through France and other parts of the Continent; wanting in fact, the very essence of a beautiful landscape, the hedge-rows, and tree-covered hills and glades of old England.

* Continued from page 197, vol. xi. no. vii.

The house too, I was disappointed with, externally and internally; although in the various rooms are crowded objects of great interest, still I seem to have expected more. I was not allowed to take any view of the front of the house; but from the terrace behind, I readily obtained two that quite repaid me the trouble of the visit. The house, an irregular and not unpicturesque pile of modern building, photographs very well, the stone being a dark grey, and doubtless had I had more time, from the opposite bank of the river several very beautiful views would be obtainable. From Melrose a few hours takes the tourist to Kelso, a most picturesque town, beautifully situated by the side of a fine clear river, spanned by a noble bridge, and close to the town, the majestic ruins of the Abbey. A general view of these fine and extensive ruins is readily obtainable from the church-yard which surrounds it, and amply repays the photographer. There is very much to be done here and all is easily accomplished from its peculiar locality, not being closed in by buildings; but, as is the case with nearly all these ecclesiastical ruins in Scotland, the surrounding ground is appropriated to the purpose of a burying-place; thus answering the double purpose of a resting-place for the dead and a security also for the ruin that it surrounds. Crossing the river Tweed is seen the fine gothic seat of the Duke of Roxbury, Fleur's castle, a fine and extensive pile of buildings; but I came for the Abbey, and was content with getting several, six, good negatives of it.

The great advantage of this agreeable little tour is the facility with which each place is reached by the railway and the comfortable and moderate priced Inns that are to be met with in the various towns; for eager as the artist is for his mental food during the day the comforts of a good Inn and well-dressed dinner are by no means to be despised; or the clean, wholesome, fresh-smelling sheets at night, whereon to rest the weary body, and dream of coming enjoyments. Near Kelso is a hill called the Pinnacle Hill, quite worth the trouble of ascending, and giving the visitor an excellent idea of the singular beauty of the situation of this pretty town. Having obtained what we thought a fair number of views we journeyed on next to Dryburgh, the ruins of Dryburgh Abbey being about a mile's walk from the station; this, to my mind, was the most picturesque fragment of a ruin that I had yet visited, irrespective of the interest attaching to it from its being the resting place of the remains of the unknown, a curious fancy to be thus buried, nor is the tomb, or tombstones, with the modern iron railing, at all in keeping with the venerable building that enshrines it. He lies buried in St. Mary's aisle, with his wife and son. The beautiful foliage of the trees enlivening these ruins particularly struck me—a beauty that most of the Scotch ruins are sadly wanting in. The ivy here twines its tendrils to great advantage, adding, if possible, fresh beauties to the Witches Wheel window, that must ever be admired and gaped at with delight. Here is truly a rich field for the photographer. Fear not to over-expose, for the large masses of green, and the dark color of the stone will admit of nearly any length of time.

Jedburgh and Dryburgh can comfortably be accomplished in the same day, and still allow ample time for all necessary work. The Abbey at Dryburgh, if nothing else were visited, is worth all the trouble of the ride from Edinburgh. Jedburgh is somewhat more difficult of access, I mean as to the finding a good point of view from which to take the extensive ruins; one is obtainable from close to the gate of the church-yard, and another from the road, but both are somewhat too close. The interior did not seem to me to present many points of interest. It is a most venerable pile, of the date of 1,000, rebuilt by David I. Part of it has been roofed in and glazed in the worst possible taste, and is now used as a place of worship. Sir David Brewster and Mr. Somerville first drew breath in this little town. I contented myself with two views of the Abbey, and not liking my quarters, the Hanar (the Spread Eagle evidently being the Inn of the place), I determined on taking the late train to Edinburg, thus closing a week's most enjoyable and instructive tour; moderate in expense, most easily accomplished, and possessing many and great points of interest, whether to the ordinary traveller in search of the picturesque, or to the primary and more searching eye of the photographer, who seems never satisfied, not even with walking away with Abbeys in his portmanteau, and bridges, rivers, ruins, and palaces, under his arm,—he still craves for more.

I found on my return to Edinburgh that I had quite repaid myself for the trouble and expense of this little trip, and brought back a very nice collection of negatives, calculated to do good service at a future day.

I much coveted one of Edinburgh old town, but the opportunity allowed occurs so very seldom, from the smoke and thickness of the atmosphere, that even resident photographers have waited in vain. I obtained some good ones of Scott's Monument, Holyrood, (the Chapel quite worth a day or two's work bestowed on), and very *comeatable* and quiet.

The endless bits of street architecture in the old town of Edinburgh are very tempting; but having had one taste of the quality of the lower classes in Princes Street Gardens, when I was at last obliged to call in the aid of a policeman, I did not summon up courage enough to attempt any views in the Congate and Cannongate, beautiful and picturesque as they would have proved; for instance, John Knox's house, or those venerable old houses near the House of Assembly. So failing in the town, I wended my way to Roslin and Hawtharnden. The Castle is such a mere fragment that otherwise than grouping and forming an integral part of the general landscape, it is scarce worth putting up the camera to take. Not so, however, the Chapel. This is so closely encircled with a wall that you can only get very near views and therefore only bits, but these are quite worth taking. The interior I did not attempt, the very yellow light of the old glass not promising any possibility of success, though the architecture is strikingly beautiful. A general or distant view of the Chapel is anything but picturesque, it looks more like a family mausoleum, and the accessories are not harmonious and not at all calculated to form a good picture.

Having in vain waited for anything like a chance of getting a good photograph of the old Gardens, I determined on another railroad trip, and this time wended my way first to Dumfernline, a miserable and dirty town, and possessing an Inn that I should hope is unique, surpassing in filth and dirt, and therefore discomfort, any that I have ever been in in civilized Europe; so that instead of sleeping, for I very believe had I halted there for one night nothing would have been seen of me in the morning, I remained long enough to take some nice views of the fine fragments of ruins of the old Abbey, again surrounded by a church yard, and got into most comfortable quarters at a most excellent Inn, at Cupar. After breakfast, there being nothing of any interest in the town, I proceeded on to St. Andrews, a quaint and most picturesque old town, quiet enough, and I hear very aristocratic. At any rate the situation is quite enough to tempt one to remain some little time, independently of the interest attached to the ruins of the old College, Church and Castle, all most interesting and capital studies for the photographer and draughtsman. The coast scenery too is very interesting,—the harbor, and even the town itself.

A couple of days may be well spent here, there being plenty of work and beautiful studies. From here I proceeded again by railway to Perth and on to Dunkeld. I may mention, *en passant*, that both at St. Andrew's and Perth there are several very clever photographers, especially the former, whose museums are open to any visitors, and quite worth going to see. With Dunkeld I was well acquainted, and found it in every respect as I had seen it nearly 20 years ago; the same comfortable Inn, the same lovely river, and the beautiful hills, pine-covered, surrounding it on every side.

Here, meaning to remain some little time, lodgings were sought, and at the early season of the year, readily obtainable, as comfortable in every respect as could be desired, at Mr. Blain's, exactly facing the Hotel. Whilst photographing the interior of the Cathedral, or ruins of what it formerly was, the Duke of Atholl introduced himself, and to his kindness and consideration during a fortnight's sojourn, I was indebted in no small degree, seeing much that I should not otherwise have seen, and taking many photographs that would otherwise have been impossible. He prides himself much on his new Dog Kennel for a pack of Otter hounds; noble studies, and well worth any pains-taking to accomplish.

I much sorrowed that I could not be present at the Highland gathering, which doubtless would have offered plenty of occupation for the quick-working process,—picturesque groupings and costumes of every hue. The kilt seemed to be very generally used by the gentry around Dunkeld, Blair and Taymouth, and doubtless for the summer months it may prove cool and pleasant; but the trews I should crave for in winter. A fortnight slipped away quickly, as it always does when agreeably occupied. His Grace kindly gave me a letter to his factor, Capt. Macduff, at Blair, and though there is not much of interest here; still, as it was for many weeks the residence of Her Majesty it of course is worth looking at. The exterior of the house is ugly in the extreme, very much resembling a parish Union workhouse, and anything but like what one would picture a Highland Castle. A photograph of the Castle, one of a small hut, a very pretty fall of the Fender, in the grounds, completed my work. Before and after dinner was necessarily dedicated to repose, and the ride back to Dunkeld, than which scarce anything can be prettier, through the pass of Kellianarken; and at every turn of the road fresh beauties present themselves, with the sparkling Tay several hundreds of feet below the road, still bright and glistening, even at that distance.

I was sorry when the day came to leave Dunkeld and all its unnumbered beauties, still I was forced to do so, as if work is to be done it does not do to loiter. Taymouth was the next place of halt, and here, for the first time, imposition was attempted; the wax-light system and other items in proportion; a deduction was asked for and refused; the only alternative I had was to strike off the article, service, stating at the same time my reason for so doing. The parting of course of host and visitor was disagreeable. Taymouth Castle is quite worth a morning's work; the situation is unrivalled for its beauty; but the landscape scenery is too extensive for any camera to do justice to it; nevertheless, two or three ruins of the house are quite easily managed, and will well repay the photographer. There are, too, some noble studied of trees in the park. The village is very pretty and picturesque, and the sun and the surrounding houses group very nicely and make a very pretty subject. There are, too, some very pretty bits of costume in the peasants; but for all this, a day or two is, of course, needful and the extortion of mine host was not calculated to induce any lengthened stay.

A very pretty ride along the borders of Loch Tay brought the traveller to Killin, and for instantaneous pictures here are some unusually fine studies, whether of the falls, which are very fine, close to the town, or the rapids formed in the rocky bed of the river. It was a bleak, cold and uninviting day unfortunately when I was there, and feeling unwell into the bargain, I was induced to push on and not sleep as I had arranged to do. A wild ride through one of the wildest of the Highland passes, and a ride full of picturesque beauties, brought us by 8 o'clock to Callandar, where being early in the season, lodgings were easily met with. I do not know that there is much to be done here except the river scenery, and falls at the bridge or pass of Lery. An easy ride takes the traveller from here to Dumblane, where there is a nice lot of ruins, and the railroad is then joined to Stirling; several beautiful points of view are here easily to be met with, and on the return journey to Edinburgh, the dreary old pile of Lorlithgen Castle is quite worthy of a visit. Three weeks had thus slipped most agreeably away and the bright weather once more appearing, and there being many miles yet to be accomplished and much to be photographed, one bright morning, the very opposite to that on which the town was first approached, the railroad was once more racing us away, this time to stop at the entrance (as it were to the Lake district of Cumberland and Westmoreland), of the Oxenholme station of the Lancaster and Carlisle Railway, which it was my wish thoroughly to explore and delineate, and therefore the months of June, July, and August, were set apart for that purpose. A peep of a week at the Manchester Exhibition, its wonders, its photographs, and the conclusion of a most delightful summer photographic ramble through a part of North Wales, Llandudno, Conway, Bangor, (Anglesea, and Holyhead) must form the subject of my concluding paper, if indeed you feel disposed to devote so much of your valuable space to these desultory jottings and recollections; not, I trust, however, without offering some hints worthy the consideration of my brethren in the gentle art.

From the Photographic Notes.

VOIGTLANDER versus PETZVAL.

TO GEORGE KNIGHT, ESQ.

Dear Sir,—I am very happy to see that my last letter to you has been inserted in the Birmingham Photographic Society's *Notes*, which also contains another letter from Prof. Petzval, in which my name is mentioned.

I do not wish to tease the patience of the reader too much, and have only to say some few words in answer to that letter, particularly as little is left for me to add to the assertions in my last letter.

Professor Petzval, instead of coming to the point at once regarding me, again contents himself with sarcastic remarks on the word "Orthoscopic," devoting half a page to that purpose. Even suppose my having misapplied that word, how can a man of Professor Petzval's faculties make so much ado about nothing? I have, however, no right to complain of his wit, seeing that he does not even hesitate to ridicule a whole nation, calling it *La Grande Nation*, on no other account than because a committee of Photographers and *scientific men*, (I shall add), have dared to find my (or to speak more correct, his own *soi-disant*) new lens superior to all others, giving him all the credit of the invention. With far greater right he might declare war with all England, because not only my lenses have been found good by English photographers, but particularly because an English assembly have dared not to feel enlightened by a lecture on his works, but has been so audacious as to pronounce not very flattering at all events. I should like to know whether it can be considered dignified to draw a whole nation into a private affair; and no eloquence of mine could have painted Professor Petzval's disposition in more lively colors than he has done himself. I shall pass over his description of the very empirical way he supposes my having employed in copying the lens, as well as over his calling my proceeding an expeditious mode of making an invention; the first is too absurd, the latter untrue, for never have I laid any claim to the invention either of the lens, or the name. It may be observed that my last letter, by which all these insinuations are repulsed, was not known to Professor Petzval at the time he was writing his last letter,—very well; but my *memorial* was known to him; he was pleased to call it an *absurdity;* but very far from being an absurdity (if my statements *were not true*) it would rather be a *shameful piece of imposition*, and I should like to know to what circumstance I am indebted to the forbearance of Prof. Petzval in both his letters; he has only sharpened his wit in various things, and has rather evaded the question of my being in possession of the drawing and the curvatures of that lens. To give a further proof to any non-prejudiced mind, how the affair stands, I will say one thing more: Prof. Petzval has taken a patent in Austria for his new lens; in spite of that patent I have openly sold the same lens, distributing every where my circulars about it. How is it that Prof. Petzval does not *proceed against me* on that account? Very simply because he is aware that by producing the paper I was so often speaking of, I should not only repulse his attack, but at the same time upset his patent, and by not taking the first step, the world may at least see that on my part no pecuniary consideration has got anything to do with the affair. The answer of Professor Petzval will, however, soon appear, and should he evade the question again I shall consider myself excused giving further reply, but should he carry the thing so far as *particularly to deny* my being in possession of that document my final answer shall follow, and with it such proof as will put the whole transaction beyond any doubt.

With regard to Mr. Paul Pretsch's observations I have only to state this, the lecture of this gentleman, from which he supposes my having got first any tidings about the lens, appeared on December 21st, 1857, and is but a translated extract from various reports of Professor Petzval to the Academy in Vienna delivered already on March 12th of the same year; my first Orthoscopic lens arrived in Vienna at the *beginning of November*, and my memorial, together with four different sized lenses, were handed to the Academy about *December* 24th. The observation of this gentleman may therefore well rank amongst many of Professor Petzval's—founded upon nothing at all. Further, I take no notice of his letter. I have not the honor of knowing Mr. Pretsch, nor has he the disadvantage of knowing me, as far as I am aware. The affair lies entirely between Professor Petzval and myself, and no third party has any right to interfere. Professor Petzval may want an *agent;* but certainly can dispense with a proxy; should Mr. Pretsch continue his personal attack, he may do so; but certainly he will never receive any answer from me. Perhaps some consideration will show to Mr. Pretsch that such a proceeding against a man who never injured him in any way, would not be honorable and gentlemanlike, and would carry in itself its judgement.

You will oblige me by causing these lines to be inserted in the same Journal.

I remain, Sir,
Yours truly,
VOIGTLANDER.

From Photographic Notes.

MR. GODDARD'S LENSES.

The following letter is from a Cambridge M.A. No one can read Mr. Goddard's communications to the London Journal and the Notes, without being convinced that he is a man of great perseverance and good practical knowledge of his business. We insert the letter with much pleasure, and feel sure that in doing so our motive will not be misunderstood:

To the Editor of Photographic Notes:

London, May 26th, 1858.

SIR,—In Vol. II., p. 126 of the Photographic Journal, is a letter from Mr. Brown, a well-known photographer of Newcastle, recommendatory of the Lenses made by Mr. T. Davidson, Optician, Castle Hill, Edinburgh. He there states "that he possesses a portrait combination by this maker, the back lens of which is cemented, thus having the fewest reflecting surfaces a lens can have, and thus ensuring the least possible loss of light from reflection of surfaces. The outer lens is 14 in. focus, and the inner one 21 inches. The combined focus is $6\frac{1}{2}$ inches, producing a half-sized picture. They can be reversed in the tube, and give a longer focus, thus producing a larger picture; or the 14 inch focus lens can be used for views, giving a well-covered field of 9×7. The lens of 21 inch focus, when used for views, gives a picture of 15×12. Thus the lens has a four-fold use, each change working to the visual and actinic focus perfectly."

Being anxious to ascertain if Mr. Brown, after three years further experience of the working of this lens, still recommended it, I found on enquiry that he had laid it aside, and has for some time used a portrait combination made by Mr. Goddard, of Whitton, near Hounslow.

In a letter to that gentleman, dated 24th May, Mr. Brown writes as follows:—"In justice to Mr. Davidson, I must say that his lens was a very fine one, and I still believe that for groups, the close cemented back lens is best. It has not the same amount of brilliant light as the open lens, yet it has decided advantages in my estimation, which the other does not possess, unless stopped down; for in lenses of all other makers (excepting yours) they are too central for any other purpose than a single portrait. With respect to the half-plate portrait combination I purchased of you, it cannot be overrated by any praise I can bestow upon it. My knowledge of lenses extends to those of all makers of any note in England, France, and Germany, and I must say yours stands pre-eminently first for flatness of field and fine definition. I can copy any engraving with full aperture, every line correct to the corners of a $6\frac{1}{2}$x$4\frac{3}{4}$ plate, with a combined focal length of only seven inches."

At the above favorable testimony in favor of Mr. Goddard's Lenses, I can add my own, as I possess both his No. 3 and No. 4 combinations. The former will give good portraits to $8\frac{1}{2}$×$6\frac{1}{2}$, and the latter to 12×10 inches. The front lenses of these combinations are adapted for views, and give landscapes of 12 and 16 inches respectively, with good definition to the edges. I have therefore no hesitation in recommending them to the notice of photographers in search of a really efficient instrument, at a very moderate price, and with this view, I shall feel obliged by your insertion of this in your next number. R. A. R.

ARCHER'S LENS versus THE ORTHOSCOPIC LENS.

To the Editor of Photographic Notes:

30 Upper Rosoman Street, London.

SIR,—A word or two in relation to the Orthoscopic lens. I have a double combination lens, made according to the formula of the late Mr. Scott Archer, 3-in. in diameter, $8\frac{3}{4}$-in. solar focus, covering a plate $9\frac{1}{4}$-in., price £6 6s. Mr. Archer took all his pictures with a similar one. He found it give the lines of architectural subjects without curvature. It is furnished with diaphragms for views, and it is used without for portraits in the usual way. The front lens can be reversed, and used alone for views (having a focus of 15 inches), but this is not recommended for architecture.

Knowing that it covered a large plate in comparison with the focus, I was curious to know what angle of view was comprised by it. Calculating from the supposed data, of a lens which covers a plate two-thirds of its focal length, including an angle of 35 degrees, I had concluded that one that covered more than half as much again as an ordinary lens, would include an angle more than half as large again, or more than $52\frac{1}{2}$ degrees; but, on measuring carefully the angle actually included, I found it to be 45 degrees. I consider that I am very fortunate in possessing an instrument which practically equals the Orthoscopic Lens, and at the same time can be used to take rapid portraits. The focus and field of the No. 6, ordinary Voigtlander combination, is much the same as the above, namely, 10 inch focus, and covers a 12 inch plate. The diameter and price do not correspond, they being respectively $4\frac{1}{8}$ inch and £45.

Mr. Archer, when he wished to lengthen the focus of his lens, used a diverging lens attached to the back lens. His views are very well worth inspecting.

W. EDW. HOLMER.

To the Editor of the Photographic Notes:

30 Upper Rosoman Street, London, E.C.

SIR,—On inspecting this lens it appears to be of the usual construction of portrait lenses. Not being myself a judge, I have submitted it to a friend who has had considerable experience in a large optical warehouse, and he informs me that the lenses are of longer focus than usual. The front lens is a cemented plano-convex. The concavo-convex lens of the back combination is *more concave,* and the plano-convex, or back lens of all, is *less convex* than usual. The front lens reversed has a focus of 15 inches and the back lens about 30 inches, and about 32 inches when reversed. In other respects it is the same as the ordinary portrait lenses, such, for instance, as those sold by Horne and Thornthwaite. The diameter is $2\frac{1}{2}$ inches not 3 inches as stated in my letter above. The distance between the lenses is 4 inches. There is a permanent diaphragm between, and equi-distant from the front and back combinations, giving an aperture of 2 inches for portraits and 3 diaphragms for views of the respective aperture of three-eights, five-eights, and seven-eighths of an inch. The exposure for a landscape with a five-eighth of an inch aperture and moderate sunshine, is from seven to ten seconds. Portraits in the shade, with good light, about five seconds. I have very little time to experiment, but I will *endeavor* to take one or two negatives and submit them to you.

W. Edw. Holmer.

PHOTOGRAPHIC Self-registering Magnetic and Meteorological Apparatus.

INVENTED BY MR. BROOKE, OF KEPPEP-STREET, LONDON.

[This article was published in our July No., 1853; but as we consider it a very valuable paper, in the present state of the Art, and as there are now, undoubtedly, a great many amateurs who have never heard of the instruments described, it is quite worthy of re-publication.—Ed. *P. & F. A. Journal.*]

The importance of instruments whereby the direction and intensity of the earth's magnetism may be readily ascertained, is acknowledged by all scientific men; and the application of photography to this purpose is a means whereby much labor has been saved in meteorological observations. In the following paper we purpose explaining, as briefly as we can, how these observations are made by self-registering apparatus.

Terrestrial magnetism is a *directive*, not an *attractive* force, exercised by the earth and its surrounding atmosphere upon a compass needle, or a freely suspended bar magnet. That it is not an attractive force, may be readily shown by floating a compass needle by means of a piece of cork on a vessel of water: the needle will be found to take its position in the direction of the magnetic meridian; but it exhibits not the least tendency to float towards the north, although perfectly free to do so if any attractive force were exerted upon it in that direction.

The *magnetic* does not coincide with the *astronomical* meridian, but is variously inclined to it at different points of the earth's surface. The angle at which these two meridians are inclined to each other is the *magnetic declination.* The value of this angle is at the present time about $22\frac{1}{2}°$ in the vicinity of London, and its direction towards the west.

A compass needle is ordinarily supported in such a manner as to rest horizontally in the magnetic meridian; but if it be so sustained as to be capable of moving freely in a vertical plane, the marked end of the needle will point or dip downwards, and the angle which the needle when in its position of rest makes with the horizontal plane is called the dip. The present value of this angle, in the same locality, is about $68\frac{3}{4}°$.

The force by which the marked end of the needle is thus directed obliquely downwards, may be conceived to be compounded of two forces, one acting horizontally and the other vertically; by the former of which, acting alone, the needle would assume a horizontal, and by the latter a vertical position. In the present instance, the proportion of the vertical to the horizontal force is nearly as 2 to 1.

These three elements of terrestial magnetic force, namely, the declination or direction of the vertical plane in which it is exerted, and the amount of its horizontal and vertical components, are found to be continually in a state of change: some of the variations being of a periodical character, while others, far more irregular and extensive in amount, are of less frequent occurrence, and arises from causes that are at present very imperfectly understood.

The general object of magnectic observations is to obtain a complete knowledge of the physical causes on which the existence of terrestrial magnetism, and its various changes, depend. This knowledge is to be sought by a comparison of the observed changes in the three elements of magnetic force with the occurrence of other natural phenomena. The instruments by which the changes of the magnetic elements are observed are the declinometer, the bifilar or horizontal force magnetometer, and the balanced or vertical force magnetometer. The declinometer consists of a bar magnet freely suspended by a bundle of untwisted silk fibres; the variations of the position of this magnet correspond with those of the vertical plane in which the earth's force is exerted. The bifilar is a similar bar magnet, suspended by two nearly parallel bundles of fibres, separated by a small interval. The double point of suspension is twisted round until the bar assumes a position exactly perpendicular to the magnetic meridian, in which it will then be retained by the opposition of two equal forces—the gravity of the bar and its appendages tending to untwist the suspensive skeins, while the horizontal component of the earth's force tends equally to turn the bar in the opposite direction. As the former of these forces remains constant, it is clear that any variations of the latter will produce corresponding changes in the position of the magnet; and it is by observations of these changes of position that the variations of horizontal magnetic force are determined.

The balanced magnetometer is a bar magnet, very delicately poised on knife edges, so as to move in a vertical plane like the beam of a balance. The instrument is placed at right angles to the magnetic meridian, and is maintained in a horizontal position by a weight, which counteracts the tendency of the earth's vertical force to place the magnet in a vertical position. As the counterpoise remains constant, it follows that any changes in the amount of vertical force will be indicated by corresponding changes in the position of the magnet; which latter have been made a subject of observation.

The method hitherto adopted for observing the indication of these instruments, has been that of viewing, through a fixed telescope, the division of a fixed scale reflected by a plane mirror attached to each magnet. But by this system of observation a very imperfect knowledge of the nature of magnetic changes has been obtained; and as it has been deemed necessary, in magnetic observatories, that the observations of the various instruments should be made at intervals of at furthest two hours, by night as well by day, this laborious duty has devolved upon the assistants; hence some means of enabling these instruments to record their own changes has long been an acknowledged desideratum in physical science. With the aid of photography this desired object has been attained by the instruments that form the subject of this notice, the merit of which has been acknowledged by the award of a council medal by the jurors of the Great Exhibition of 1851.

By these instruments an uninterrupted and unerring record of all magnetic changes is now maintained at the Royal Observatory, Greenwich. These results could not have been obtained by personal observation; for even if every telescope were constantly watched by the eye of an assistant (which would require a very numerous staff), the results would still be liable to errors of observation; and occasionally the magnetic variations are too rapid and transient to be continuously recorded by an observer. We may further remark, that since the employment of this apparatus at Greenwich, the number of assistants in the magnetic department has been reduced, and the fatigue of night duty has been dispensed with entirely.

Magnetic registration is undoubtedly the most useful application hitherto made of the beautiful art of photography. The method suitably applied to each of the magnetic instruments may be thus described:—A concave metallic mirror, three inches in diameter, is attached to each magnet by a frame possessing all requisite adjustments; the rays of light from a lamp or gas-burner, placed at a distance of about two feet from the mirror, pass through a small aperture in a metallic plate, and fall on the mirror, when they are reflected to a focus at a distance of about nine feet. The source of light being fixed, it is clear that the movements of the focal point of light will correspond with those of the magnet. A cylinder covered with photographic paper is so placed that the point of light may fall on it. The cylinder is carried round on its axis by clock-work, and by the combined movements of the point of light and of the cylinder, the magnetic curve is self-traced upon the sensitive paper. The photographic process has also been applied to the barometer, and to the wet and dry bulb thermometers; but the mode of application is different from the preceding, the light not being reflected from a mirror. The description of the figures will render further explanation unnecessary.

As the preparation of the sensitive paper used in these instruments differs somewhat from the ordinary photographic processes, it may not be inappropriate to describe it:—The paper is first washed with a solution of four grains of islinglass and of iodide, and twelve of bromide of potassium, in one fluid ounce of distilled water, and dried quickly by the fire; a considerable quantity of paper may be thus prepared at once. Previously to being placed on the cylinder, the paper is washed over with a solution of fifty grains of nitrate of silver to one ounce of water, which communicates to it the requisite degree of sensibility. After having been in action for twenty-four hours, the paper is removed from the cylinder, and the impression developed with a warm solution of twenty grains of gallic acid to one ounce of water, with a small addition of the ordinary commercial strong acetic acid. We may now proceed to explain the working of these very ingenious instruments.

Fig. 1 represents the principal self-registering apparatus invented by Mr. Brooke. The apparatus is supported by a framework of tubes springing from the four corners of a black marble slab (which when in actual operation, would be cemented on the top of a stone pillar firmly fixed in the ground, and insulated from the floor of the observatory): these tubes, about four feet long, converge alternately to four points of the torsion plate; they thus compose a framework possessing great stiffness. To the suspension frame of each magnet, a plane glass mirror and a concave metallic speculum are attached. The plane mirror is for the purpose of making eye-observations with a telescope in the usual manner. A gas-light or lamp is so placed, at a distance of about two feet in front of each speculum, that an image of a small slit in the copper chimney surrounding the burner may fall on the sensitive paper attached to the registering apparatus. This consists of a stand supporting horizontally on friction rollers two concentric glass cylinders, round the inner of which is wrapped a sheet of prepared photographic paper: the outer or covering cylinder keeps the paper moist during the twenty-four hours it remains in action. A bent arm, attached to the axis of these cylinders, is carried round by a fork at the end of the hour-hand of a timepiece specially constructed for the purpose. The horizontal motion of the tracing point of light combined with the vertical motion of the paper, traces out the magnetic curve. A third light is attached to the registering apparatus for the purpose of drawing a standard or base line on the paper; by the varying distances of any point of the magnetic curve from this line, the magnetic variation is determined. At the distance at which these instruments are placed, an angle of 1° is represented by two inches on the paper; but the scale value may be enlarged at pleasure, by placing them further apart.

A A, the declination magnet.

B, a concave speculum attached to the magnet.

C, a plane glass mirror also attached to the magnet, for making observations by a telescope, on the old method when required.

D, the torsion plate, reading to minutes by two verniers.

E, a frame standing upon the torsion plate. A hook, capable of being raised or lowered by a screw, is attached to this frame, from which the magnet is suspended by a skein of untwisted silk fibres.

F F F, a glass box, in which the magnet and its appendages are enclosed, to protect them from the air; for the same purpose, the suspension skein is enclosed in a glass tube G, which passes through a stuffing box H, in the lid of the box.

I, a gas-burner enclosed in a brass chimney, from which the light can escape, except a small pencil which passes through a narrow slit H, capable of being adjusted by a screw; on the breadth of this slit, the breadth of the register line depends.

L L, a combination of two plano-convex cylindrical lenses. The pencil of light passing through K, falls on the mirror B, and is reflected to the cylindrical lenses; by these, the image of the slit is condensed to a point of light on the surface of

M M, the registering apparatus, consisting of two concentric cylinders, between which the photographic paper is placed.

N, the magnetic curve traced by the point of light.

O, a gas-burner, fixed to the stand on which the cylinders rest.

P, a plano-convex prismatic lens, attached to the top of

Q Q, an opaque box, which protects the photographic paper from extraneous light. A pencil of light from O passes through P, and is brought to a focus on the surface of the paper.

R, the base line, described by the point of light.

S S, the bifilar, or horizontal force magnetometer.

T T, the apparatus for producing an automatic temperature compensation; this consists of two zinc tubes, which are clamped to a glass rod by two adjustible clamps V V, the suspension skein passes over a pulley X, and the ends are attached to two hooks, W W; as the temperature rises, these hooks are approximated to each other by a quantity equal to the difference of the expansion of the glass rod and the zinc tubes, between the clamps V V; and thus the torsion force is diminished; the position of the clamps is so adjusted, that the diminution of the torsion force shall be equivalent to the loss of power in the magnet: and *vice versa*, when the temperature falls. The magnet, its appendages, and the suspension skein are enclosed similarly to the declination magnet; the glass box, &c., is omitted to avoid confusion. The registration of its movements is likewise similarly effected on the opposite side of the cylinders.

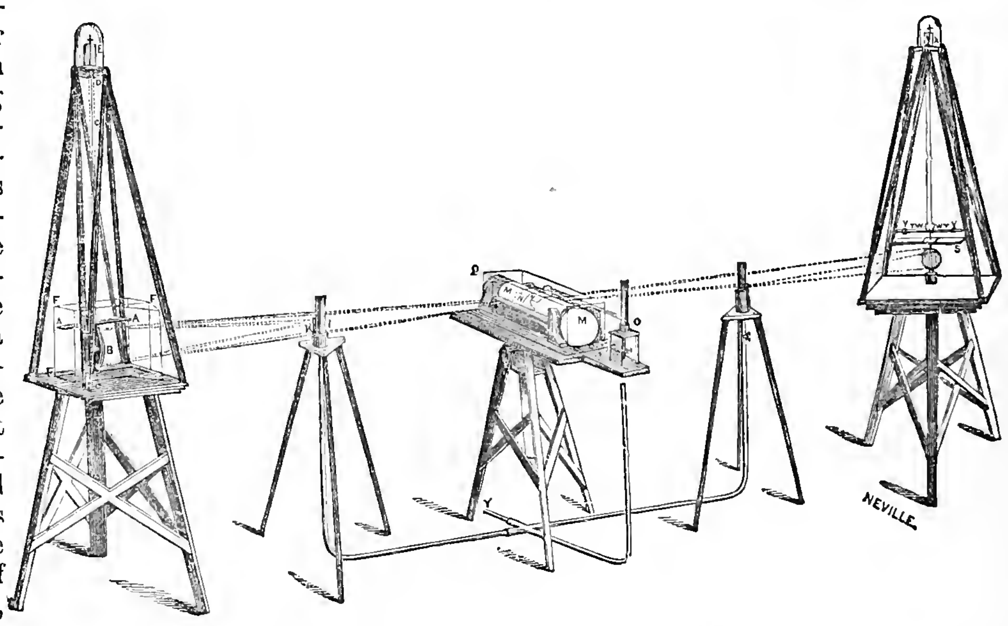

Fig. 1.—Brooke's Self-registering Declinometer, and Bifila Magnetometer.

A blackened zinc case is placed over the cylinders, when in actual operation, to prevent any light from falling on the paper, except the two pencils which describe the magnetic curves, and another which passes through a prism on the top of the case, and draws the base line. In order to avoid confusion this is omitted in the drawing, as well another case of the same material, which covers the whole of the apparatus, to protect the sensitive paper from any stray light, as well as to defend the whole from dust, &c.

Fig. 2 represents the Balanced Magnetometer, the Barometer, and the apparatus on which the indications of both these instruments are registered.

A A, a self-registering barometer, enclosed in a case, resting on a stand.

B B, the upper and lower ends of a syphon barometer tube, which are of the same diameter, and of large size.

C, a float resting on the surface of the mercury, which hangs in a notch on the short arm of a lever.

D, the pivot on which the lever turns.

E, the long arm of the lever, which carries at its extremity an opaque screen F, with a small aperture, through which a small pencil of light passes.

G, a plate on which the tube rests, which is raised or lowered by a screw.

H, a stand supporting a gas-burner.

I, the register line, described by the pencil of light transmitted by the screen F, which will evidently rise and fall with the column of mercury; the indications will be amplified in proportion to the length of leverage.

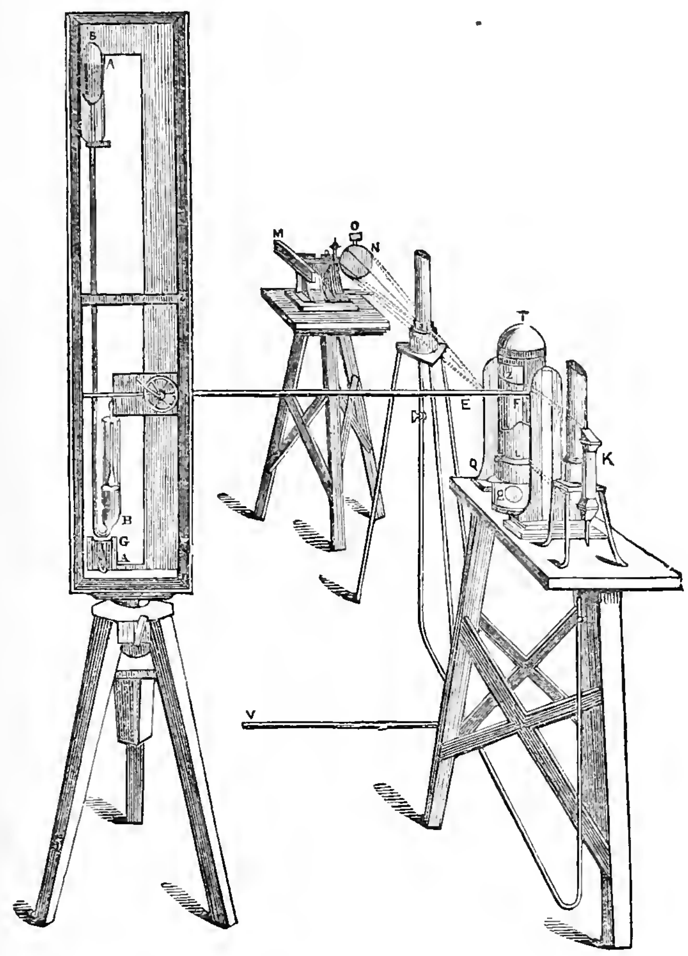

Fig 2 —Brooke's Self-registering Balanced Magnetometer and Barometer.

K, a tube with a plano-convex prismatic lens at each end of it, placed at the back of the burner; through this, a pencil of light is conducted in the direction indicated by the dotted line, and describes the base line L. By this arrangement, two pencils are derived from the same source of light, which fall perpendicularly on two remote points of the paper.

M, the Balanced Magnetometer, is supported by a brass framework surmounted by agate planes, and firmly attached to a slab of black marble, which, like the preceding instruments, would be cemented on the top of an insulated stone pillar, when in actual operation; it would also be enclosed in an air-tight case (omitted in the drawing), having a plate-glass window in front of

N, a concave speculum, connected with the magnet by a brass bar in which two agate knife edges are imbedded; these rest on the agate planes attached to the supporting frame. The knife edges may be raised out of gear on four Y's by means of an eccentric.

O, is a small plane mirror for making observations with a telescope in the usual manner.

P, a gas-burner, similar to those of the preceding instruments. A small pencil of light preceding from this is reflected from the speculum N towards the photographic apparatus, and passing through

Q, a combination of two plane convex cylindrical lenses in a frame work of wood, falls upon a vertical revolving cylinder covered with photographic paper, and describes

R, the register line.

S, is a brass frame which supports a turn-table on three vertical and three horizontal rollers. A pin projects vertically from the centre of the turn-table, which enters a hole in the centre of the cap of

T, the cylinder, resting on the turn-table; by these means the axis of the cylinder always coincides with the axis of revolution.

V is the gas-pipe by which the burners are supplied.

The balanced magnetometer is, like the bifilar, furnished with an automatic temperature compensation, not visible in the drawing. This consists of a small thermometer tube, clamped to the magnet, so that the axis of the tube may be in the same horizontal plane with the centre of gravity of the magnet and its appendages, and the centre of motion between the bulb and the end of the thread of mercury in the bore. The length of the stem, and the capacity of the bulk and bore, are so adjusted that the weight of the small quantity of mercury driven out of the bulb by expansion, may exactly counter-balance the loss of power in the bar occasioned by the same elevation of temperature.

The necessity of this and the previously described temperature compensation, will be better understood by stating that in both the force magnetometers, the position of equilibrium of the instrument depends on the natural action of the earth's magnetism and the free magnetism of the bar, and that a variation of either of these elements will induce a corresponding change of position of the magnet. In order, therefore, that the magnetic curve may truly represent the changes in the earth's force, it is necessary that the variations of force in the bar itself should be mechanically counteracted by the same agency that produces them, namely, change of temperature.

Fig. 3, is a representation of the self-registering thermomemometer and psychrometer. This is essentially a wet and dry bulb self-registering thermometer. The bulbs of the thermometers are placed underneath the table, through which the stems pass vertically, and are placed between the opposite sides of the cylinders and two lights. A narrow vertical line of light, brought to a focus by a cylindrical lens, falls on the stem of the thermometer, and passing through the empty portion of the bore, affects the prepared paper. The boundary between the

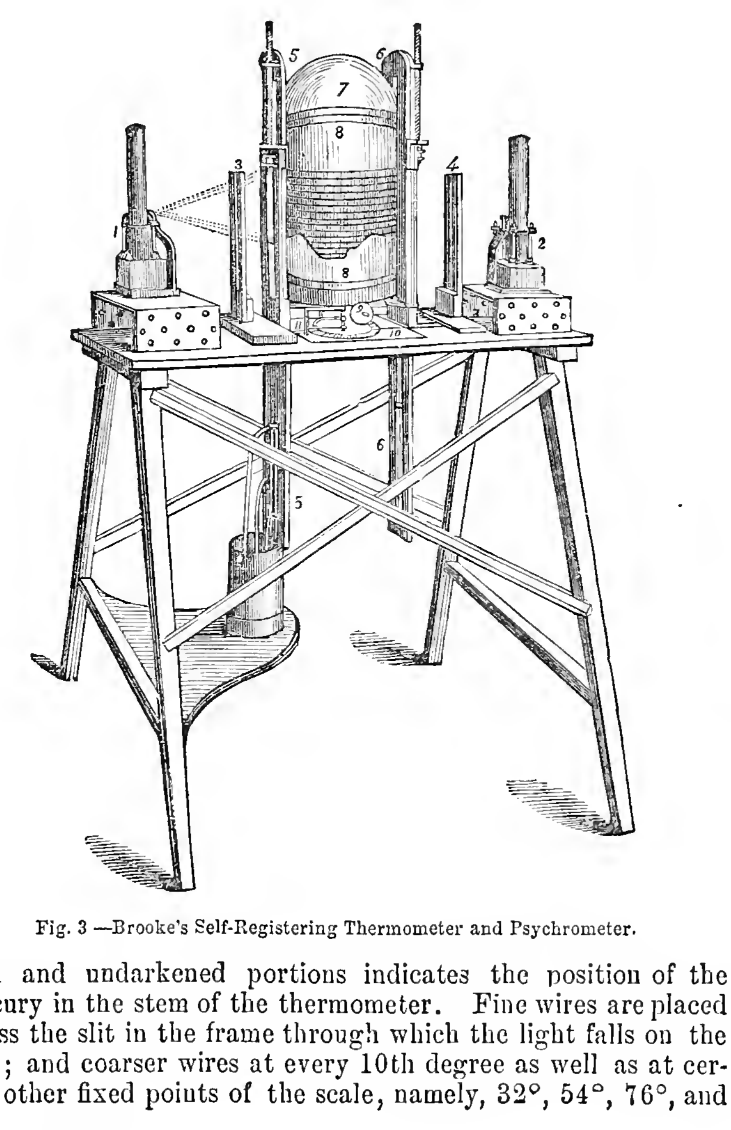

Fig. 3 —Brooke's Self-Registering Thermometer and Psychrometer.

dark and undarkened portions indicates the position of the mercury in the stem of the thermometer. Fine wires are placed across the slit in the frame through which the light falls on the stem; and coarser wires at every 10th degree as well as at certain other fixed points of the scale, namely, 32°, 54°, 76°, and

98°. The shadows of these wires protect the portions of the photographic paper on which they fall from the action of light, and the darkened surface of the paper is consequently traversed by a series of parallel pale lines; and the relative position of the broad and narrow lines readily explain the temperature indicated by the register. In this illustration figures are used instead of letters:—1, 2, are camphine lamps, now superseded by gas, whereby the time and labor of trimming, and a greater uniformity of light has been obtained;—3, 4, are cylindrical lenses, by which a bright focal hue of light has been obtained; 5, the psychrometer or wet bulb thermometer; 6, the dry bulb thermometer; 7, two concentric cylinders, between which the photographic paper is placed; 8, the register, it appears after the impression is developed; 9, one of the rollers of a turn-table, on which the cylinders rest; 10, the frame which contains the timepiece; 11, a bent pin, or carrier, attached to the axis of the cylinder, this is carried round by a fork at the end of the hour-hand of the timepiece.

As this apparatus is necessarily placed in the open air, when in actual operation, it is provided with an inner cylindrical zinc case, with sliding doors, to protect the sensitive paper from light, when the cylinder is removed from, and brought back to, the photographic room; and an outer wind and water-tight zinc case, with water-tight doors, for removing and replacing the cylinders, and for trimming the lamps, if lamps are used.

As the timepieces employed in notating the photographic cylinders exhibit several peculiarities of construction, our account of the apparatus would be incomplete without some mention of them. In order to avoid the unsteadiness of the hour-hand, which in ordinary movements results from the play of the motion-wheels under the dial, the central axis which carries the minute-hand is placed out of the centre. As the forked or carrying arm is firmly attached to the axis, another moveable hand or pointer is added; which travels with the former, and points to the hour. The compensating-bars of the balance of this piece are composed of brass and palladium, to prevent the rate being influenced by proximity to the magnets. The number of the leaves in the pinions are all prime to the numbers of the teeth in the wheels with which they are in gear, to diminish the chance of irregular motion from wear, as the face of the piece must necessarily be exposed.

A lithographic fac-simile of one day's work of all the photographic self-registering instruments employed at the Royal Observatory, Greenwich, will be found in the introduction to the volume of "Greenwich Magnetical and Meteorological Observations for 1847," to which the reader is referred for further information respecting the practical application of the apparatus, as well as for a more detailed description of it. The reader is also referred to a series of paper by the inventor, published in the "Philosophical Transactions."

From Photographic Notes.

POSITIVE PRINTING.

"*Enquirer*" finds a difficulty in getting good prints on albumenized paper. His tones are too red, and he wishes to obtain purples. The plan usually adopted is, to place the print, on removal from the pressure frame, in a bath of hypo-sulphite of soda to which chloride of gold has been added; to fix and tone it in this bath, and then wash and soak it for some hours in water frequently changed. The prints so produced are greatly admired by most people, but unfortunately are very liable to fade. When the prints are washed before being put into the above toning bath, they are more difficult to tone; this plan is however the safest as regards the permanence of the print.

Prints on plain "Papier Saxe," excited with ammonio-nitrate of silver, toned with sel-d'or, and then fixed with fresh hypo, are very permanent. They are sometimes of too cold a tint, and look dry and mealy. A little serum of milk with the salt bath greatly improves them in the above respects. We have never seen a faded print by this process. If the lights are too yellow, this will be corrected by adding a little muriatic acid to the sel-d'or bath. The ammonia-nitrate should be applied with a brush twice, and the paper dried by a gentle heat, and used at once. Ammonia-nitrate gives better whites than plain nitrate, but the sensitive papers will not keep; they turn brown as the ammonia evaporates.

The simplest and best printing process is, in our opinion, that which we have described in *Notes*, No. 42. This requires no toning bath, and the prints exactly resemble engravings. The negatives should not be quite so dense as when they are required for sun-printing.

Some years ago, we sent Dr. Hill Norris a print from one of his beautiful Dry Collodion negatives, a small stereoscopic subject full of detail, *and not too dense for development printing*. In a letter from him, alluding to this print, he says: "I have had the pleasure of examining the very beautiful print you sent me. It is really a great point to achieve so excellent a tone without the use of the toning bath."

In all printing operations, a good deal depends upon the condition of the nitrate bath. We have lately received a valuable communication on this subject from a former correspondent, "N," which, with his permission, we have published.—ED. P. N.

From Photographic Notes.

BIRMINGHAM PHOTOGRAPHIC SOCIETY.

GENERAL MEETING, MAY 25TH, 1858.

The Vice President, W. HOWELL, Esq., in the Chair.

The Minutes of the last Meeting having been read and passed, the Secretary announced, that in accordance with the notice given at their last sitting (this being the last meeting of the present Session); the Council propose to make this evening, their FIRST PRESENTATION OF PHOTOGRAPHS to the Members. The pictures, being of different subjects, will be balloted for.

Pictures to the value of nearly £4, were then balloted for.

The CHAIRMAN then called upon Mr. BOURNE to read his paper on

"THE APPLICATION OF PHOTOGRAPHY TO BUSINESS PURPOSES."

Napoleon, by contrast, styled the Great, once contemptuously stated his deliberate conviction that "England was a nation of shopkeepers;" a remark, which to this day has met with no denial, and in all probability is destined never to be contradicted. Doubtless, that far-sighted man afterwards discovered, that hidden in that all-absorbing love of traffic, lay the real secret of England's immense power, irrespective of Industry's twin sister, wealth. Sufficient, that other nations have, by their humble imitations of our business propensities, learned to look upon the sword as a mere auxiliary in the structure of a nation's greatness.

The principle of self is so deeply inherent in us all, more or less, that on the accidental discovery of any wonder in science, we are lead to examine in what manner it may be made subservient to our worldly aggrandizements and to grapple with it till bound hand and foot in slavish attendance on our increasingly varied and capricious wants; using it as a chariot wheel for the purpose of trade, or to pander to our love of pleasure.

This may at first sight appear very low ground, but a slight recollection will show it is not so in reality, for I ask, what, of late years has been so beneficial in promoting the cause of civilization as railways, and I conjecture, without fear of contradiction, prospective, and I might add perspective dividends, played no small part in their rapid spread throughout the land.

Besides, I repeat, it is to commerce England owes her ascendancy over other nations; and what is commerce, but the aggregate endeavors of individuals to acquire pecuniary advantages? That these endeavors are made in unjust ways as well as just ones, as lately we have had so many opportunities of

knowing, rather tend to strengthen my assertion that self-interest is *a* motive power in discoveries of a scientific nature.

This point settled then, we proceed to notice a few of the multifarious in which photography has been applied to business purposes. The primary effect of the discovery, after the surprise it excited had somewhat abated, was to call into existence numberless likeness-takers; men of a rather scientific turn of mind, and in some cases, perhaps, unfitted for any other pursuit. Inceed, of late years, since the lamented Mr. Scott Archer's Collodion Process was thrown open to the world, the name is legion of those who earn their livelihood by presenting you with "your likeness, colored, in a magnificent frame, for the small charge of one shilling." More particularly in sea-port towns, where "Jack" is rampant, is to be noticed this increase. I was, myself, struck with the quantity in the main street leading from Plymouth to Devonport, nearly every other house being a photographic establishment, and in some cases as many as three together, all doing *literally*, a roaring trade; some man, by no means a candidate for the Hospital for Diseases of the Chest, stationed at each door, with persuasive eloquence, requesting you to step inside. It is only natural to presume they answer as a commercial speculation or they would not be there.

Now, I take it, this "holding the mirror up to nature" in a highly popular form, must have a tendency to elevate the humbler classes, who, surrounded by these scientic substitutes for daubs and scissor-cut profiles, are led to enquire into some of the first principles in the chemical action of light; and the spark of intelligence once ignited, is perhaps soon fanned into a flame, exciting a thirst for knowledge on other subjects, difficult to appease. I remember seeing a notice of a trip to the Lickey Hills a summer or two ago, every pleasure-seeker on that occasion receiving a likeness of himself, or herself, in a frame, taken on the spot. Imagination paints some bashful son of toil whose brawny hands testify to their owner's disregard of hard labor, yet diffident, when wishing to make to some coy maiden an avowal of love and constancy. What opportunity so good, as when amid the freedom of nature's beauteous scenes the swain comparing with his dulcinea the artist's attempt to portray their facial characteristics? What opportunity so good to exclaim unconsciously with Shakspeare, "Look on this picture and on that," and to add, but not with Shakspeare, "how well them two 'ud look together!" Imagination fancies these two, (now happy parents) looking back with pleasure to the day when the business necessities of some humble photographer caused his attendance at a gipsy party to take likenesses. I might dwell upon the pleasure afforded by the possession of lifelike portraits of those whom we love or respect. I might touch on the good the picture of some venerated mother, now no more, exercises over some son, who, his wild oats unsown, is restrained in some wrong doing by that sainted look, in which warning and benevolence are so plainly mingled. But my subject demands my withdrawal from those more fruitful themes.

Photography has been applied with great success to the business of Medical Men. Mr. Diamond, in 1856, read a Paper before the Royal Society, in which he showed how beneficial is this science in cases of lunacy. A patient at one moment may be full of gaiety and pleasure, and at another, dejection and despondency hold their sway. The photographer catches instantaneously the cloud or the sunshine of the soul, thus enabling the metaphysician to witness and trace out the connection between the visible and the invisible in the philosophy of the human mind. These records thereafter form a guide by which to act in other cases. Dr. Diamond also stated that cures in cases of insanity may be effected by means of portraits themselves, and gives the following account of a case in which photography, as he conceives, unequestionably led to a cure:—

"A. D., aged 20, was admitted under his care in August, 1854, having been recently discharged from Bethlem Hospital, after a year's residence there. Her delusions consisted in the supposed possession of great wealth and of exalted station as a queen. Any occupation was therefore looked upon by her as beneath her dignity. It was not without great persuasion that his patient was induced to allow herself to be photographed; but when she saw her likeness, and was led to converse upon the subject of her delusion, an improvement took place, and she was eventually discharged cured."

The author also showed that portraits were highly useful in case the patient, having left cured, should have a relapse, and require re-admission into the hospital; when the former likeness has been found more useful in calling to his mind the care and treatment than any recorded description could possibly be. T. N. Brushfield, Esq., Superintendent of Chester County Lunatic Asylum, states the gratification patients, under his care, evinced at being shown their own portraits, or those of friends, and that a woman who had been one of the worst cases, begged for a portrait of herself, that she might send it to her son in Ireland to show how much better she was. So many other circumstances will so readily occur to the minds of all my hearers, in which photography could be made serviceable in Surgery, that it is needless for me to particularize.

Then again, reflect on the immense use this noble art is to the Detective Officers. Happening to need the services of this useful fraternity, I was struck with the numerous likenesses suspended in the office, of different ladies and gentlemen whose avocations were of a doubtful character, thereby rendering their apprehension at any future period, when found necessary, a work of great facility. In fact while in the office, one policeman in plain clothes, having just received per post a photograph of some one "wanted," handed it to another, with the question, "Do you know that?" receiving in reply, "I should think I do, rather!" The inference is easily drawn. By the way, it is a curious fact that criminals always manifest great interest in their likenesses, and are always particularly anxious that they should be good ones. Again, a strong advocate of Teetotalism having tried in vain to convert a tippling brother, made it his business to photograph him when considerably the worse for liquor. The likeness, with its silent moral, shown to the brother when sober, produced the desired effect, and another disciple was gained to the cause of Temperance. Dr. Roulston, of Leeds, recommends that immediately upon a dead body being found, two or more photographs should be taken, so that a perfect fac-simile of the features, both in full and profile, should remain for the inspection of those who have lost friends or relatives, and who would by this means frequently be relieved from a state of agonizing suspense, when the putrefaction of the corpse no longer permitted of recognition. Every one knows that the morbid curiosity of the lower orders in Paris, and more particularly of young girls, leads them frequently into the "Morgue," where the dead bodies of those who have met with a tragical end are exhibited in a nearly nude state, on a stone slab, on a gentle inclination, waiting the recognition of friends. I cannot but think photography might be there substituted with advantage.

The Play-writer has even made this art subservient to his business, for the London Newspapers have lately informed us of a farce, produced at the Strand Theatre, entitled: "Your Likeness, One Shilling," in which is graphically and amusingly depicted the fear into which some photographer plunges an old lady customer by sundry technical allusions to his professional apparatus, and the process of focusing *more especially;* causing immense laughter. Again, with what benefit is photography used by an artist when engaged on a portrait of children. How extremely difficult to retain them in one set position, and with one expression of countenance for any length of time! ! Whereas the collodion process enables the portrait painter to dispense with the frequent posturing required in such cases. It is reported that while Sir Thomas Lawrence was portraying on canvas the features of some noble peeress, a collision occurred between them from the want of stillness in the one, and the insisting of it by the other. Had sun-printing been then known and adopted, the end would have been attained without any loss of temper on either side. I am fully aware that many eminent artists look with great distrust on the adoption of photography to their assistance, but doubtless, as "Time works wonders," these Conservatives in painting will gradually give place to others of a more Radical turn of mind, who, with the energy which accompanies youth, will gladly avail themselves of the mechanical exactness which a photograph will give, and yet find abundant scope left for the genius of the true artist.

A talented member of your Society, (Mr. Reglander) has so recently shown you its applicability to picture composition, in the arrangement of figures, that it is needless for me to enlarge.

That the copper-plate engraver will yet make great use of this art in his business I confidently believe, though, its application either to copper, steel, or box-wood engraving, must be considered as yet in its infancy.

Again, the abortions got up to amuse little children in the way of magic lantern slides, will at once suggest with what propriety photography can be applied to their improvement.

The Librarian is just beginning to appropriate its benefits. By its means, a catalogue is formed of photographic fac-similies of the title-page of every book, in miniature, so that any bibliopist can at once tell which edition of any work he would select.

The Astronomer soon found his business was not only facilitated, but rendered more accurate by its use. Professor Bond, of America, was the first who surmounted the primary difficulties. He successfully produced miniatures of the moon, which when examined by a microscope, showed clearly the dark and light spots, serrated shadows and mountain peaks with which that interesting, but as yet unknown region, abounds. One of the stars in the constellation Lyra, has already been photographed, and from the supposed distance of that star, the light is calculated to have taken more than twenty years in passing down to the prepared silver or paper surface.

To the Commercial Traveller, this art has been an immense boon. Instead of carrying great, heavy samples, a pocket-stereoscope with the veracious copies of his wares answers every purpose. I beg to offer as an illustration of this part of my subject some photographs of Toast Racks, &c., and I can, from my own experience prove how serviceable is photography. I also, by way of contrast, show a lithograph copy, in which you will observe a great want of perspective, the handles all turning round in a most unartistic fashion. Besides, customers when looking at engravings or wood cuts, invariably allow a slight per centage of beautiful lines and curves which exist only in the imagination of the draughtsman, and not on the article; now, as Nature never told a lie and never can, a photograph of any article carries conviction with it. Pianos, to wit, being somewhat inconvenient to carry round the country, in variety, for sale from samples, are found, when their pictures are viewed through the medium of a stereoscopic magnifying glass, satisfactorily to exhibit all their solidity and beauty, without actual presence. Customers when requiring articles to match, now send per post a photographed copy of the goods required and can rely on procuring exactness. When, in cases of emergency, manufactures of an elaborate description are hurried away to their destination, minute graphical detail is dispensed with, by the agency of light-printing. As mementoes of manufactured articles I submit three copies of ecclesiastical vessels, made of silver; also a monument made of marble and brass, all of which will well bear minute inspection with a powerful magnifier.

Messrs. Padbury and Dickens, of the Sandpits, Birmingham, have most kindly permitted me to illustrate my subject with the accompanying copies of Art Manufacture, and which as specimens, both of photography, and its utility to business, are well worthy of close examination. A microscope would, I think, be found considerably to assist in their due appreciation and inspection.

Messrs. Wright, of Salsley, have lately used the art for preserving to them the form and general appearance of the magnificent Railway Carriage just sent off to the Pacha of Egypt.

Bennett, of Exhibition fame, has by it, copies of the clock-works he erected at the Houses of Parliament and at Bolmoral, thereby facilitating any correction when requisite.

I have seen it recommended that railway accidents and war, should both be brought under photographic supervision. In the case of a collision taking place, a photograph would at once be made strictly impartial evidence and so prevent important differences which will creep into the statements of different eye witnesses of catastrophes of that nature. In Austria this has actually been accomplished on more than one occasion. And though for the purposes of actual warfare, it has yet been but little used, if at all, unless the milennium speedily arrive when "our spears will be turned into pruning hooks," even in our day we shall hear of its application by aide-de-camps and reconnoitering officers when sent by their commandant to ascertain an enemy's position; thereby avoiding a waste of time by lengthy verbal descriptions, and facilitating rapid movements. We all remember, how some adventurous English Captain, just prior to the recent war, made a pretext for entering the harbor at Sebastopol, and used the short time allowed him, in taking photographs of the fortifications for future use. In connection with Russia, you will doubtless remember that an English Engineer constructed over the river Dnieper at Kieff, the most magnificent suspension bridge, perhaps, which the world possesses. The powerful Emperor, far away from Kieff, but impatiently longing to know how the work progressed, caused photographs to be sent to him periodically, showing the exact state of the bridge at a given time. Two thousand miles of distance were thus practically annihilated; and the Czar could know all that was going on, without stirring from his palace at St. Petersburgh, by comparing the photographs successively forwarded to him. The crafty autocrat knew too well the little reliance to be placed on drawings prepared by his mercenary subordinates, and must therefore have hailed the advent of photography with much secret pleasure. Stages of progress in numerous works of art and of ingenuity can thus be easily registered, as it were; for each photograph tells a true tale concerning a particular spot at a particular time.

The photograph now exhibited of a steel engraving, illustrates its service in copying rare works of art, or articles of *vertu*.

I have thus then endeavored feebly and inadequately I admit, to point out some few of the purposes of commerce to which photography is, or can be applicable.

Should any words of mine to-night suggest to some brother member its applicability to some purpose conducive to industrial art, or the extension of knowledge, to which as yet, *he* has not applied it, the evening will have not been wasted.

And of those present, to whom perhaps this paper has appeared a dreary occupation of precious time, I ask their kind indulgence. To each and all for their sympathetic attention, and more especially to those, to whose kindness I am indebted for some of the specimens now exhibited, I beg to tender my most heartfelt thanks. Believing, as I do, that to make a Society strong and useful, the energies of every individual member should be called out; as *one* I have done my best; that it is no better, please accept my apologies and overlook the defects for the sake of the motive. (Cheers).

Some discussion followed, and the pictures brought by Mr. Bourne were handed round, and greatly admired.

Mr. Osborn then rose to propose a vote of thanks to Mr. Bourne. He said that the Application of Photography to Business Purposes was of very high importance, and he had frequently urged upon manufacturers the utility of such a course, but was sorry to find that it did not meet with much favor; one reason was, probably, the high price which photographers put upon their services, as it must be borne in mind that cheapness was an essential quality in this application; and operators must look to the quantity to pay them, while, at the same time, they must not sacrifice quality. He had, however, great pleasure in moving a vote of thanks to Mr. Bourne for his interesting paper, which he was sure all present would agree in saying, had but one great fault—that of being too short.

Mr. Phillips seconded the motion.

The Chairman said that he perfectly agreed with the views advanced by Mr. Bourne, and he hoped, that as the Society numbered so many young men among its members, they would follow the good example set before them during the session just closing, and open their stores of knowledge for the benefit of others. He would impress upon them the utility of jotting down any observation that might strike them when in the field, and hoped that they would occupy the vacation well in adding to their store of knowledge as well as of pictures.

Mr. Bourne having responded, the meeting then adjourned for the vacation.

From the London Art Journal.

COLORING STATUES.*

BY JOHN BELL.

In a former number, I stated my view that the marble statues of the Greeks were not painted, but that the vast ivory idols of the divinities of the temples usually were; and I purpose to continue the subject with a few more remarks. I called attention to ivory not being in itself a truer imitation of flesh than the finest kinds of marble, or at least that opinion would differ on this subject, or at any rate, even if some might prefer the tint of ivory, that it was not preferable to marble to that degree as to counterbalance its perishable quality when laid on in thin plates, as was the case with the cruseo-elephantine statues. In these instances the joinings could never have been perfectly hidden, and there must have been a world of trouble connected with such a surface even after it was perfectly adjusted. In some cases we are told it was moistened by means of oil, at others of water. The manufacture of these idols is elaborately set forth in the magnificent work on the Olympian Jove by Quatremere de Quincey, and seems to have been of the most troublesome and intricate character—I had almost said undignified—being put together on wood cores, being hollow within, and strengthened in the interior with rods of metal and various appliances; which hollowness was requisite probably not only for strengthening the structure, but for adjusting and fixing the ivory and gold plates of the surface from within.

The sculptor prides himself on his art for its lasting qualities; but these cruseo-elephantine idols had not this dignity, and must have required the utmost attention to keep them in good repair. We are inclined to call sculpture *par excellence* the lasting, the imperishable art, and yet here were the highest subjects of the time executed in materials so little calculated to last, that not only not a vestige of any of them have come down to the present time, but they must have been about the first things in the temple to decay. The marble statues of the Parthenon are not very much more destroyed than the columns, but not a "pinch of dust" is left of the daughter of Jove.

How just is the retribution that the idols should have perished, while other works of the same art, less closely connected with the grossness of superstition, have remained. How much have we to thank the Providence, which, while it crumbled these Greek Dagons, garnered up for us in less perishable materials so many triumphs of Greek art.

We have no definite accounts how the cruseo-elephantine style of art first grew up in Greece. It was not borrowed from the Egyptians, from whom the Greeks borrowed so much, for not only have we no records of such works having been ever executed in Egypt, but it is wholly opposed to the spirit of Art in that ancient country, which emulated eternity in the steadfastness of her productions; and if it was heralded in by the Phœnicians, we have no account of any works on a similar scale being executed in that country, or by any other Asiatic race. It appears, at least to at all the degree in which it prevailed among the Greeks, to have been an indigenous growth, although for their ivory they were of course indebted to other lands. It does not seem, however, to have been universally adopted.

On the authority of a passage in Valerius Maximus, we understand that Phidias desired to execute the Minerva in the Parthenon *not* in ivory and gold, but in marble, but that he was overruled; and this reason is given,—that marble was not thought a material sufficiently expensive and precious to do sufficient honor to the goddess. But it is evident that this could not have been the true cause, for the quantity of ivory requisite for a cruseo-elephantine statue would not have been more expensive than to have obtained huge blocks of sufficient scantling to have executed the colossus satisfactorily; and the gold and other precious enhancements could as well have been applied to a statue in marble as in any other material.

The difficulties of the manufacture of such vast statues of ivory and gold as the Jupiter at Elis, the Minerva at Athens by Phipias, and the Juno and Æsculapius by Polycletus, are perhaps sufficiently illustrated by the quotation in the last article from Muller on the subject; but they are mentioned also by Flaxman, and are elaborately detailed by Quatremere de Quincey. It is further illustrated by these authors that the trouble of keeping them in repair was also very great, the veneers of ivory which formed the surface of the flesh being liable to curl, unless very securely fixed, and to gape and display the joinings from time to time, ivory being a material that swells and contracts according to the state of the atmosphere. In addition to this, the perishableness of statues constructed in this manner requires no illustration, and when we consider how opposed such perishableness was to the spirit of anything consecrated to the gods, especially their images, and that ivory in itself is not superior to fine marble in the imitation of flesh, indeed, when left to itself, it is apt to become very yellow and somewhat ghastly in effect, it seems on us that there must have been some other substantial reason for the employment of ivory instead of marble.

I repeat that I consider this was that these great idols were desired to be colored, and were so, if not quite up to the hues of human flesh, yet to a pretty close simulation of it; and that ivory, instead of marble, was employed as more suitable for coloring. Ivory is a material still selected for the most delicate of all painting, miniature painting, and is also capable of being indelibly and beautifully stained; and in one of these two methods, I believe, the flesh-surfaces of these great statues to have been tinted. And, let it be observed, that this view of the subject, if allowed, affords a double light; not only does it elucidate why ivory was used for these works, but also shows why marble was not—viz., because it was not thought suitable for receiving color, and moreover illustrates that it was *not* the practice of the Greeks so to treat the latter material; for if they were in the habit of coloring marble, why, *par excellence*, was it not used in this manner in these cases?

It may be suggested that Phidias's objection did not probably stop short at not not wishing the statue to be made of ivory and wood, &c., but extended to the wish that it should not be colored; and that, if his idea had been carried out, the whole treatment of the Parthenon might have been modified by such adoption of a simpler style for the figure which, forming the acme of the whole, would have given the key to the whole decoration of the building.

I conceive, as I have said before, that the style of temple sculpture among the Greeks was by no means uniform, but, on the contrary, various. The simple style in which Phidias desired to execute the colossal Minerva was not without precedent; but the more elaborate and decorated style was preferred by the priests and the people. Phidias, no doubt, viewed the future statue more as a work of Art; the priests more as an engine of state religion: and the priests prevailed, the consequence of which is that their idol utterly perished long ago; whereas, had the artist had his way, some lordly fragments would probably have remained to the present time to give us a still higher veneration than we even now have for the triumphant sculpture of that period.

In entertaining the view, however, that these great statues of the presiding divinities of the temple were thus done in ivory for the purpose of being colored, so as nearly to imitate the hues of flesh, we must not suppose that they had a common vulgar effect like wax figures, to which we seem to have an instinctive repugnance. This, indeed, would have defeated the very object for which the priests were so anxious. No doubt the exquisite artistic taste that characterises nearly everything that has come down to us from the Greeks in anything like perfection, was also exerted to the utmost degree upon these

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* Continued from p. 164, vol. xi., no, vi.

works. The Minerva of the Parthenon was no sham of an actual being (even the mere scale of the work would have prevented this), but a bold attempt to realize the celestial idea of a being solemn, impassive, far above the human level, and through whose veins coursed not blood, but celestial ichor.

I conceive, then, that in these works the Art-craft (so to speak) was overruled by the Priestcraft; and, in considering this branch of the sculptures of the Greeks, we must hold in view that they were not only works of Art, but that the native truth of Art in its inherent principles was bent to be the instrument of a false religion, in creating images which were to be the objects of worship. These were created at vast expense to be the means in the hands of the priestcraft to rule the people and impose upon the public. In the temples that contained them a "dim, mysterious light" reigned around, produced in part by the overlapping of the centre roof over the side roof, for the protection of the interior, affording but a modified triforium-like light, and in part by the sacred veils, which probably were also colored, so as to produce an effect analogous to that of the painted windows in our cathedrals. All was shadowy; the dimness that reigned around increased the apparent proportions of the divine occupant, and harmonised the general effect of the colors.

Dramatic effect in their worship was ever sought by the Greeks, and it has been supposed that it was only at certain times that the divinities were unveiled at all. Doubtless, on these occasions of unfolding them to the eyes of enthusiastic worshippers, every means were taken to work upon their senses. Ceremony lent its impression, and music and the chant their charm, and sacrificial incense waved before the god in curling clouds, like those of his imaginary heaven, from behind which moving veil the votary might deem he saw his divinity frown or smile. To effect impressions like this naturally led to these statues being very nearly fully painted, so as the more to awe and terrify; and whatever might have been the taste of the artist, he had to bend to these requirements.

It appears, however, probable that just as Mr. Penrose observes with respect to the marble surface of the architecture—viz., "that it played a considerable part in the appearance of the temple," it is also probable that the ivory statues were not ever heavily painted, but rather that the translucent quality of the ivory was taken advantage of by the most delicate colors that would enter into the material, like a stain rather than by body color applied over the surface. I have alluded to both methods as probable, but quite incline to the view that staining colors were probably used, not only as more beautiful, but as more durable. Still, however, as we have no positive evidence on the subject, it is safest to suppose that no constant identity existed in the treatment of these statues, still keeping in view that the actual material—as this was always precious in cherished works to a more or less degree—played a considerable part in the variety of tint produced. This was probably more especially the case as regarded the outer decorations, as such treatment was more adapted to withstand the elements than any ajuncts of paint, the repair of which, too, would be attended with great trouble, as it would have of course to be done in an exquisite manner, not unworthy of the other parts of the structure.

It appears, indeed, probable that what was effected in the way of variety and relief of tint on the outside sculpture, was chiefly carried out by means of variety of material and not by paint. If actual paint, for instance, had been used on the statues in the tympana of the Parthenon, Minerva might just as well have had a marble helmet painted or gilt as a bronze one, the holes for affixing which are still remaining; and the same as regards the buttons and other adjuncts. If any general slight stain, however, was applied to the broad surfaces of the architecture, it is probable that the outer statues received the same treatment to harmonise them with the architecture; for the same reason that caused in them a distribution of colored material to carry off that similarly introduced on the outside architecture, as the shields which were hung round the entablature, &c. Also, it is highly probable that a faint blue stain was introduced at the back of the tympana, to increase the relief of the figures they contained.

As regards the frieze under the colonnade being protected from the weather, it would bear, if requisite, a higher degree of decoration: but as the forms in it are so small in comparison with those on the outside, a similar treatment with that in the tympana would give the effect of being more decorated. They were probably relieved by a faint blue background of an atmospheric character, and the bridles, helmets, buttons, and even the hoofs of the horses might have been gilt. These relievi of men and horses in this frieze had no light from above, but were lit from below by reflection from the marble pavement, in the same way as the faces and forms of performers are at the theatre when they advance to the footlights. A somewhat similar effect may be perceived where dust has been allowed to accumulate on casts of such works, producing much such dark tints on the upper surfaces as would be caused by light from below. These Parthenaic relievi, in especial, are remarkably well displayed under such circumstances, whence it is evident this effect on them was studied. It does not appear probable that the coloring in these works were carried much further than I have mentioned above, as any distinguishing of the horses by color wholly destroys the beauty of the groups as a continuous piece of ornament, which is the great feature of their decorative effect; and their relief being very flat, and their effects of light and shade most delicately studied, points decisively to their distinctness not having been destroyed by any addition of various and full color. If, however, more of their surface was treated with color than that of the tympanum statues, I conceive it was by means of sub-tinting with the most delicate stains.

Having thus, in some measure, considered that class of statues which were probably tinged, or painted, or colored by difference of material in various degrees, we come to those which I conceive there is sufficient evidence to show were monochrom, their surface being left pure. Among these I submit were the superior marbles statues—not specially used as idols, and not secondary to architectural effect.

The Venus of Cnidos, by Praxiteles, was doubtless, on the whole, the most celebrated statue of antiquity. So great was the admiration of this work, that Nicomedes, King of Bithynia, offered to remit the whole public debt of the city if they would allow him to be the possessor of it; but so highly was it prized by the Cnidians that they rejected the offer. They built a small circular temple expressly for it, open on all sides, so that it could be seen in all views, and surrounded the spot where it stood with every beauty of trees and flowers that their climate could supply.

Neither was the admiration of this statue confined to the King of Bithynia and the Cnidians themselves. "Many persons," Pliny states, "sailed to Cnidos with no other object but to gaze on this statue." "It was," he adds, "not only the finest statue of Praxiteles, but the finest statue in the world. Every point of view was beautiful," and visitors remarked that, "whichever way they approached her the goddess smiled benignantly on them;" but not a word about coloring does there appear in the whole account. Now is it probable that if coloring was really considered an essential enhancement to the highest class of marble statues, that it would have been omitted on this great occasion? or, if the the eyes had been painted blue, and the hair blonde, or any other color, and the flesh tinted, would Pliny's account have been completed without any allusion to it?

But Lucian enters still more into particulars as regards this statue. In the "Amores," (13, vol. v.), he tell us that the mouth was a little open, and somewhat smiling. In another part of his works, he goes on to expatiate on the beauty of the hair and forehead, and admires the precise yet delicate eyebrows; but not a word of the *color* of the hair and eyebrows! He then makes especial mention of the swimming softness of the eyes, but not a hint of their hue, which surely he would have mentioned had they been painted, or even tinged ever so slightly.

The statue was nude, the position of one hand like one of the

Venus Medici; the other holding a pendant of drapery that fell over a vase: but there is no mention of color even on these.

But the part of evidence on this marvel of ancient Art yet to come is the most important, as it has direct reference to the surface of the nude portions of the figure having been left untouched. The statue, Lucian says, was made of Parian marble, and a blemish or *a stain on the left thigh*, he says *was the more remarkable on account of the extraordinary brilliancy of the marble.* Now whatever fancied foil such a stain might be in the idea of the loving possessor of this statue, this remark can be considered but an ingenious defence of a blemish in that they loved. The artist, we may be sure, was not of this way of thinking. Solicitous as sculptors are to obtain the most beautiful and unblemished marble, especially for nude figures, there is no doubt that Praxiteless would have done all he could to conceal the blemish in question. And if his friend Nicias had been in the habit of finishing the *flesh* of the sculptor's works by painting, it would have been on *this occasion that his services would have been particularly in requisition.*

Painted, it appears to me, as regards the flesh, certainly this statue was not, or the stain in question would have been assuredly the first thing to have been concealed. Neither could it have been even stained. The sparkle and brilliancy of marble is at once destroyed by any foreign substance applied, as it hinders the lambency produced by the reflection of light from its innumerable crystals far down in the material. One might as well attempt to varnish a diamond!

That the ancient Greeks did their best to obtain for their highest class of works the most precious quality of marble is evidenced by every bit having been scooped out of Paros,—the pure quality of which, when untampered with, is perfectly expressed by Lucian. Any one who, having the opportunity of examining a fine specimen of Parian marble perceives the purely brilliant, lightsome character it possesses, like that of the milky-way, will acknowledge how descriptive is the epithet applied to it by Lucian as existing in the surface of the statue he describes, and how certainly any application over it would mar the quality he mentions.

Thus we have seen that there was no marble statue of ancient time, that was prized or honored as this statue of Venus was; and yet we have evidence of the strongest nature that, in her case, not only the flesh was neither painted nor stained, but that neither the eyes nor hair were tinged. No impartial judge can have any doubt (in consulting the above passages from Pliny and Lucian) that if these parts were colored, it would have been mentioned in so detailed a description. It is impossible to deny the above conclusion as regards this work, and further in respect to the general practice of painting marble statues of the same class, the evidence is the stronger from the fact of its being negative. Had Pliny or Lucian felt called on to specify that the Venus of Cnidos was *not* painted or stained, it might have been argued that she was an exception in this respect to the general rule; but not a word is said on the subject. In fact these writers both treat the subject just as we should now, or at any time when the painting or statues is ignored.

Among the meagre and vague details that we have in the way of evidence on the painting of statues by the ancients, it appears most fortunate for the interests of pure Art that the above most important evidence should remain to us that this *chef-d' œuvre* of ancient Art was decidedly not painted or stained as regards the flesh. Further, it is valuable inasmuch as it conveys the strongest presumption also that neither the eyes nor hair were colored in any degree. Moreover, it is to be remarked that it contains no allusion whatever to such additions even on the secondary parts, as the drapery or the base. In addition to this, the passages in question contain no hint that the above purity of surface was any way unusual; and in the absence of all positive evidence whatever that the highest class of marble statues of ancient time were colored, the silence of Pliny and Lucian in this case must be taken as proving that the coloring of statues was by no means universal with the Greeks, but that it was common for them to leave the marble surface of their best works wholly untouched, as has been the recognized mode in the best modern times.

In regarding therefore this whole section of the subject, it appears from the preceding considerations that the question of the coloring of their statues by the Greeks is not a simple one, and that not only is there no reason to suppose that the same mode prevailed with respect to all statues, but the evidence of the contrary is direct and plain. The Venus of Cnidos was not colored. Some of the other statues of Praxiteles appear to have gone under the hands of an encaustic painter, and may have had some of the adjuncts tinted; but there is no mention at all with regard to his works of the flesh, eyes, eyebrows, or hair being colored, although he probably executed works in various ways. There appear, however, to have been other works of the greatest importance connected with architecture that had colored adjuncts by means of different materials. There were also those colossal occupants of temples, that were covered with ivory, probably for the purpose of being tinted, at least to a subdued imitation of natural colors. And there were the Archaic statues, and those connected with the licentious rites, in which their crudity of form and exaggeration of character were probably carried out in the color that was added.

The chief passages in the ancient writers bearing on this subject of coloring statues exist in the works of Plato, Pausanias, Pliny, Lucian, Virgil, and Plutarch. But the array of all these would be out of place in these brief remarks; and also what information they may really afford, is confined to a few passages. I have detailed those which appeared to me most important. The most valuable of them all, being, I conceive, those from Pliny and Lucian just quoted, which evidence that no color was used on the pure Parian surface of the far-famed Venus of Cnidos.

From Photographic Notes.

PECTINATE STOP OF A VIEW LENS.

To the Editor of Photographic Notes:

SIR,—Having invented a method of stopping the view-lens for the purpose of modifying the light of the sky and the distant parts of the landscape, I have much pleasure in communicating it to you.

I propose to call the arrangement a pectinate stop; the most general form of the stop being like a comb.

I have adapted this arrangement to the Orthoscopic lens, to which it is most easily applicable; but it will also be found applicable to the ordinary view-lens, the conditions being reversed as regards the position of the stop. A disc of cardboard or thin metal being cut so as to fit with the cap of the Orthoscopic lens, a semi or semi-lunar portion, is cut out, and the remaining portion indented like the teeth of a comb; this being placed in front of the lens, and the new stop being also used behind the lens, the light of the sky is considerably modified, and the illumination of the picture rendered much more equal than before.

I have tried the arrangement with Voigtlander's No. 3 lens, and found the performance of both the lens and of my new stop most satisfactory. The stop of 1 inch aperture behind the lens was retained; focus 25 inches, size of plate $17\frac{1}{2}\times15$ inches.

I may remark that it may be found requisite to have various stops to suit the intensity of the sky, and the position of the line of the horizon in the picture, and that the apparent effect of the new stop in diminishing the light on the focusing glass is much less than would be anticipated, and that even when buildings or trees project considerably above the line of the horizon, the new stop may nevertheless be used.

A friend, to whom I have suggested the use of the pectinate stop, reports that it has enabled him to obtain effects of distance which he had otherwise found impossible.

I also anticipated that under favorable circumstances this method of stopping will enable us to obtain photographs of clouds with a fair development of the landscape, and will also give a greater scope to artistic talent in modifying the effects of light on the picture.

Yours respectfully,
WILLIAM SYKES WARD.

Claypit House, Leeds.

[The "pectinate stop" would we think be better placed at a little distance in front of the true stop of a common view lens, as suggested by Mr. Howell, in *Notes*, No. 45. The principle of Mr. Read's stop appears to us to be more correct; for when its plane is inclined to the horizon, the pencils from the foreground objects have a circle for their base, those from the sky an oval of less area, while in the "pectinate stop," the base of *all* the conicals pencils which diverge from the bright points of the view are of *equal* area and shape. Our correspondent will, if he thinks this carefully over, perhaps agree with us; but if not we shall be glad to hear and insert his objections to our reasoning.

We do not see exactly how to apply Mr. Read's stop to an Orthoscopic lens. Has he any suggestion to offer on this subject.—ED. P. N.]

For the Photographic & Fine Art Journal.

HELIOGRAPHY vs. PAINTING.

PHILADELPHIA, July 3rd, 1858.

MR. EDITOR—In your present number I propose to pursue the topic opened in your number for May; that is, I would offer some suggestions as to the means to be adopted by the Heliographer to overcome the difficulty arising from the *rapidity* with which the sunbeam acts upon the plate. The portrait-painter (as I said in the former article) *may* have several sittings,* each lasting for an hour or more, and thus have time to learn what is his sitter's most *characteristic* expression—or, perhaps, to *call up* that expression by his conversation and personal influence. The Heliographer has his sitter with him but a few minutes, or, it may be, seconds—and even then the circumstances are such as not to be very favorable to producing in the sitter's mind the mood which will give to his face and figure the best expression. What can the sun-painter do to counterbalance these disadvantages?

As I have said more than once before, he must have genius as a *sine qua non*, for this will not only spontaneously suggest various *expedients* to be used, but it exerts, upon those coming in contact with it, a kindling, genial influence, which can be neither analysed nor defined.

But genius, without the cultivation, which supplies it with materials and implements, can accomplish little. Let us note, then, some of the *means* to be used in effecting the *end* above alluded to.

In the first place, then, the Heliographer should have his *rooms* so arranged as to act *favorably* on his sitter's mind, *prior to* as well as *during*, the sitting. It will be understood, without my going into details, that I mean he should fit up his rooms with *artistic* taste—having therein books, pictures, engravings, sculpture, &c., of a kind to attune the visitant's mind to the *mood* he would wish to express in the portrait to be taken. The *furnishing* of the apartments, including the forms of the windows, the shapes of the chairs, sofas, and other appendages—in short, all the items of equipment should be regulated with a view of awakening in the visitants the best and highest thoughts and feelings. If I were speaking to common-place prosaic persons, I might expect *ridicule* in requital of these remarks. But you, Mr. Editor, and your readers generally, I trust, have sufficient knowledge of human nature, or in other words, *philosophy*, to know that we are very much in character, what the *circumstances* about us have moulded us to be. The dark or the bright, the black or the white, around us cast their peculiar shadows upon our minds, whether we be *permanently* or *temporarily* under their influence. As the end we are supposed to be aiming at is to get from the sitter his *best* expression, and as all surrounding circumstances operate in one way or another, to affect the *mind whence* the expression comes into the face and figure, let us make all he sees or comes in contact with, in the Heliographic Rooms, tend to produce upon him the influence we desire. I need not enlarge or go into details upon this subject, since those who can understand it *at all*, will understand it *at once*, and fill up the outlines here given, from their own minds.

This previous preparation having been made, we now come to the time of sitting itself. And here, as I have repeatedly intimated, a momentous task falls upon the artist who would get a portrait, expressing the best and highest phase of his sitter's character. I might fill many pages with a detail of what experience has taught me in reference to the *position* the sitter should be required to assume—the mode in which the light should fall upon his face and figure, so that blemishes may be alleviated, and good points brought distinctly into view. In short, a thousand things respecting the *configuration* and *locality* of the sitting room, the windows, through which the light comes, &c., &c., all of which myriad particulars bear directly and essentially upon the fact, whether a mere mechanical transcript, or a mimic life reduplication of the sitter, *at his best*, is to be obtained. I may, perhaps, hereafter present the results of what a vigilant observation, prolonged through many years, has taught me in regard to these matters. As I have more than once hinted before, it seems to me strange that in all the numerous, and, it must be said, excellent treatises on our art, scarcely the slightest attention has been given to a subject, which is by far more important than any other—that is, the *means* to be employed for getting the sitter's best and *individualising* expression—his living, thinking, feeling *self*, instead of a face and form, which makes us

"Start, for *soul* is wanting there."

At present, however, I must restrict myself to a few words on a single point—the action of the artist upon the sitter *at the moment of taking*. The Heliographer should possess certain conversational powers, together with a certain kind of manners and deportment, whereby he can adapt himself to his sitter—*whoever* and *whatever* he may be—with such effect as to call up in such sitter his best and most characteristic moods—or he should instantly quit the camera for some very different implement. You will find, in looking over the biographies of all who have been distinguished in portrait-painting, that they have uniformly been distinguished by their powers and conversation. To possess such powers demands first original genius—involving a *ready sympathy* with persons of all temperaments and characters, and next an *assiduous cultivation* of such genius—a cultivation which puts one in possession of all those myriad *methods*, both in the way of *solid* and of *graceful*, whereby the hearer's *mind* is aroused and his heart set all aglow. Therefore, I would say that the Heliographer who would be *truly such*—who would do honor to his profession, and *not* do *discredit* to that bright orb, who lends his luminous pencil for his work, exacting nothing in requital but a *fitness* for the profession assumed—must *know* at the outset, that he possesses a conversational capability, and *then* must *cultivate* such capability to the highest possible degree. I need not specify *how* he is to do this—his own *spontaneities* will prompt him. It is, however, obvious upon the surface that a large acquaintance with books of the rarest quality is one important item of such culture. But more important still for him, as in truth, for all men else, it is to *observe*—observe all men, of whatever class or character, with whom he comes in contact—observe them, too, with that genial humane feeling, which so acts upon all coming within its sphere, as to summon into activity whatever is best and noblest in them, and to bring into view that imprint of the Divine Original and Sire, which is stamped on every soul, though often hidden by the rubbish of worldliness, or covered by the black, fetid waves of illicit passion and appetite. Thus mingling with men of all degrees and qualities, the Heliographer learns how to approach and commune with all—and thus is able so to *act* upon his sitter,

*The biography of Sir Thomas Lawrence relates that this artist often required even a dozen or more sittings before he could catch that expression, the obtaining of which was his leading excellence.

both by his conversation and his mere personal presence, as to bring out the expression desired.

My space forbids my extending these remarks further. But to you, Mr. Editor, who have labored so worthily to vindicate the dignity of our art, I can confidently appeal for sympathy with and approbation of these views. If they show that to be a first-class Heliographer requires both high genius and large culture and accomplishment, they show at the same time what you have so often declared, that the assumption of the Heliographic profession by persons possessing *neither*, is an impertinence and an outrage upon commonest propriety.

M. A. Root.

From the Liverpool Photographic Journal.

ON THE WET COLLODION PROCESS.*

BY MR. J. A. JUDGE.

Read before the North-London Photographic Association.

In addition to the cloths already enumerated, a piece of fine muslin is also required, which (like the other cloths) should be always kept scrupulously clean and free from dust.

The glass plates must, if of a large size, be of patent plate, the edges being ground or removed by scraping one plate against the other, taking care not to scratch them during the process, and rinsing them in water immediately the operation is over. If they were placed face to face, the small particles of glass rubbed off the edges and adhering to the plate, would inevitably scratch its surface, and render it unfit for use. If of a small size, not larger than 3¼ by 4¼, French white glass may be employed: it is not as flat as patent plate and consequently is more liable to fracture whilst under pressure in the printing frame; the smaller sizes are generally carefully picked by the dealers—its cost is much less than that of patent plate.

The camera should be occasionally wiped inside with a damp cloth, and the dark slides, when not in use, stowed away in a cupboard or other receptacle, to keep them free from dust.

The collodion should be used from a long thin stoppered bottle, which will allow floating particles of film, &c., to subside, and prevent them being disturbed whilst coating the plate. Two of these long bottles should be provided, one to contain the collodion in actual use, the other with the spare supply. This latter, especially in hot weather, should be considerably thinned with ether, and as the collodion diminishes by use and evaporation, the bottle should be replenished from the stock. The advantage of employing two bottles is this:—the ether evaporating more rapidly than the alcohol, if not re-thinned, the collodion would become unworkable. If thinned with plain ether, you would be liable, by adding too large a proportion of it, to precipitate the iodide of potassium, and you would get spotty plates in consequence. The collodion should be mixed over night, but is better when several days old. When working with large plates, with an extensive evaporating surface, use a thin, comparatively under iodized collodion. Keep the necks of tne bottles free from pieces of dried film, which might be carried on to the plate; and give rise to specks and blemishes. When learning, keep to one collodion from a good recognized manufacturer, until you are pretty well advanced. By using different specimens of collodion you are very liable to be led into error, and your progress may be considerably retarded.

I should strongly dissuade a beginner from making his own collodion. Even in the most skilful hands it is a very ticklish affair, and the beginner would derive considerably more annoyance than profit from the attempt. When proficient let him make it by all means, if he considers that by so doing he will obtain it cheaper than by purchasing from a well-known house; but while learning the manner of using the chemicals, let him avoid dabbling in the manufacture of them as much as possible. It will be unnecessary for me to allude further to collodion, a paper on that subject having been, I believe recently read before this Society.

About the best material for a dipping bath is gutta percha; it should have a piece of wood attached to the back, to prevent its bulging out and rendering the glass plate liable to be thrown off the dipper. It is well to be provided with two dippers, so that in case of accident the plate may be fished out without loss of time; a piece of stout cane with a slit at one end is a very convenient instrument for the purpose. A new bath of gutta percha should never be used until well seasoned. This is effected by filling it with a weak solution of nitrate of silver, which is allowed to remain in it for a week or so, or until required; it is then well washed with rain or distilled water, and it is fit for use. It is decidedly false economy to use a bath only just large enough to contain the plate. With so small a quantity of solution it rapidly gets out of order, and is the source of much annoyance to beginners.

I may mention that the Council of the Society of Arts have just appointed a Committee to direct the institution of a series of experiments in gutta percha, with reference to the nature and causes of its decay, &c. The Committee invite the co-operation of those who have had any experience of it. Perhaps some of the members present may have made experiments or observations touching the action of nitrate of silver upon that substance, in which case the Committee would be happy to receive any information on the subject. The queries to which replies are solicited will be found in the *Journal of the Society of Arts*, April 16th, 1858.

The bath should be of the strength of thirty-five to forty grains of nitrate of silver to the ounce of water, and should be saturated with iodide of silver to prevent it attacking the plates when immersed in it. It can be prepared as follows:—

Nitrate Silver, re-crystallized, and free from nitric acid..	1½ oz.
Distilled water....	2 "

Dissolve.

Iodide potassium....	6 grs.
Distilled water....	1 oz.

Dissolve.

Pour the solution of iodide potassium into that of silver—the precipitate of iodide of silver formed by the interchange of the bases will be almost immediately dissolved—then add seventeen ounces of distilled water (making twenty ounces altogether, imperial) to the mixed solutions; the iodide of silver, by this addition, owing to its insolubility in water, will be re-precipitated in the form of a fine yellowish powder. The bottle containing it must be kept in a warm place for twenty four hours or so, occasionally shaking it, or until the greater portion of the iodide has again been re-dissolved. The bath will now be almost completely saturated with the iodide of silver; however, it will still attack plates immersed in it, and to prevent this injurious effect upon the sensitive film, either a small portion of iodized collodion must be pured into it, or, if preferred, a large glass may be coated with collodion and plunged into the bath, in which it must remain until the film looses its opacity and becomes quite transparent. Fresh collodionized plates must be added until, on being left five or six hours in the bath, the film is but very slightly attacked by the solution. A bath seldom gets into thorough working order until it has been used for a few days. The pictures at first are generally hard, and the semi-tones are not as perfect as when the bath is a little older. It is well not to try any more experiments with the bath than can be avoided. When it becomes old and insensitive, and the film produced slips about on the plate, the better plan is to reject it entirely, and convert it into a solution (with the addition of a fresh quantity of nitrate of silver) for sensitizing the positive paper. A renovated old bath will never work nearly as well as a new one, and the old solution answers very well for the purpose above named.

The developing solution is made as follows:

Pyrogallic acid....	4 grs.
Distilled water....	4 oz.
Acetic acid....	1 dr.

Dissolve.

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* Continued from p. 205.

From the Liverpool Photographic Journal.

HONEY PROCESS.

Darlington, May 7, 1858.

To the Editor of the Liverpool Photographic Journal:

Dear Sir:—I was induced, by your clear instructions to "Vale Salve" on the honey process (No. 7, vol. ii.), and also from seeing Dr. Holden's (Durham) pictures by the same process, at the exhibition in the S. Kensington Museum, to try my hand at it on Easter Tuesday last, but, from some mismanagement on my part, was not so successful as I could have wished. I used Horne's *dry* collodion, and pure honey solution, as directed, and slightly acid bath, which gives clear pictures by the wet method. The plates were prepared and finished in one day. I was disappointed by their requiring so long an exposure. With a sixteen-inch view-lens, three-quarter-inch stop, in working Taupenot's process last summer, I obtained tolerable pictures with five minutes' exposure; and yet, under similar conditions with honey, the negative of the print enclosed was exposed seven minutes, and, independent of the long exposure, could not develope the honey plates clearly. A negative by collodio-albumen, when laid upon a sheet of white paper, has the deep shadows quite transparent, which, I imagine, is the correct appearance of a good negative; *but with the honey there is a deep deposit all over, and the sky being very thin prints through, it seems under exposed.* As the detail in the deep shadows is imperfectly rendered, can you suggest a remedy? It is perhaps, a bad plan to change from one process to another. Taupenot's has produced good results in my hands; and I imagine all we read about its being complicated, troublesome, &c., is more imaginary than real; with ordinary attention the plates are easily prepared, and to me much more certain than by any other keeping process. One reason for trying honey was, I expected to obtain a film very little less sensitive than wet collodion. Can this be done? If you could give me any further hints in this direction I should feel obliged. In working with the above mentioned lens, sunlit view, most sensitive honey film, what exposure would you give? and how much more in a diffused light? Although an admirer of collodio-albumen, I do think the promoters of it very much over-rate its sensibility. I find it two or three times slower than usually stated; have also found the same with Long's process. Is the *dry* collodion suitable for the honey process? A friend sent me a sample of pyroxyline the other day for dry collodion made by Mr. Berry, of Liverpool; he says it will not take a picture by the wet method. I dissolved it in three parts of ether to one of alcohol, three grains to the ounce. A portion fell to the bottom, and on shaking up did not dissolve. The spirit was very pure, obtained from Horne's. Am I right in so doing? I would just trouble you once more on a subject which seems to present an obstacle to amateurs: it is the washing of dry collodion plates. Some recommend copious washing, others merely float the silver off the surface with the first coating of gelatine. Is the latter plan equally successful? Is evidently less troublesome. Does long washing interfere with the sensibility? It seems a disputed point, and one that ought to be set at rest. If you would kindly state your opinion on the above queries, it would be a boon to many amateur photographers, besides a

DARLINGTONIAN.

P. S.—It is generally recommended to use very old collodion for Taupenot's process, but I find it possible to keep it till it is too old. I used some the other day a year old, very dark color, which I partly removed by inserting a strip of zinc; but it seemed muddy, not so bright as new collodion; and when sensitized gave a dull opaque film, which seems liable to crumble off the glass when fixed and dried. Would it do to mix with new collodion?

[We think your picture has been very much *over exposed:* hence the weak sky and the fogginess of which you complain, the latter compelling you to check the development before the details in the deep shadows are sufficiently intense, and obscuring them when printed; that they are there, however, is sufficiently perceptible by examining your proof by transmitted light. If prepared as we directed with such a lens and aperture as you describe, an exposure of from two to three minutes in sunlight at the present season would be ample, while with diffused light from three to five minutes might be given. We have been working recently in this way, and not exposing for more than one-and-a-half to two minutes. We prefer more alcohol than you have used to make collodion, say five parts ether, three parts alcohol, and not less than five grains of pyroxyline to each ounce of solvent. It is very rare to find a sample of pyroxyline that does not leave some slight sediment; and we find practically, for syruped plates, that an admixture of the *stringy* kind of collodion (as exposed to the powdery), in the proportion of one of the former to two of the latter, is preferable. There is no doubt whatever about the fact that for *dried* plates *(not syruped)* you cannot wash them too carefully and completely. We think your old collodion very likely to be adapted for mixing with new for your collodio-albumen plates. Try a small portion as a sample, say with equal bulk of new. —ED.]

For the Photographic and Fine Art Journal.

NEW ORLEANS PHOTOGRAPHIC GALLERIES.

MR. SNELLING:—Having resided the past season in New Orleans, and been a close observer of the photographic artists of that city, and of their galleries, I have noted down some observations which may interest your readers.

J. H. CLARK's Gallery at No. 94 Canal Street, deserves especial notice from the good display of plain photographs, and those in water colors. The latter are deservedly fine, as Mr. Clark possesses the best water color artist in New Orleans, His photographic artist was in E. Jacob's employ for some months, and Clark bids fair to rival all other galleries, as his reputation is constantly on the increase, and his facilities keep pace with his reputation. Only photographs and ambrotypes are taken at this gallery.

ANDERSON & BLESSING's Gallery, No. 134 Canal Street, produces the largest photographs from life in New Orleans. Their ambrotypes are rather inferior to those in other galleries. Connected with the gallery is a depot for the sale of materials for the art, and their trade in this line is considerable. These rooms are well furnished, and every convenience for the production of good pictures, and there should be no reason why they should not excel in their profession.

F. LAW's Gallery, corner of Camp and Canal Streets—formerly Moissenet's—is confined exclusively to daguerreotypes and photographs. Their quality is not, however, the very best. At this gallery the celebrated Hallotypes are made by an *exclusive right.* This corner now has been long known as a Daguerrian Gallery, and its old established reputation should not be allowed to wane under the hands of Mr. Law.

Mr. W. W. WASHBURN, Canal Street, has a finely furnished gallery, but few specimens. Such as are to be seen are mainly good ones, and consist of ambrotypes. He takes no photographs. This is not right. As Washburn was formerly a New York operator, he should not allow others to excel him in the higher branch of the photographic art.

DOBYNS & HARRINGTON, corner of Canal and Camp Streets. I called at this famous old stand of these distinguished artists, and found, much to my surprise, a sign with T. A. GRAY's name thereon. From the extensive display at the door one would infer that the work up-stairs would excel all others in New Orleans; but on viewing the specimens on exhibition, I was more surprised to discover that they were the productions of Mr. BRADY, of New York, from the fact of the mats being stamped with his name—indicating that New York Ambrotypes were preferred in New Orleans instead of their own work. I also discovered here a solar camera, but it was laying perfectly useless amongst the rubbish of the gallery. Although Mr. Gray was so loud in the praises of this camera, and his ability to work it successfully, I was astonished to learn that he could not succeed with it. If he possessed the requisite photographic skill he certainly should not have allowed so valuable an instrument as the solar camera to remain idle.

E. Jacobs, 93 Camp Street, has a magnificent display as a Gallery of Fine Arts. In reality, it is more a gallery devoted to the exhibition of splendid Oil Paintings by the old masters, than a Photographic Gallery. He has imported a large collection of rare works from Europe at a considerable expense, and takes much pride in the display. His attention is consequently directed from the art photographic. Consequently all his specimens are the productions of Northern operators, whom he has employed from time to time at stated salaries, which he has in many instances refused to pay, when the work has been well executed. This, of course, will bring discredit on any establishment, however superior it may be in external appearances. Mr. Jacobs has only a few oil portraits, and these no larger than cabinet size. The credit of these are due to the artists he has employed to paint them, not to any photographic skill which he possesses; and I observed that all the specimens, both of ambrotypes and plain photographs, were made by the successful artists he has employed from the North, and who have left him with many regrets, on account of the non-payment of their salaries, that they ever were engaged to him as operators.

C. Galvani's Gallery, 103 Canal Street, is devoted exclusively to the sale of old and modern paintings. Connected with this business Mr. Galvani devotes much of his time to painting photographs in oil and water colors, in which department he excels; and he deserves much credit for his skill in the productions of his pencil, as evinced by the display in his gallery.

Besides the galleries above mentioned, there are several small affairs in Camp and Poydras Streets, mostly conducted under the name of Moses (surely an Israelitish name). The pictures displayed in these diminutive establishments are, of course, no credit to the art, but rather bring discredit on the profession by the low prices and the still lower character of the pictures. If your valuable journal was more extensively read, and its teachings observed the style of photographs at the South would be greatly imyroved. The only place in New Orleans I could find a copy was at Clark's. His pictures are consequently more in accordance with the improvements now known in the art.

Yours &c.,
R. A. C.

From the Photographic Notes.

PREPARED PAPER BOX.

Every photographer who has had any experience in positive printing must have suffered from the annoyance occasioned by excited chloride papers becoming discolored by keeping. It is customary to excite papers in the evening, in hopes of being able to use them on the following day,—the weather looks promising perhaps, and five or six dozen sheets are excited, and hung up to dry,—but next morning, perhaps, turns out cloudy or wet, and successful printing is impossible, so the papers are taken down and put away in a portfolio, there to remain until fine weather returns. Or, possibly, in this unsettled climate of ours, the glass may be low and the weather threatening in the evening, and no papers are prepared,—while the next day turns out all that could be desired for printing. These are among the drawbacks to the pleasures and profits of photography. Now an ingenious French gentleman, M. T. Cognacq, of La Rochelle, professes to have found a remedy for the evil. He has invented a box which can be closed air and light tight, and in which he says sensitive chloride papers may be preserved in all their original whiteness and purity for an *unlimited time;* and in proof of the assertion he offers to enclose any number of sensitive papers, marked in such a way as to be known again, and to produce them at any future time, when required, in their original good condition. This really appears to be a valuable invention, and if our readers wish to procure one of these magic boxes for the indefinite preservation of sensitive chloride papers, we refer them to MM. L. and H. Wulff, 57 Rue Charlot, Paris, who are appointed agents for the sale of them. The price varies from 60 to 80 francs, according to the size. It will be understood that the papers are said to keep as well after exposure under the negative, as before, so that the operations of fixing and toning may be deferred "sine die."

OUR ILLUSTRATIONS.

With this number we give four illustrations, not having been able to get sufficient paper to finish the pictures for July.

I.—MR. H. WATKINS as Wandering Walter, in the Drama of the Maid of Penrith; by T. Faris.

II.—NIGHT; by Whipple & Black after Thorwaldsen.

III.—GENESEE FALLS, with Rochester in the distance and the scene of the Little's murder in the foreground; by E. T. Whitney.

IV.—A PHOTO-LITHOGRAPHIC HEAD; by Cutting & Turner. (See article *Photo-Lithography* in another page).

We shall not stop to describe these pictures at present, but may give a general sketch of Thorwaldsen's at the close of the series. Mr. Whitney has sent us the following communication in regard to his picture.

Rochester, July 16, 1858.

Friend Snelling,—According to your request in the Journal some time since. I send a brief outline of facts concerning the murder of Chas. Littles, as published in the Rochester *Democrat*. The exact spot where the deed was committed, is the highest point of land in foreground, near where a man is standing in the picture; alongside this fence is a narrow path on which the parties walked to the fatal spot. About five rods from the precipice the first pool of blood was found, and about ten feet further another pool. On this spot a dreadful struggle must have taken place before the bloody deed was accomplished. Here was found the arm of a chair used (as is supposed) to accomplish the deed; from the level of the spot described, to where the body struck when it was thrown over, is about fifty feet (where another man is standing leaning on the rocks); and from thence it was dragged in a straight line to the water over 100 feet, most of the distance being a steep bank down which the body may have rolled with but little assistance: all the way down a bloody track was visible, the night was exceedingly dark, and in the struggle all three went over the bank together, Ira Stout and sister each breaking an arm and being severely bruised.

It is with great difficulty that the river can be reached from the spot described; the path is steep and the descent by daylight requires care; down his bank was found the victorine worn by Mrs. Littles, and in her hair next morning were found burs, such as grow thereabouts. This is about the substance of the description as given in the *Democrat*, December 21, 1857.

With the result of the trial of Ira Stout and Mrs. Littles, no doubt all are familiar; the former was to have been hung July 18, but has been granted a new trial, the latter was convicted of manslaughter and sentenced to the State Prison for seven years.

Those unacquainted with Rochester, need to be told that the river and falls divides the city in the centre. Just above the falls is the R. R. Bridge of the N. Y. Central; on the west (or right hand side in picture) is the R. R. Depot; above the bridge on either side is the business part of the city. Several years ago, a beautiful island was in the centre of the river just above the falls, and forty-five years ago, all around was a howling wilderness infested by none but beasts of prey and the Red Man of the forest.

Rochester now contains 50,000 inhabitants and growing rapidly; the river gives immense water power; all along its banks are the famous flouring mills of the Genesee, and manufactories of various kinds. It was at these falls Sam Patch lost his life; at low water there is a rock in the centre of the river, there, on a scaffold 25 feet high, he made his last fatal plunge; his body was found some days after in the river near the Lake seven miles below; below these falls about 2 miles is what is called the Lower Falls, a most beautiful and romantic spot, far surpassing the Upper in natural beauty; below these falls the river is navigable for large vessels to and from Lake Ontario, which is five miles below, winding along between banks from one to two hundred feet high, reminding one of the Hudson at the Highlands.

I cannot close this article without paying a tribute to the genius of one of our townsmen, who has invented a new style of negative bath, which I have used the last two years with good success, I allude to Kellogg's Patent Flowing Bath; the amount of silver used for cabinet sizes is only one ounce, that is sufficient to make a good many; this is very convenient when making views, I take a small tent, have my glasses cleaned only on one side, after collodionizing, secure it in the bath, and then by tipping the bath with a steady motion get a perfect even flow of silver over the entire plate; after a minute or two the plate is ready for the sitting: if my bath is spoiled or lost, a few minutes and a few shillings will give me a new one, and by it you dispense with a twenty or thirty ounce bath, dippers, dirty fingers, &c.

A few words about cyanide of Potassium and I have done. You know how I have been afflicted the last year and laid aside from business over twelve months; when I returned this spring to my rooms, I was advised by a distinguished chemist of your city, Dr. Geo. H. Smith, to dispense with the cyanide. For the first month I disregarded the advice, and the consequence was that I speedily got back to my old troubles, nausea at stomach, weakness in the eyes, loss of sight, and swimming of the head; I finally concluded to follow his advice, and since then I have resumed my place in the operating room and make sittings as formerly, and my health is almost entirely restored. Please make a note of this, and correct as far as possible any erroneous impressions that others may have formed from an article you published a few months since, in which a certain M.D. says it is harmless; and I am fully satisfied that it is hurtful and every photographer should know it. It should not be used for cleaning the hands even, for it gets in the blood, and to some persons it is very poisonous.

Yours truly, E. T. Whitney.

The formulas for printing were as follows:

SALTING.

Water	1 gal.
Common table salt	180 grs.

SENSITIZING.

Nitrate of silver	438 grs.
Water	16 ozs.

Four ounces poured off after solution; precipitated and redissolved by ammonia, and the 4 ounces poured back and filtered; then 7 drops nitric acid are added.

TONING AND FIXING.

Water	1 gal.
Acetate of lead	640 grs.
Chloride sodium	760 grs.
Hyposulphite soda added till clear ; then	
Acetic acid No. 8	2 ozs.

Washed in running water twelve hours.

From Photographic Notes.

URANIUM PRINTING.

Mr. Haudoy, of Lille, has introduced an improvement in the uranium printing process. The paper is first prepared with gelatine and nitrate of uranium, then dried, and exposed in the pressure frame, the time varying from 1 to 15 minutes; the picture, faintly visible, is then intensified or developed with aceto-nitrate of silver of the usual strength for paper negatives; in 30 or 40 seconds all the details should appear; the print is then placed upon the surface of the following bath:

Water	100 parts.
Proto-sulphate of iron	6 "
Acetic acid	4 "

This gives great vigor to the print, and brings it out upon the surface of the paper. The color is then a deep sepia, but may be changed to a black by washing the print, and toning it with chloride of gold, strength, half-a-grain to the ounce of water. The iron bath is very energetic in its action, and the print must be watched when placed in it. Uranium prints developed with silver appear sunk in the paper, and look better by transparency, but by treating them with iron they are brought out upon the surface, and look better by reflected light.

From the London Art Journal.

GIOVANNI BELLINI.

The rise of the art of painting at Venice, about the middle of the fifteenth century, it is remarkable, was not until more than a century and a half after its rise at Florence; and at the time when the painters of north Italy were making their earliest efforts to break through the mediæval trammels, the Tuscans had advanced almost to their highest excellence. Fra Angelico, so much revered as the master of seraphic expression, and Masaccio, who, enlightened by the Florentine sculptors, at length introduced well shaped, ably-limbed humanity into pictures—a most tardy improvement—both died about the time when the painters of the lagune were only just beginning to infuse some life and bloom into the old traditionary Byzantine forms, with aid derived, not from the Florentines and Siennese, but first from the ruder and more homely early schools of Germany, and secondly from certain hard and crabbed notions of the antique which were beginning to be taught in the neighboring city of Padua At an age when Giotto had long before adorned almost every quarter of Italy with his most vigorous and pathetic conceptions full of dramatic expression, and with allegories replete with beautiful serious wit and sapient fancy, and his successors had produced many a long poem of the pencil, deeply imbued with the favorite mystical theology of the age, or awful with Dantesque power, the Vivarini of Murano—as if Venice had meanwhile, in her island seclusion, been wholly ignorant of these grand and most intellectual works, or rather as if, with her characteristic jealousy, she had turned her back wilfully and resolvedly on the example and teaching of the Italian *terra firma*—commenced with monotonous single figures of saints, standing apart from each other in Gothic panels, such as are characteristic of the earliest period of Art. And in their more ambitious efforts they contented themselves with an occasional Coronation of the Virgin, in an antiquated half-German and somewhat rustic style, or some very quaint and feeble representation of more active events, painted on a diminutive scale, and inlaid in the gorgeous frames of their more important works, like illuminations in the border of some old missal. The chief interest in their works, so soon as they show any—although religious tenderness of expression is not altogether wanting in them—derives itself, not from any tendency to ideal grace and unearthly sanctity,—such as characterises the similar subjects painted ages before by the Tuscans,—but from a portrait-like individuality of character, leaning towards ordinary life; and, above all, a soft, delicate, and rosy dawning of that beautiful and magnificent coloring which became the distinguishing glory of Venetian Art.

A succession of the Vivarini extended to the close of the fifteenth century; and the works of the latest of them, Bartolommeo and Luigi, display a rapid advance in this soft and splendid coloring, and in the liveliness of their saints; but their progress seems to have been derived in a considerable degree through the example of a second independent school of painters which had meanwhile arisen in Venice—that of the Bellini. The founder of this second school, Jacopo, chiefly known by his studies of the antique at Padua, under Squarcione, was not a painter whose abilities call for extended notice: but his second son, Giovanni Bellini, is one of the most venerated names Art has to boast of; for he it was who raised the devotional spirit of Venetian painting to the utmost height it ever attained, and also carried forward many of its more purely technical merits to an excellence so appropriate to his class of subjects that his scholar, Titian himself, could not, in that respect, have equalled him. Not only have his saints more tenderness, and pious fervor than those of any other Venetian, but the colors in which they shine forth are unrivalled in clear strength by those of any previous Italian painter; owing in some degree, perhaps, to a study of the Van Eycks, but far more, I believe, from Van Eyck's medium of oil, which he was the first Venetian to adopt, enabling him to produce richer and more transparent tones than the former method of *tempera*, and so more fully express his own notions and feelings with regard to color. In grouping and composition likewise, Bellini introduced the first essential improvements. He led the way in breaking down those Gothic partitions between the solitary saints; by that means enabling them to meet and look tenderly on one another, and, by-and-by, assemble round the throne of the Madonna in those orderly but dignified groups called *Santi Conversazioni*, which constitute the chief charm and attraction of the purely devotional painting of Venice.

These groups supply, assuredly, some of the Venetian recollections on which you are apt to linger with the most delight, for ever afterwards. The prow of your gondola strikes against the weedy steps of some church, which is shabby enough in all conscience exteriorly,—an unfinished rubbishy brick façade, perhaps; and the dingy black veil hanging across the portal is lifted up by some equally shabby and sometimes almost idiotic-looking, neglected youth; but within, even in the midst of meanness and obscurity, a picture of a most rare splendor and preciousness may dawn and brighten before you, such as you will never forget, if you have any heart or memory for such things. A group of saints of a dignified and holy aspect, standing around the enthroned Madonna, within a niche of some resplendent temple, or surrounded by some landscape serene and heavenly-peaceful as themselves, is before you, making "a sunshine in a shady place," with glorious hues of crystaline, *spiritual* purity, glowing with an internal light, and therefore admirably suited to the beautified condition of the sacred personages whom they irradiate; and still more movingly are the shady tribunes lighted up with the gentle looks of just and reverend men made perfect, and there fascinating you with the loveliness of a calm religious peace. Defects the work perhaps has, for it was produced at an early period, when drawing had been but imperfectly cultivated; yet it is undeniably a holy vision for all that. They could not—those early painters—draw feet and hands by any means adequately; but some of the purest and most sacred emotions of the soul they could draw, in their happiest moments, profoundly and quite marvellously. The architectural backgrounds (usually an apse or magnificent altar-niche, where these gentle-eyed personages, as in the intermediate Paradise, seem calmly awaiting their final glorification) are painted in a consummate manner, amounting almost to the appearance of clearest yet deep-toned reality: and they are especially fond—these devout, tender-hearted old masters, Giau Bellini, Vittore Capaccio, Firolamo Sante Croce, and others—of introducing infant angels playing on musical instruments with naive assiduity, at the feet of the enthroned Madonna, or with an artless serious simplicity which is inexpressibly beautiful and touching. Their harmony is evidently ministering to the sweet and solemn thoughts of the saints who stand above; and its tones are not unheard by the soul of him who gazes at the picture, although unrecognized by his mortal ear. Those little earnest Bellini-musicians will often revisit the memory, always piping some persuasive strain in honor of innocence, and gentleness, and peace: and at the feet of the Infant Redeemer are sometimes placed a few fruits or flowers,—beautiful simple things which had conciliated the affections of the painter, and seemed to him not unworthy of being offered in that holy place.

The first picture of this class by Bellini I met with at Venice is in the Academy, in the same room with one of the freest and most brilliant triumphs of his great scholar—"The Assumption of the Virgin." The fastidiousness of critical writers of an ascetic turn, has been prone to hint slightingly of that glorious work af Titian's, whose liberal heaven, full of blooming joy and sweet healthy human tenderness and innocence, there honored and exalted, it is nevertheless truly refreshing to contemplate, even as a relief, after reading their mongrel compositions, made up of sour bad theology and rambling fancy. I cordially admire that work of Titian's. It is a delightfully humane and cheering conception. Yet we can admire Bellini's melancholy tone of piety in this picture too, *as an amiable weakness;* or rather as a feeling of short duration, justified by some real intelligible sin or affliction, and not by any means a mood to be encouraged or permitted long. Nay, we think it is rendered even more striking by the contrast with Titian's blooming heaven, from which every trace of ascetic care is so properly judiciously, and amiably banished. The work we are now approaching was formerly an altar-piece of the Church of St. Job in Venice. The Madonna, with the Bambino on her knees, is enthroned under a superb golden semi-dome or alcove; "San Giobbe," St. Sebastian, and two sainted monks, standing in sorrowful and indeed somewhat lachrymose piety about her; whilst at her feet are seated three of those draped girl-like angels, playing on lutes and a viol. Present picture is an admirable one, though not quite a first-rate Bellini. On approaching it, you are at once hushed into a deep respect by the very atmosphere of contemplative, cloistered religious feeling which you are breathing, and it is some time before you descend to think of the magnificent but reverential elaborateness of the painting. Considerable remains of the old feebleness and meagre stiffness there are, it is true, in the drawing; but otherwise the painting is generally soft and delicate, the coloring especially meritorious, of a tender subdued warmth, beautifully clear and harmonious, animated throughout by a mild glow. The niche around the throne, with its golden semi-dome, mosaiced with Byzantine cherubin, exactly like some in St. Mark's is, characteristically of Bellini, quite magnificent in its apparent solidity and warm transparent tone. The attendant saints, as frequently with the painter,—are, it must candidly be admitted, somewhat monkish and mawkish in their melancholy devoutness; but for this it looks as if truth and nature, or rather the mistempered piety under the eye of the painter, were justly responsible; for the faces and expressions have all the air of real truthful portraits. The pity is that Bellini had not better models, and that he had not here learnt—as in his last and greatest works, accomplished at a marvellously advanced age—to represent through combined imitation and feeling, a more manly, noble, and beautiful expression of devoutness. But be this as it may, no one can doubt his perfect sincerity and tenderness of feeling, up to the measure of his light; and these it is which give a deep and edifying charm and fascination to the present work, notwithstanding its shortcomings. Bellini's pictures do not often display any very intense appreciation of physical beauty. The Madonna here, one of his most pleasing, is a some what interesting woman, not much above the ordinary kind, rather heavy in her form and languid in her looks. Yet a sweet feeling mildly animates her; and she is very softly and beautifully toned and painted. One of the girl-like angels beneath her, playing on a lute, has, perhaps, the prettiest face to be found in the painter's works; but that of another tends too much to the reverse. Lovely nevertheless in feeling are for the most part these innocent young beings, seated at the feet of the venerable Sanctities, and soothing you, both at first and whenever afterwards you think of them, with their looks and with their spirit-heard airs of their viols and mandolins.

Eventually it came to pass that one of our favorite pursuits at Venice was Bellini-finding. Yet, in the first instance, I am bound to say, the works of this painter disappointed us. The picture just described is by no means healthy-minded in expression; and his other productions in the same collection (small ones of subjects similar, with half length figures) are likewise disagreeable, from the same monotonous defect of a morbid melancholy devoteeism, expressed not unfrequently in visages so ill-favored as to be altogether the reverse of pleasing Haughty or sickly looking Madonnas, sometimes with weak eyes and disagreeable countenances, Bellini evidently passed lamentably too much of his long life in painting, holding up before them Bambinos, now and then *extremely* ugly, for the adoration of lackadaisical old sants, whose piety seems to be of the most vapidly sentimental kind, and younger sanctities quite dully woe-begone; these pictures being chiefly distinguished from those around them of the same period by the greater force of the coloring, which is commonly tempered by fine sober greenish tones. But with regard to the subject and expression, religion here seems to have but one idea, and that idea, like even the very highest and best when entertained too long, becomes deadened and diseased from constant repetition. Madonnas and Bambinos continually required by the priesthood, and continually limned by the painters, become at length—it is here abundantly evident—very incubi on the imaginations of the latter; oppressing them most drearily, till all freshness and healthiness of feeling and conception being worn out, the lugubrious insane result becomes most cloying and wearisome to the beholder. These were the inferences which, with much unwelcome violence to our predilections, we coul l not escape from, after passing through long galleries in the Academy, abounding in the minor devotional pictures of that "serious and loving man," Gian Bellino—as Mr. Ruskin calls him—and his followers; and indeed we went away (absolutely we could not help it) with a mortifyingly prevalent disinclination for his works. But soon a change came over us, and this feeling was utterly reversed. To account for so sudden an alteration in our views, we must now explain teat we had not yet seen those three pictures of his which display conceptions so incomparably more beautiful, elevated, and touching than any of the others, that on first seeing them, you would, perhaps be tempted, in the true spirit of some graceful sentimental lady-critic, to entertain for a few moments the fancy that the painter's guardian angel, pleased with his good and devout intentions, and compassionating his partial deficiencies of power, had here verily and indeed guided his hand, and so done the best part of his work for him.

The first which we saw of this matchless triad was the picture in the Church of Il Santissimo Redentore, on that long narrow island to the south of the Canale della Giudecca. The morning before we first went there was cold, wet, and gloomy. No; by no means is it always sunshine and warmth in this soft Italy. The rain-drift threw quite a dim grey veil before the doomed Church of Our Lady of Safety, close opposite; and the mouth of the Grand Canal was roughened with waves, brown, turbid, and stormy, which required a far longer stroke, and far more vehement forward movement than usual on the part of the gondoliers, whose craft continued to shoot along extraordinarily fast, considering the impediments with which they had to contend. But what most struck me was the entirely altered appearance of the men themselves, all equipped for the weather, in high-crowned hats and long dark coats, which, reaching to the ankles, reminded me at once of my old acquaintances, the tall dismal-looking peasants of Tipperary: indeed nothing could correspond less with one's usual notions of a Venetian gondolier. The whole scene, in point of gloom and chilliness, was not unworthy of England, not unworthy of the Thames itself—*so long as it lasted;* but how different in its short duration, and in the complete oblivion of it which smiled through all the serene air within an hour or two afterwards! That which with us at home commonly remains so long, and at last quits us as slowly and gradually as care itself, lingering for days in heavy sullen shades and damps, here rolled off at once in clouds bright and solid as the silvery domes beneath them, huger than accumulated piles of snowy alps, yet swift as victorious bannered hosts hastening away with joy and glory to receive the gratulations of their friends, their queen, and country. During our stay at Venice, at any rate, thus it was the very little wet and gloomy weather came and went; coming as if simply for the benign purpose of giving Venice a thorough right good washing; and having accomplished that object in an hour or two—and in so doing no doubt subdued in the narrower canals and purlieus a thousand smells, a thousand germs of epidemic malady—departing magnificently, cheerfully, utterly; leaving no sign of its visit except a yet purer softer blue in the heavens, a delightful lightness and freshness in the air, and sometimes (we have seen it once) an apparent *lake* in the piazza or grand square in front of St. Mark's Church, in which the cupolas and glistening mosaics, and the groves of variegated columns of that Oriental Pageant of a building, are reflected for a brief space, smoothly and vividly as in a burnished mirror. This beautiful effect, it is said, sometimes occurs in the most complete perfection during the full flow of the spring-tides, when the gondolas glide about freely in the square, and deposit their inmates at the porch of the mirrored basilica itself. But I am forgetting the Bellini. The Church of Il Santissimo Redentore, which contains it, is a thank-offering for the remission of the plague which carried off Titian; and its notable inferiority in size and costliness to the opposite one dedicated to the Madonna on a similar occasion, is alluded to by Mr. Ruskin as illustrating neatly and appositely enough, the comparative estimation in which the Redeemer and his Mother are usually held in this part of the world. Nevertheless, Il Redentore was pronounced by Palladio's admirers of the by-gone days to be his finest church; and even such men as Beckford and Goethe, carried away by the fashion of their age, praise it ridiculously, hailing it with rapture as an object most conducive to graceful classical impressions. But it really seems marvellous that it was so admired; for what can be more unmeaning and awkward than a pediment supported by pilasters, with lower down, the ends of another pediment sticking out on each side. It is as if two façades had been shuffled, or inlaid, into each other. The composition, on the whole, reminds one much of the houses which children build with cards. The interior with its handsome Corinthian columns, and cold and bare proprieties of proportion, might perhaps have formed a tolerably appropriate rotunda for some Roman prætor to dispense justice in; and the niches around are, it may be, not altogether unworthy of receiving statues of some of the philosophers and rhetoricians of the declining empire; but certainly any figure more graceful and poetical would be ignobly placed in them, whatever Goethe and Beckford may have fancied and eloquently advanced to the contrary. Christian sanctities are, of course, wholly out of place there.

In the sacristy is the first we met with of the three first-rate Bellinis now remaining in Venice, a somewhat small very simple picture of a half-length Virgin with the infant Saviour lying in her lap, and two infant angels sitting beneath, playing on lutes. It is indeed an exquisite work. The Madonna, with something of the old Byzantine stiffness, is nevertheless highly impressive, as she sits solemnly with downcast eyes and palms together; but the two little cherub lute-players, for a truly touching infantile simplicity, are absolutely, and without any exaggeration at all, little wonders. Yes, it is quite evident here at once that old "Zuanbelin" was, in his happiest moments, one of those wizards of the brush who could stir up from their sleepy beds some of our very deepest and sweetest feelings. It is, I verily believe, to these identical little cherubims that those in Raphael's Madonna di San Sisto are so thoughtfully listening, as they lean on the threshold of heaven's court; but these, I think, in their simple, serious, artless childishness are even lovlier and more affecting. I not remember in Art any figures of the kind more thoroughly exquisite. The one who sits to your left, looking before him, and seriously touching his mandolin, is more like a simply human child; the other, throwing up his eyes rapturously, is more cherubic and heavenly. Their lovely strains (lovely no doubt) have drawn thither a goldfinch, who quietly perches on the top of a green curtain hanging behind the Madonna: and to complete this most simple composition in that exquisite way so characteristic of these tender-thoughted early masters, three cherries, peaches, and two pears, painted with the most affectionate delicacy, lie scattered on the sill at the foot of the picture. Some innocent child has left them there for a loving gift or offering. I should humbly imagine little "San Giovanni Battista."

From Photographic Notes.

MACCLESFIELD PHOTOGRAPHIC SOCIETY.

At a numerously attended Meeting of the above Society, held on June 2d, the following paper was read by Mr. W. B. Osborn, Treasurer of the Birmingham Photographic Society:—

"THE DRY COLLODION PROCESS."

Mr. Chairman and Gentlemen:

Feeling duly impressed with the honor you have done me, in requesting me to read a paper before you this evening, an honor more prized because bestowed at the opening Meeting of your Society, thus giving me an opportunity of making your acquaintance at an early period of your history as a Society, and enabling me, I trust, to be of service to you in giving you the result of my experience in a very delightful branch of the fascinating art, of which we are all disciples.

The Process which your Secretary has kindly pointed out to me, as likely to prove of interest to you, is fortunately a process to which I have devoted considerable care and attention during the past year; and, from a series of careful experiments, I feel convinced that it is at once of high utility to all classes of photographers, and that Dr. Hill Norris' Process, (the one I am about to introduce to your notice), is the simplest, cleanest, and most successful Dry Process now extant. To this gentleman is due a very large amount of praise, for the liberal manner in which he has given the results of his arduous labors to the world; and I shall endeavor this evening to explain the *modus operandi* of this exceedingly useful adaptation.

The advantages of this process will be obvious to all who have ever worked collodion in the open air. The perfect freedom of action is a great charm to any one who has been tortured with the portable and convenient tents, so light that one person *may* carry them while it inevitably requires another person to carry the remainder of the apparatus, so that extreme portability is not attained in this way. I have tried all ways, full tents, demi-tents, &c., &c., and had I not been enthusiastic in the pursuit of Photography under difficulties I should long since have given up out-door Photography as hopeless. The stifling sensation of a tent on a hot summers' day are anything but pleasant. Besides, I was quite disgusted on one of my excursions with a tent, by the advent of a crowd of urchins running after what they were *pleased to call* the *Punch and Judy man.* I next tried the manufacture of a portable developing Box, and in this I flatter myself I was tolerably successful, because I could carry all I wanted myself. However, this soon became a bore, and, although the box is light, the whole of the apparatus is heavy, so after many trials I took to the Dry Process.

I shall of course presume that you are all acquainted with the Wet Negative Collodion Process, so that I shall spare some of the details that I might feel bound to give to mere tyros in the Art.

With your permission we will just glance at the *rationale* of this Process.

I might here suggest that if Amateur Photographers would as a rule, examine the *rationale* of any new processes submitted to their notice, and convince themselves that they were based on really correct and scientific principles, before venturing upon actual experiment, they weuld save themselves much time and trouble as well as unnecessary expense. A great number of the formulæ often published in the pages of the Journals are empirical and useless, and when tried can only end in disappointment and failure.

The manipulation of Dr. Norris' Dry Process may be said to consist of 9 distinct operations, viz.

1. Selecting and cleaning the plates. 2. Coating with collodion. 3. Exciting. 4. Washing. 5. Pouring on the preservative solution. 6. Drying. 7. Exposing. 8. Developing. 9. Fixing. Being only three operations more than in the wet process.

First then, the Collodion. You are all probably aware that various samples of Pyroxyline possesses very different characteristics; some kinds are highly explosive; others are simply combustible, while others again are not explosive, and are only slowly combustible. This difference is carried out in the manufacture of collodion, some kinds being only sparingly soluble in ether, while others are abundantly so. Again, some kinds yield a fine thin glassy film; some a hard, horny, and strongly contractible film; and others a porous non-contractible and structureless film. It is this last kind—the powdery or porous sort—which is best adapted for the purposes of Dry Collodion. New Collodion, as a rule (except when made in the way I shall describe), is highly contractible and is very easily washed off the glass. The wavy lines so often seen in some collodion pictures are doubtless due to the contraction of the skin-like collodion when drying.

Collodion, when it has been kept some time, undergoes a change, and becomes porous and fit for using for dry purposes. This is generally the case, but not always, and those of you who have a stock of old collodion will be in a very good position to experiment with the process now before you. You may easily test any collodion by manipulating in the ordinary way, finishing, and washing; if, upon passing the finger across the film while wet it follows it like a piece of skin, and will allow of being nearly restored to its original position, *it will not do* for the puspose; but, if on the contrary, it crumbles up into a powder, and remains so, then it is quite fit for use.

Another method of testing is to pour a small quantity of the collodion into a glass of water. If the residue is stringy it will not do, but if powdery it will answer the purpose.

To make collodion *new* and fit for dry operations, great care has to be taken in the strength and temperature of the mixed acids in making the pyroxyline. The difference between a high and low temperature being very remarkable. The proper strength of the acids will of course vary in the different samples, but a good rule is to procure the strongest acids, and when mixed, add a portion of water, and raise the temperature to between 130° and 170° Fahrenheit. This will give you a fluid porous collodion, if mixed in the usual way with ether and alcohol.

I never recommend amateurs to meddle with making pyroxyline; it is a very uncertain thing and requires great experience. The collodion may be mixed as follows:—

Soluble cotton (as above)........	6 to 8 grains.
Rectified ether......................	6 drachms.
Alcohol absolute....................	2 "
Iodide cadmium.....................	6 grains.

Let it stand for a few days to settle. It improves with keeping.

The bath is the ordinary 30-grain nitrate of silver, and slightly, but *very slightly* acid.

The preservative solution is made by dissolving 80 grains of pure gelatine in 20 ozs. of boiling distilled water. Filter while hot through two thicknesses of bibulous paper. Then carefully boil down to half the quantity, stirring with a glass rod; when cooled put it into a bottle with $1\frac{1}{2}$ ounces alcohol, and shake it. It should be as clear as water.

We shall now proceed to work, selecting and cleaning the glass plate. The flatted *crown* glass is what I generally choose; it is nearly as good as patent plate. Take a file and run along the edges to prevent cutting the hands; then, with a Buckle's brush, dipped in nitric acid, rub over the plates on both sides; wash well in water and polish off with dry cloths and wash-leather. *Never use silk* handkerchiefs.

2. Collodionising the plates is accomplished in the ordinary way; so is 3. Exciting in the nitrate bath. We then arrive at an important operation.

4. Washing the free nitrate off. Upon taking the plate out of the bath drain upon blotting paper, and place the plate in a vessel of distilled or very pure filtered rain water; this should be collected in a vessel kept for the purpose—immediately after the first fall of rain—and not taken out of the water butt, as it

would most probably contain organic matter, which would insure the purity of the iodide of silver.

After the plate has remained a few minutes in the first dish of water, lift it out and place it in a second, then in a third, and lastly in a fourth dish; let it remain in each dish for two minutes. Repeat the operation with each plate successively and change the water for every three or four plates.

It is very essential that the free nitrate of silver in the film should be nearly all washed off, or at least reduced to the minimum, otherwise, should any remain, the plates will not keep so well, and are very likely to stain during development.

After slightly draining they are ready for the (5) Preservative solution. Place the bottle containing this in a saucepan or jug of boiling water. When hot, take the plate in the left hand, and pour out sufficient of the solution to cover the plate evenly. The operation is precisely similar to the coating with Collodion, only that in this you pour on at one of the corners and slightly tilt the plate. In half a minute pour this off and give a second dose, beginning at the opposite end of the plate. The plate may now be drained and either allowed to dry spontaneously or submitted to

6. The Drying operation.—This should be conducted in a box somewhat like the sketch. The plates are reared up (faces under), against the partitions, and a spirit-lamp, lighted underneath the box I use, is made of tin, with sliding wooden frames. When dry the plates may be kept an indefinite time.

7. Exposure.—On this point, it is impossible to give any definite instructions. As a rule, I think it is about four times as slow, as moderately sensitive wet collodion. I have taken good pictures with Ross' Stereoscopic lens, $4\frac{1}{2}$ ins. focus; $\frac{1}{6}$ ins. aperture; bright sunlight, $2\frac{1}{2}$ to 3 minutes; dull weather, 5 to 15 minutes; the last were overdone.

8. Development.—Immerse the plate in a dish of *distilled water* to soften the gelatine; and, for stereoscopic plates, pour over 1 drachm of the following solution, mixed with three drops of nitrate of silver, 40 grains to the ounce:—

Pyrogallic solution.................3 grains.
Distilled water.....................2 ounces.
Glacial acetic acid..................1 drachm.

Citric acid, 2 grains, may be substituted for the glacial acetic. The development will proceed very rapidly and produce very intense pictures Should the solution become muddy, wash off and proceed as before, using rather more silver.

Printing transparencies is accomplished by placing a negative and a prepared plate in contact and exposing to gas-light for five minutes, diffused daylight for about three to five seconds; they are then developed in the ordinary way. I shall now proceed to develop some transparencies exposed last week.

For developing large plates a safer method is to use a saturated solution of gallic acid, to every ounce of which add 10 drops of the nitrate of silver, as above. The temperature of the room should be about 70° and the development will occupy from one to two hours.

9. Fixing.—This operation may be performed as in the wet process, with cyanide of potassium; this is preferable to the hyposulphite of soda, which requires so much washing. The plate may now be varnished and the process is complete.

In conclusion, I can confidently recommend this process; it is simple, easy, expeditious, and is well worthy your notice and trial. It requires a little care at first and then all is comparatively easy.

May I hope that I have done you some little service this evening, and that I have imparted some information that is new to you; if I have done so, and have thereby contributed to your gratification and the advancement of our art, my object is accomplished.

On Mr. Osborne's resuming his seat a vote of thanks, proposed by Mr. Stewart, was carried with acclamation.

Mr. Jesper also begged to thank the Birmingham Society, through Mr. Osborne, for the kind assistance afforded in the formation of the Society.

Mr. Osborne returned thanks in an appropriate speech and the proceedings terminated.

From Photographic Notes.

DRY COLLODION PROCESS.

To the Editor of Photographic Notes:

Dear Sir,—Some twelve months since, while experimenting on Dr. Taupenot's process, a modification of it occurred to me, which I have found to answer remarkably well; but I did not think it of sufficient importance to make public. I have always been averse to that rage for immediate publication which seems to have seized photographic amateurs. It is the cause of an immense amount of mischief, as the process (or modification merely as too many are,) published in a crude form; frequently the result of some accidental state of the ingredients employed, and found eventually to be a mare's nest and not the great discovery which the amateur at first fondly imagined it to be; your own experience must tell you that my remark will apply to the great majority of cases; in what other way can we account for the many other photographic bubbles which rise, sparkle for a moment, and are sunk in oblivion. Let any one who doubts what I say, if he has a half hour to spare, take up the back numbers of the Photographic Journal, and, commencing at No. 1, go through the volumes, and see how many of the various processes there mentioned are in existence at the present moment. Alas! they are few; of course I do not say all are so, on the contrary, there are some gentlemen to whom our warmest thanks are due for the freedom with which their discoveries are given to the public; these are, in nearly all cases, the result of study and experiment, and herein lies the difference between these and the hasty invention I have condemned; many of the latter have written in the height of enthusiasm, before time had been allowed for cool reflection, when the heart of the amateur was beating high with the proud thought that he *too* should appear *in print* as the discoverer of the simple process, which in his sanguine imagination has already swamped all the old and clumsy methods, and has taken a first place in the annals of Photography; whilst *he*, the inventor, is written to, talked about, his name constantly before the public, as amateur after amateur bears testimony,—"through the medium of your excellent Journal,"—to the practical utility of the discovery or modification, whatever it may be. (Though this may be called a little flight of imagination; yet it is very evident from the style and manner of many of these letters to editors, that such were the feelings under which the writers labored when their communications were pened). Where is the process now? Have the inventor's high anticipations been realized? I fear not, the probability is, that after the first appearance of his article in the Journal, it is heard of no more, unless some fickle photographer should try it, and write to the much enduring editor an account of the manner in which "his plate blackened under the influence of the developer," or "the film rose up in blisters and then slipped off the plate." We hear of no more after this, even from the inventor, who often finds himself unable to produce the same results on his next attempt, and in his inmost heart feels ashamed of his precipitation, and resolves in future to see that his ship is fairly ready for sea before he knocks away her support and launches her on the public; but to return: I began by saying, "Some twelve months since, &c." You had better read it again, as my long digression will have caused you to forget it, while I go on thus: This process, I find essentially the same in principle as the one Mr. Fothergill inserted in the *Times*, some short while since, and a communication respecting which is in the last number of your Journal. I have not written to you to set up my first claim to the discovery, (if discovery it be); but firstly, for my own amusement, and possibly some of your readers; and secondly, to mention the method I have subsequently followed as giving better results than the one I first employed. This was identical with Mr. Fothergill's, excepting that I used gelatine instead of albumen.

The plan I afterwards followed is rather more troublesome, but I think more certain, and less dependent on the state of the collodion film: this is of great advantage to many new beginners, who in almost all cases prefer the collodio-albumen process to the gelatine, the later being in a great measure dependent for its success on the collodion employed. The process is as follows: After sensitizing, the plate must be coated with albumen, but *iodized*, (not plain, as in Mr. Fothergill's method), allow it to rest a moment and then wash well under a tap until all the albumen is washed off and nothing remains but what is lodged in the pores of the collodion. After this, it must be dipped a *second* time in the same silver bath, washed and dried. I may mention, that after the albumen has been washed off, the plate may be immersed while still wet; but when time is not an object the results will be found better if the plate be allowed to dry previously. This latter method was suggested by my friend Mr. Hooper, of Manchester, who has worked the process as well as myself, for some time, and can speak to its good results. As regards sensitiveness, I do not think it has much advantage over the ordinary collodio-albumen process; it is, however, much quicker in development, and this, at first, led me to believe that I had hit upon a more sensitive process; subsequent experiments however, showed, that to procure *good half-tones*, the exposure required was nearly the same as by the old method. The development is conducted in the usual manner, either with gallic or pyro-gallic acid, as may be thought most suitable. If this modification is of any use to your readers they are quite welcome to it. I never thought it worth while publishing before; but seeing that the new process was occupying a good deal of public attention, I thought I might as well mention my new experiments in that direction.

"Old Photo."

In reply to the query contained in your postscript, please consult Mr. Howlett's letter on taking Instantaneous Pictures, in *Notes* No. 43.—[Ed. P. N.]

From Photographic Notes.

PRINTING IN CARBON.

Our readers will find, on referring to p. 28, No. 43, of the Journal, the notice of a patent applied for on December 12th, 1857, by Mr. Charles Cowper, (No. 3,066), for certain "Improvements in Photography." This patent has at length been filed and completed, and the following is a copy of the Specification. The process is the invention of Mr. Testud de Beauregard:—

"Now know ye that I, the said Charles Cowper, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:

"The invention relates to the production of photographic images, pictures, or proofs, without salts of silver. For this purpose, carbon, or other pigment is employed, and it is fixed on the paper, or other surface, by means of a preparation, which is acted upon by light.

"If gelatine or gum be added to a saturated solution of bi-cromate of potash or ammonia, and the mixture, after being dried, is exposed to solar light, the gelatine or gum is rendered insoluble in water. If, before exposing the mixture to light an insoluble coloring material is added to it, such as carbon or black lead for a black color; vermilion or carmine for a red color; indigo for a blue color, or other pigments or mixtures of pigments, the result is that when the mixture is exposed to light, and thus rendered insoluble, the coloring matter or pigment is imprisoned or retained by the mixture and rendered indelible. When such a preparation is exposed to light under a photographic negative or other transparent or partially transparent picture, and is afterwards washed with water, the pigment becomes fixed at those parts where the light acts upon it, but is removed by the water from the parts which are shielded from the light, so that the picture is reproduced in a similar manner to that in which pictures are reproduced by the ordinary photographic processes with chloride of silver. This mode of proceeding is not new, but in applying this principle in practice, there are certain difficulties to be overcome. Thus it is necessary to preserve the whiteness of the paper in the whites of the picture, and to prevent the adhesion or fixing of the pigment or coloring matter in the parts which have not been exposed to light, and also to employ the pigment in an extremely fine state of division; for in the ordinary photographic processes, the molecules of silver may be said to be in an infinitely fine state of division. It is also necessary that the particles of coloring matter should be spread as uniformly as possible upon the surface of the paper, and to give to the last operation of the washing, a liberty of action, such that the molecule or particle of pigment which is not fixed may not carry off with it, by its proximity or adherence, the neighboring molecules which ought to be fixed by the action of the light.

"A saturated solution of bi-chromate of potash is heated in a water bath and a quantity of gelatine is dissolved in it. For one quart of the saturated solution of bi-chromate of potash, from one ounce and a half to three ounces and a quarter of gelatine may be employed, or in lieu of gelatine, from ten ounces to sixteen ounces of gum arabic, with a slight addition of albumen, may be employed. I do not however confine myself to the above-mentioned proportions, as they admit of considerable variation, according to the quality of the gelatine and the degree of sensitiveness required; a strong solution requiring less exposure to light than a weak one. The strength or density of the solution of chromo-gelatine should be such that it is syrupy at a temperature of one hundred and forty degrees of Fahrenheit's thermometer, and becomes solid or gelatinous when cold, and does not crystallize in cooling, and affords a film or thickness of the mixture on the surface of the paper immersed in it.

"This mixture or bath is used hot or warm, and the paper is either entirely immersed or floated on the surface. The immersion may vary from two to six minutes, according to the intensity of the light, and the season of the year. The more powerful the light, the stronger may be the solution, and the longer the immersion. The paper after removal from the bath is suspended in a hot and dry place until quite dry. All these operations must be performed in the dark or by artificial or yellow light.

"The carbon or other coloring matter or pigment, is now to be applied to the prepared paper. The coloring matter being insoluble the perfection and delicacy of the proof will depend on the application of the coloring matter in an extreme state of division. The preparation of the paper therefore consists of two operations; first the application of the chromo-gelatine to the paper, and second, the application of the coloring matter, not to the surface of the paper itself, but to the surface of the layer or film of chromo-gelatine on the paper, by which means the proof admits of being perfectly cleared or cleansed as hereinafter described.

"The coloring matter may be applied in various ways, by the dry process, or by the greasy process, or by the wet process. By the dry process, the dry coated sheet of paper may be rubbed mechanically with the coloring matter spread upon a pad, or rubber of cloth, or leather. This method is particularly adapted to the application of plumbago or black lead. The operation is facilitated by moistening the rubber or pad with alcohol. The coloring matter ought to be spread as uniformly as possible. By the greasy process, carbon, or ivory black, or lamp black, or other suitable pigment is ground up very fine, with neat oil or other suitable oil, and applied to the coated paper by a pad or dabber. As soon as this mixture has been uniformly applied to the paper, it is immersed very quickly in a bath of sulphuric ether, either alone or with a slight addition of collodion. This last mixture has the effect of drying the paper or removing the oil, and of causing the coloring matter to adhere to the surface. By the wet process, a bath is employed composed of carbon or Indian Ink, very finely ground with water and gelatine, and a small quantity of gum-arabic or dextrine. The coated paper may be immersed from ten minutes to three quarters of an hour in this bath, according to the thickness of the film or layer which is desired. This bath containing gelatine is employed warm or hot. A bath of Indian ink, with alcohol added to it, gives good results, when the paper is removed rather quickly from it. As in other photographic processes, practice and skill in manipulation enable the operator to obtain superior results. Mechanical means, such as presses or rollers, may be exployed to facilitate the operations. Thus, the mixture of carbon and oil may be applied by inking rollers, instead of employing a dabber. As the object of the paper is to form a support for the chromo-gelatine, other materials or surfaces may be employed for this purpose. Glass, or collodionized glass, may thus be employed, and coated with the chromo-gelatine, and afterwards with the coloring matter, and thus transparent pictures and negatives may be produced; ivory, wood, and other materials may also be used in lieu of paper.

"The paper or other surface having been prepared in the dark, as above described, is then exposed to sunlight, or daylight, or other light of sufficient chemical power, either in the camera-obscura, or in contact with, or in close proximity to, a photographic negative, or other article to be reproduced, in the same manner that ordinary photographic paper is employed.

"The duration of the exposure to light varies with so many circumstances that no rule can be laid down; but it is easy to ascertain the necessary time by exposing pieces of the prepared paper to light for several different lengths of time, and noting which gives the best result.

"After exposing to light, the proof is fixed and cleared by simply washing it in hot water, either with or without friction, by a brush or sponge The water dissolves out the gelatine or gum which has not been acted on by light, and washes away the coloring matter from those parts which constitute the lights of the picture, while the parts which have been acted on by the light remain undissolved, and retain the carbon or coloring matter. The proof may thus be considered as an engraving produced by light, and not liable to be acted on, or faded by the agencies which injure ordinary photographs.

"A great variety of coloring matters, or mixtures of coloring matters, may be employed in the manner herein-before described. Gold and silver in the metallic state, and in impalpable powder, may be employed in the same manner. Various effects may also be produced by applying different colors to different parts of the paper or surface.

"It will be seen that the paper, or other surface, is always covered with a layer or film, on which the coloring matter is superposed and fixed. When the coloring matter is mixed with the chromo-gelatine, and applied at once to the paper, it is very difficult or impossible to wash it off so as to leave the lights of the picture clean and white. The application of the carbon or coloring matter by superposition in the manner herein-before described, is intended to obviate this defect.

"Having now described the nature of the invention communicated to me; and in what manner the same is to be performed, I wish it to be understood that what I claim is:

"The mode or modes herein-before described, of producing photographic proofs or pictures by means of carbon, or other coloring matter, applied by superposition, as herein-before described."

We need scarcely inform our readers that the process described in the above specification is not new to us, as we have, on several occasions, suggested in that Journal this mode of proceeding, at the same time observing that we have only partially succeeded with it. Mr. Pouncey, of Dorchester, is now spending a few days with us, and he emphatically states that his process is different from the above in some important particulars, and very superior to it. We have very little doubt of being able ultimately to arrange with him with respect to the publication of his process, but at present the number of names on the list for the purchase of it does not exceed five hundred. The specimens which Mr. Pouncey has brought with him are greatly superior to anything we have seen before of his, and we feel convinced now that the days of silver printing are numbered. We conjure our readers to come forward and assist us, without loss of time, in the purchase of the process. The importance of the matter cannot be over-rated. Beautiful prints may be produced in a variety of colors, precisely as we have all along predicted.

PHOTO-LITHOGRAPHY.

Just before we sat down to pen this article, we glanced over the *New York Times* of the day, and the first words that met our eyes were the following:—

"The amazing development of Invention, of the practical application of Science, in this country, is a matter which does not lack general recognition. Of the thirty millions of American minds, it is estimated that at least fifty thousand are more or less engaged in embodying into concrete form, some scientific conception for the amelioration or adornment of man's physical or social condition. Scattered all over the country, but chiefly in the great free Northern States—hidden in cities and villages, often amid poverty and discouragement, nursing their thoughts, are the cunning heads and hands that are spinning the threads to be woven at the mighty loom of Time, into the many-colored web of our life. * * * * *

"The startling fact of concentration of so much mental energy or practical science, has a very deep significance. It is not merely the result of a certain combination of circumstances; it has a root in the structure of the American mind—a versatility, an aptitude, a constructiveness, that sheds inventions with a fertility that rivals the fecundity of nature. * *

"The effects of this wonderful mental activity directed towards practical applications of science, towards the industrial and mechanical arts, are and must be manifold. * * * There is a class of croakers who are eternally whimpering at the deficiency of America in Art and Literature. * *

"The inventors are doing a work beyond the dream of poet or prophecy. * * * The sublimest epic ever composed is the progressing subjection of matter and force to spirit, is the the conquest of Nature by the thought of men."

The article is too long to be quoted in full, and we give such extracts as we deem applicable to the subject under consideration. Had Photography been the theme of the writer, he could not have uttered greater truths in regard to it, than those which he has made upon the general topic of invention. It is now little less than twenty years since the Photographic Art became known to the public, and it is second only to the steam engine in the influence it exerts over the human mind and in its revolutionary tendencies. No branch of Science or Art reveals so much the triumphs of mind over matter. It is made the lever by which the veil is raised from over the past; it is made the vehicle to reveal thought to mind; it enters into every branch of industrial art to its knowledge and profit; it moves the hearts of thousands with simultaneous pleasures, and it causes the criminal to tremble. Its works are declared wonderful, yet its steps have not reached half-way to the zenith of its glory. Each day reveals some new wonder; each day produces some new process, or perfects a theory and reduces it to practice.

Among the many processes which have claimed the attention of the searchers after hidden things, that of *Photo-Lithography* was among the first. In fact, it was quite simultaneous with the publication of the Daguerreotype, by MM. Niepce and Daguerre, the most successful attempt having been made in 1839 by an Italian nobleman, (whose name has escaped us), who succeeded by the aid of a telescope, in impressing the nebulæ of Orion upon a lithographic stone, and taking pretty fair specimens from it with lithographic ink.

So far as we are enabled to learn, the next attempt at all worthy of our consideration, was made by Joseph Dixon, Esq., who, in 1840, made several experiments in this direction, and succeeded partially in solving the problem; but it is reasonable to suppose, from his having abandoned his researches, that he failed to come to any satisfactory practical result.

Several French and German savans essayed to elaborate this process and apply it to illustrative art, but up to the present time their endavors have met with slight reward; we hear of nothing having been done to render it worthy the notice of publishers, or those who take an interest in the progress of Art matters. With so many of the first minds of Europe engaged in the study of this branch of photography, and delving deeply into the hidden recesses of nature with the purpose of transfering the exquisite limnings of the sun to stone, copper and steel, in aid of their multiplication, it is—and should be—a source of great pride to us, that it was left to the *American mind* to attain that perfection in *Photo-Lithography*, which alone can make it of practical utility.

It was left to Messrs. Cutting, Bradford, and Turner, of Boston, to perfect this art, and that they have done so in a masterly manner is shown by the results before us.

For these improvements Messrs. Cutting and Bradford obtained a patent, and although in photography proper we have invariably set our face against patents, (and were we to-day to discover one of the most important improvements that could be made in it, we should not take out a patent); yet if we never felt disposed to have a hand in patents before, the results of Messrs. Cutting, Bradford, and Turner's *Photo-lithography*, which the latter gentleman has shown us, have given us a very strong inclination to bid for an investment.

We have seen many specimens of European *Photo-lithography*, and of European and American Lithography, and we venture to say, without fear of contradiction from any who have the opportunity to compare the results, that in any point of view, natural or artistic; elaborate finish or detail, or in striking effects nothing can be superior, in the present state of the art, to prints produced by Messrs. Cutting Bradford, and Turner. We have been shown prints of every description—microscopical objects, magnified thousands of times, portraits from life, copies of drawings and engravings, views of manufactured articles, landscapes, fossil remains, &c., &c.; all possessing delicacy and minutiæ of detail, which we say, without hesitation, cannot be approached by the eye and hand of the best artist.

As a partial—and it is only a partial indication of what is to be accomplished—evidence of the truth of our opinions, we give our readers, in the present number, a copy of an engraved head. It will be seen that every line is accurately copied, and that the print partakes materially of the nature of the engraving from which it is taken. The grain of the stone, as shown in this, is admirably overcome in many of the other specimens shown us. In fact, the process is capable of entirely obliterating all trace of lithographic grain, and giving the picture the appearance of a fine mezzo-tint engraving, or of a first class photograph.

In the illustration of every description of books, this process *must supercede* the present lithograph, and to the naturalist and physiologist it is invaluable. In copying insects, animals, fish, fowls, mineralogical specimens, trees, and all kinds of vegetable productions, not a speciality is lost, for, as with the photograph, what the eye alone cannot see is revealed upon the application of the magnifying glass.

Another point to be considered in this photo-lithographic process is, not only its general application to illustrative art, but its adaptation to the wants of a large class of artists who usually wish to multiply their drawings and paintings at a nominal cost. All they require is the process, the photographic material, and the stone—any lithographic printer can strike off the desired number.

Our readers, by comparing the picture in the present number with those given in April and May, will at once note the rapid strides the patentees have made in improving their process, and we feel convinced we shall be able to give, in future issues, pictures that will indicate this improvement in a more marked degree. There is no *American* improvement in art that has given us so much pleasure and satisfaction as this, and we do not regret that it has fallen to our lot to congratulate a gentleman whom we have heretofore been—reluctantly—obliged to oppose. This subject admits of still further observation, and we shall again refer to it in our next.

THE NEW DRY PROCESS.

To the Editor of the Liverpool Photographic Journal:

Dear Sir:—The dry process you allude to was discovered by Mr. Fothergill. My experience of its working is such as to lead me to believe that it will supersede every other dry process known; but I have no doubt that improvements will be founded upon it, as it appears to me to involve a very important principle. Many here found it not to work, but I have made some fifty or sixty experiments with it, and with *invariable* satisfactory results. I believe, however, that, whatever the principle of action may be, it is delicate as it is sure; and therefore the plan, simple as it is, must be rigidly carried out, although at present, I do not know how the failures *can* arise. A friend of mine, to whom I showed the preparation of a plate, has been just as successful as myself. A few days ago I got an excellent stereoscopic negative, with figures, (a woody scene) in twenty seconds with a Millet's double combination lens and small stop. The same day I got excellent negatives *(stereoscopic)* with a Ross's simple lens in seventy seconds. I have found no loss of sensitiveness after five days' keeping. The plates readily solarize, a result of their sensitiveness, I presume. The plan is as follows:—

Coat your plate with a *sensitive* negative collodion, which has been prepared with the acids at high temperature—old collodion won't do; sensitize in a bath thirty-five grains of nitrate of silver to one ounce of water; drain for a few seconds, and wash away the free nitrate by pouring *gently* over the plate some filtered rain water, and moving it round and round the plate by the direction of the hand,—do this four or five times till all greasiness has left the surface; let your plate stand corner ways on clean blotting-paper for half a minute, and then pour on a coating of

White eggs (fresh)	10 drachms.
Distilled water	6 drachms.
Liquid ammonia	8 minims,

previously filtered and allowed to re-liquify by standing; no filtering required. Move this albumen coating round the plate for about a minute, and now *repeat the washing as before*. Carefully keep your plates in the dark. A 10×8 plate with a Ross, fifteen-inch focus lens will require, with a small half-inch diameter stop, three to four minutes; a stereoscopic Ross's lens ordinary stop, forty to ninety seconds ; a Millet double combination lens, with a half-inch stop (excellent for landscapes with figures) will take twenty to forty-five seconds. Develope with

Pyrogallic acid	1½ to 2 grains.
Water	1 ounce.
Acetic acid	10 minims.
Sp. Rect	5 minims.

Being careful to add *at first* two drops to a drachm nitrate of silver solution, thirty-five grains to one ounce. Fix in the hyposulphite of soda. Yours obediently, J. P.

FAULTY NEGATIVES.

To the Editor of the Liverpool Photographic Journal:

Sir,—For some time I have been trying my hand at out-of-door photography, but have been so very unsuccessful that I am dispirited, and now seek for your kind aid to put me in a better way. I enclose a few specimens, and shall be glad if, in your next issue, you will point out the reason why I do not get better printing negatives.

Nos. 1, 2, 3, and 4 are by the collodio-albumen process, as given by Mr. Ackland. Nos. 5 and 6 are by *your own honey process*, as *given* in *recent numbers* of the *Journal* by *yourself*.

I have proceeded in all the manipulations as Mr. Ackland and yourself advise. Hoping you will do me the favor requested, by noticing this in your next. I am, &c., Winter.

[Improper exposure in the camera, coupled with errors in development, are the points at fault, except in No. 4, which is nearly correct in both. The stain arises from want of the proof being washed free of the nitrate of silver before being put into the toning bath. It is difficult to decided from your prints alone whether the weakness of the negatives is due to under or over exposure; but No. 6 appears to us as simply requiring further development, which may even now be carried on further, if it has not been varnished.—Ed.]

For the Photographic and Fine Art Journal.

THE APLANATIC STEREOGRAPHIC vs. THE ORTHOSCOPIC LENS.

H. H. Snelling, Esq:—After I had the pleasure of visiting your editorial establishment, and had laid before you the bird's-eye view of some streets of New York, taken by a new camera constructed by us (Wm. Gerhardt and E. Prussen,) it will be perhaps interesting to you to compare our instrument, which we call the Aplanatic Stereographic Lens, with other cameras of our construction. We have to remark that our camera produced a picture on which the objects of twenty feet distance are just as clear as objects of two miles distance; so that you are able to read every sign in this reach. The angular action of this field is 55 degrees, and gives a picture of 12 inches square, with equal light over the whole field, which would only be possible by such a construction of lenses. For better understanding I give you a full description of our lens.

The first lens opposite the object is an achromatic one constructed according to Clairaut, where the adjoining sides are equal and cemented with the intention not to lose too much light by reflection. This lens in our apparatus is remarkably large in diameter, in comparison with the focus. The reason for this is to collect as much light as possible from objects, as well in the centre as on the edges. The form of this lens is very different according to the refrangibility and dispersive power of the glass, and a certain kind of glass may be very good for a telescope, where it does not require a great aperture for an arrangement of this kind. After this lens is made as perfect as possible, in respect to chromatic and spherical aberration, the remaining deviation has to be corrected by a second achromatic lens, with the contrary property of the first lens. We will observe that the remaining part of spherical aberration ofthe first lens is

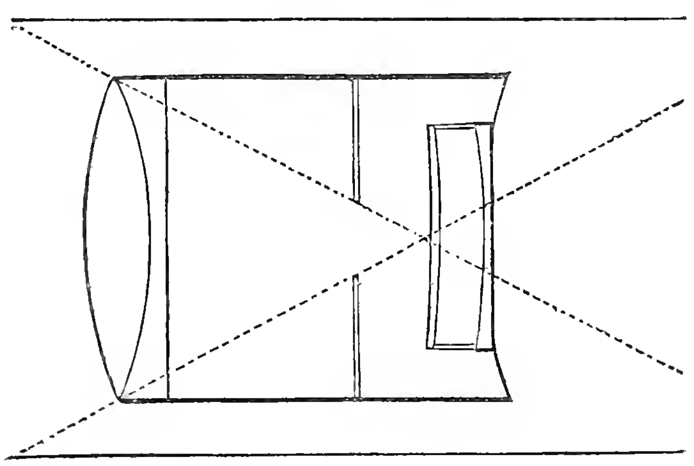


Fig. 1.

considerable, if we leave the whole aperture for the image; it would be tolerable only in the centre, and not extend one inch; but if we give a free passage of light as well through the centre as on the edges, and cut off the cone of light by a diaphragm at a suitable distance, we receive a better image with still more and better light, as well from the centre as from the circumference of the first lens, as if we would place the diaphragm 2 or 3 inches in the front of the first lens, or near behind it. Here is the great advantage to use a large front lens, and adjust the spherical aberration after the light has passed the diaphragm. This diaphragm, as you will find in Fig. 1, is placed between the front lens and the correcting lens, but only a short distance from the correcting lens, which is here in our apparatus a negative achromatic lens, which corrects the spherical aberration left by the front lens. The reason why the correcting lens is negative, is easily explained, because the spherical aberration left by the front lens is such that the circle of indistinctness lies near the direction of the objects, and the image will become more distinct on the edge if we push the ground glass more towards the objects. In this case we say the aberration of the image is positive; it is therefore a want of negativity till the positive comes to a plane image, which we call free from planary aberration or aplanatic. By the well adapted negative lens of our construction, the image becomes solid (stereoscopic), and by using such a lens for photography, the lens becomes aplanatic stereographic, hence the name adopted aplanatic stereographic lens.

You will find the diaphragm placed before the negative lens, and not behind, because in this case the reflection of the light from the back lens, and the thickness of the last two lenses, has not so great an influence on the quality of the image. The separation of the positive and negative part of the achromatic negative lens is considerable, which gives the opportunity to make the picture more relieved. I remark that a combination of such lenses will give a good negative with ½ inch diaphragm a 12 inch picture in 5 seconds, with a good sensitive collodion.

Here I give you the dimensions of our view camera tube of the above construction, completed in the last of February, 1858.

Aplanatic Stereographic Lens of Wm Gerhardt and E. Prussen.		Orthoscopic Lens of Voigtlander.	
The front lens focus	12 ins.	The front lens focus	6.97 ins.
Diameter	3	Diameter	1.39
The negative lens focus	60	Small lens focus	15.72
Diameter	2	Diameter	0.87
Size of the image	12	Size of the image	9.43
Distance between the 2 achromatic lenses	2.45	Distance between the lenses	0.698
Separation of the negative lens.	0 5		
Combined focus	11	Combined focus	11
Angular action of the combined lenses 55 degrees.		Angular action of the combined lenses 44 degrees.	

The dotted lines and drawings show the angular action of the combination. Our apparatus (Fig. 1) has an angular field of

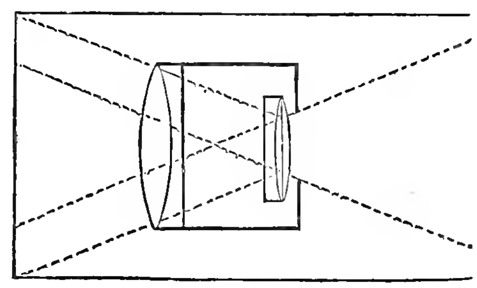


Fig. 2.

55 degrees with an aperture of double the amount of Voigtlander's Orthoscopic Lens by the same focal length. By the drawing Fig. 2 of Voightlander's Orthoscopic Lens, the angular field is only 44 degrees, and in consequence of this it gives a smaller image with less light than our apparatus.

The drawings are reduced to one half the above mentioned measurements, and are sufficient to compare one with the other.

Yours respectfully,

William Gerhardt.

From Photographic Notes.

MR. POUNCY'S PROCESS.

To the Editor of Photographic Notes:

Portrait Rooms, Triangle, Bristol, June 14th, 1858.

Sir,—I, as an old professional photographer, have long wished for a method of printing photographs, that would enable me to say to my customers, (without making my conscience wince) "this will be a dear relic of your old father for your children to look upon!"

The above desire made me call upon Mr. Pouncy, the inventor of the Carbon Process, to carefully examine his productions.

I found him an intelligent man, of quick nervous temperament, very kind and free with a mixture of love of approbation and a little caution. He has spent much time and money in the development of this new Carbon Process. The prints astonished me ; they far exceeded my expectation. The minute detail is hardly so finely rendered as by the common method, but the process is yet in swaddling bands. Mr. Pouncy gave me a few prints; I have shown them to many scientific photographers, who all wonder that the Photographic Journal should use its little influence to throw cold water upon, (in my opinion), the only real discovery in art since the application of collodion. If Mr. Pouncy's Process could be brought out, and improved *only a little* it would give an impetus to the sale of photographic productions hitherto unknown.

Photography and art, which are only courting each other now, would then become wedded altogether, and large land scape photographs, by a process of coloring adopted by Mr. Elliot of Taunton, will be rendered not much inferior to some of Gainsboro's best works. One word more, in conclusion, on portraiture. Mr. Pouncy's Process is already perfect for that purpose. I saw many prints in fit order for the pencil to work into beautiful works of art. I examined Mr. Pouncy's negatives, capital impressions will be got for the pencil. *If need be, I can prove* the pencil to be absolutely necessary in the production of a correct resemblance of nature in portraiture. I now conclude my note by thanking you, Sir, for your bold and sensible method of trying to buy Mr. Pouncy's Process, and I strongly advise all those who are wishful to make permanent portraits that will bear *refined* criticism and a little breath of time, to assist you in this worthy speculation.

I have been induced to write the above letter, which you can use at your discretion, by reading the unjust, and very unphilosophical criticism in the Photographic Journal.

JOHN BEATTIE.

From Photographic Notes.

DISTILLED WATER.

To the Editor of Photographic Notes:

SIR,—Will you please to inform me if condensed steam water, collected from a steam boiler, kept purposely for steaming prints at a calico printer's establishment, will not answer every purpose for photography as effectually as water distilled over a common fire. In such a boiler there is nothing introduced for cleaning the boiler, as there is in common steam boilers, as they are obliged to be very particular or they might damage the colors of the prints.

I believe it is customary for some photographers to use water condensed from somewhere near the mercurial tube; can you inform me if there is any advantage in this over water condensed from cylinders heated for the purpose of drying yarns in cotton mills.

An early answer to the above will save the expense either in wasted material or purchase of distilled water, to one who would practice a

DRY PROCESS.

[If the steam is free from other volatile matter it does not signify from what source it is obtained. Distilled or rain water should not be collected in leaden vessels, or passed through leaden pipes, because the lead is oxydized by the air contained in the water, and the water dissolves a small quantity of oxide of lead, which fogs the plate if used in the nitrate bath. The objection does not apply with equal force to spring or rain water, as these contain salts which form an insoluble precipitate upon the surface of the lead, and thereby protect it from oxydation. Filtered rain water from leaden tanks is sometimes sold for distilled water. Lead may be detected by sulphuric acid, which causes a white cloudiness in the water containing it,—or by iodide of potassium, which produces a yellow turbidity due to iodide of lead,—or by hydro-sulphate of ammonia, which produces a black tinge from sulphide of lead.—ED. P. N.]

From Photographic Notes.

FOGGING OF COLLODION POSITIVES.

To the Editor of Photographic Notes:

SIR,—Amongst the numerous causes of fogging of Positive Collodion Plates, I have not seen mentioned one which caused me much trouble and expense. It was some proto-sulphate of iron I had by me for some time. It had become slightly *lighter* in color but did not show any of the yellow color which proves it to be useless to the Photographer. In the course of my experiments to discover the cause, I tried every remedy suggested in your publication, without effect, but upon trying a fresh sample of iron my plate became as free from fogging as possible. I send this note, hoping that you will mention the matter in your *Notes* and thus perhaps save others from the trouble and vexation caused by repeated failures; more especially as iron is now coming into use as a developer for negatives.

J. L.

Personal & Art Intelligence.

— OUR remarks in the last number of the *Journal* on the Daguerreotype, Ambrotype and Melainotype, have called forth various marks of approbation and censure, according as they have affected the artists concerned. We find, however, the preponderance in favor of the Daguarreotype and Melainotype. That the thousands of miserably executed ambrotypes which have flooded the country for the three last years, has disgusted the great body of the thinking portion of the patrons of the Photographic Art there can be no doubt, and in order to correct the deplorable effects this cause has produced in the public mind, as well as in the decline of photographic portraiture, it should be the aim of every artist throughout the land, to endeavor to improve those branches which bid fairest to satisfy the demands and desires of the public. Had the same amount of labor during the three years past, been bestowed upon attempts to improve the Daguerreotype and Melainotype that have been upon the Ambrotype, a very different series of results may have been expected, and those artists who now deplore the loss of that reputation which they sustained in the Daguerreotype would have progressed instead of receded in the public estimation. The fact that the Daguerreotype has not improved in the same ratio with other photographic processes, can be attributed only to the universal stampede of artists from an actuality to an *ignis fatuus*, which has eventually led them into the worst kind of a quagmire. What is the *Daguerreotype*? It is the *fac-simile* of the object delineated, possessing in bona-fide light and shade, all the requirements of artistic taste—marred only by one fault—its glassy reflection—with a boldness and roundness that challenges criticism, with a delicacy and softness that cannot be surpassed even by the crayon; perfectly free from angular or abrupt outline, and with exquisite modulations of light and shade; and yet more, what is of greatest importance, a permanence which, thus far, time has failed to compromise. Its fault we have always believed and asserted can and should be overcome. Now that business is so prostrated and our artists have time to experiment, we would advise all *who have the ability*, to experiment for the removal of the difficulty. All will now agree, we doubt not, that the two great obstacles to be overcome in Photography are, to render the *Daguerreotype* visible from all points equally, and the *Papyrotype*, or paper positive, permanent. These accomplished, and the strides of the art will be far more rapid than ever before, and results will be obtained beyond the present *ken* of man.

What is the *Melainotype*, that it should take precedence of the *Ambrotype*, and be placed on an equality with the *Daguerreotype*? It is a *collodion positive* on an iron plate, and in its characteristics resembles the Daguerreotype more closely than any other photographic portrait, while it stands out in bolder relief in consequence of stronger contrast between the figure and the background. Its detail and gradations of light and shade compare favorably with the daguerreotype, although its tone partakes more of an engraving, wanting only in the delicacy of the daguerreotype. When properly made, we believe it also equally permanent and perfectly free from the destructive agents which are so constantly destroying the Ambrotype.

Now what is the *Ambrotype*? It is, even in its most attractive form, but a poor frail memento, and if the utmost care is not taken in its production, as fleeting as it is fragile. Time changes it with remorseless cruelty, no matter how carefully prepared. These changes are so marked, that very little observation will confirm the truth of our assertions. Walk up Broadway, or any other street where Ambrotype galleries exist, compare the specimens placed at the entrance hall of each establishment, compare the pictures placed on exhibition *to-day* with those of one, two, or six months exposure,--for *some* ambrotypists are silly enough to *permit* this comparison at their doors—and the changes are palpable. Even at the great marts where *legal ambro'ypes* only are made, we have noticed the change in a most decided degree as we daily passed up and down, taking note of the gradual but sure alterations. The problem of the permanence of Ambrotypes is, we think, further from solution than that of paper prints, for it seems that even balsam won't save them. This is because the contingencies likely to occur, are equally—if not more—numerous in the ambrotype as in the paper picture, and there is not that field for investigation and correction. In our mind there is no doubt that in depending upon the ambrotype to perpetuate the images of cherished objects, we lean upon the most frail of all frail things in art.

Some of our readers while commending our remarks upon the Daguerreotype and Ambrotype, have condemned those upon the Melainotype. In the latter case, we have found, upon inquiry, that the gentlemen have never essayed their skill in Melainotype, and have permitted their prejudices against *collodion positives* to decide the value of the Melainotype. This should not be. Give it as *fair* a trial as the Ambrotype has received, and let it stand or fall on its own merit.

— IT is as undoubtedly perceptible to our readers as it has been to us, that in the present state of our knowledge in photographic positive printing it is a dangerous thing to depend upon it for book illustrations. We sincerely believe, that with the *necessary care* in printing, photographic proofs may be made as permanent as any other kind of paper pictures, certain contingencies—which have been time and again explained—being avoided. Even water color, or oil paintings, will not always escape these same contingencies, and hence we see both these styles of art gradually destroyed. In order, therefore, to arrive at the best process for printing positive proofs, to avoid, in themselves, as many of these contingencies as is possible, it is necessary to experiment. In experimenting we must, of course, expect to make many failures, more particularly, when to other hands you are obliged to trust the practical carrying out of your theory. As we have before stated, the object of the illustrations in our Journal is mainly to give instruction in this branch of photography, and eventually lead to the establishing of a process upon which we can rely for permanence. We therefore wish to call attention to all the illustrations we have given durin the present year, and desire our readers to note facts in regard to them, while we endeavor to give reasons for these facts. With an excellent negative for our January illustration, and our own personal attention to the printing, we gave that month uniformly the best photographs of the year. So far as we have *seen* and *can* learn, not a proof among our January pictures have faded. The defects in the illustrations for February were entirely those of careless manipulation. We see no change in them that can be attributed to the destructive action of any agent apart from dirty fingers. Sulphuration of any kind does not appear. Many of the illustrations for March, April, and May have faded. The toning baths for these months, as well as for June and July, were very similar. Those proofs which were toned to the purple tint, according to our instructions, have remained permanent thus far, while those left in the bath until they passed into the black or brown are going or gone. The Illustrations for June, *part* of those for May, and those for July, printed before our paper gave out, were printed with lemon juice in the salting solution. Every one of these—*i. e.*, containing lemon juice—*no matter how toned*, that have come under our observation, have faded out entirely, or are rapidly going the road to ruin. We think therefore, that this experiment establishes the fact that lemon juice so applied is highly destructive to a photographic proof, and this fact learned is of more consideration than the picture lost by the experiment. Of the pictures given this month, a portion of the portrait of Mr. WATKINS and of NIGHT were printed with the lemon-juice salting. These are on thick paper. All the others are strictly after the formula given in this number. With this toning bath we find it absolutely necessary to be careful not to go beyond a clear purple tint. If this rule is strictly observed we think the pictures by it are the most permanent that can be made. In our September number we will try to inaugurate the *carbon* process.

Since this was written all the prints on hand printed with lemon juice have faded, and we are obliged to give our subscribers an assortment instead of those strictly intended for this number.

— MR. BENECKE, of Brunswick, Mo., sends us some small but very fine and interesting positive views and portraits, the negatives of which were taken on dry plates. The plates were sensitized in the usual way, and dried, no preservative being used. They exhibit the skill of an artistic and careful operator. Some of them are little gems. The steamboats at the landings must have been printed from the very best of negatives, but with the exception of the "*St. Louis River, F. M.*," are over-printed and toned. The two views of residences are excellent in every respect, sharp, clear, and well defined; the portraits are beautiful, sharp, clear, and delicately toned, the positions admirable. In every respect they are little gems. Mr. BENECKE should work with a larger apparatus.

— MR. CARDEN has returned to New York from New Orleans, and has given us in the present number his impressions of the art in that city. He has shown us a number of prints and ambrotypes taken by him while there, which confirms the good opinion we expressed of his skill in a former number.

— MR. CARSON, of Toronto, C. W., has been paying the east a visit, and returns with a solar camera, which will enable him to give his patrons any sized portrait they may desire.

— MR. FITZGIBBON has sent us the negatives of two of the South America views of which we spoke in the July number, proofs from which will be given in a future issue.

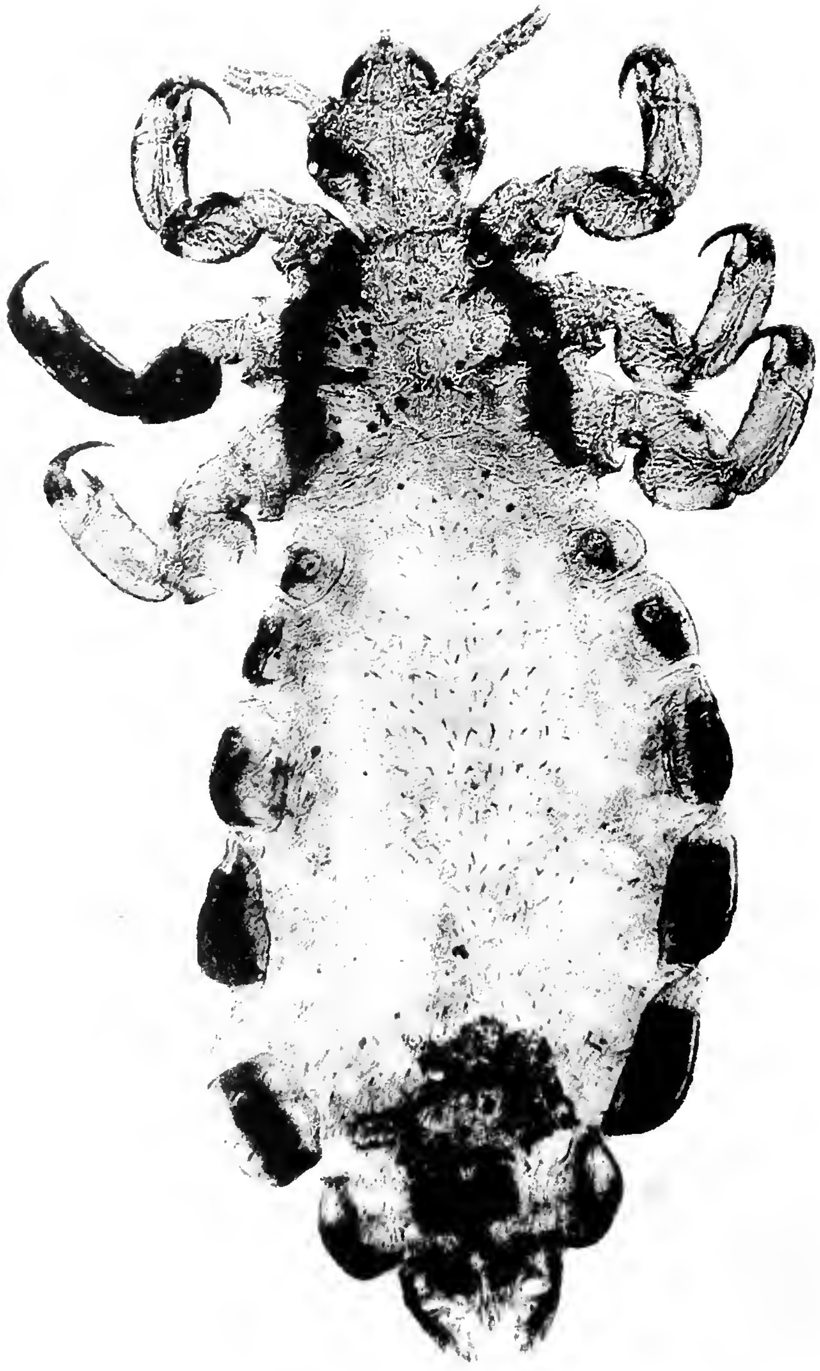
— WE have before forgotten to speak of the removals of the SCOVILL MANUFACTURING CO., to No. 4 Beekman Street, and Messrs. HOLMES, BOOTH, & HAYDEN to No. 81 Chambers Street. Had the daguerrean artist of ten years ago been told that *his* business would have contributed to build up such establishments in this city, he would have derided the idea. Both these establishments are very extensive, and the arrangements in every department complete.

— THE contents of our present number is varied, useful, and will be highly entertaining to all who love art and desire its progress. The most important paper we conceive to be that on printing by *carbon*. There can be no doubt but this will eventually be the process universally adopted if it is all that is claimed for it. The process for printing by *uranium* is worthy a trial. It may be useful with enlarging cameras.

— OUR attention has been particularly called, during the past week, to specimens of the *Photo-lithographic* process of Messrs. CUTTING, BRADFORD, & TURNER, and we have taken occasion to give our opinion of them in another column. These pictures are so very fine—some of them so unlike lithographs—that we shall probably adopt them as illustrations to our Journal, at least, so far as to give one each month.

— AMBROTYPISTS will be pleased to learn that they can greatly improve their black (asphaltum) varnish by dissolving as much bees'-wax in turpentine as it will take up, and mixing it with the asphaltum varnish in the proportion of three parts of the latter to one of the former. This varnish will not crack, no matter how thick or thin it is put on. Another very excellent black coating can be made by thinning the EXCELSIOR Co.'s Printer's ink to the required consistency with turpentine.

— WE regret to learn of the bereavement of our friend Mr. FRANK FORD in the loss of his wife, who died on the 17th inst. The funeral of Mrs. FRANK FORD was attended from the residence of her father, Mr. T. C. SUTHERLAND, on Bowery Street. There was a very large concourse of sympathizing friends and neighbors present. Rev. J. A. YOUNG, a local preacher of the M. E. Church, led in the devotional excercises. A funeral discourse will be preached by Rev. Mr. NORTON, on his return from Conference.



MICRO-PHOTO-LITHOGRAPHY,

Of Messrs. CUTTING & TURNER, No. 10 Tremont Row, Boston, Mass.

From Photographic Notes.

MACCLESFIELD PHOTOGRAPHIC SOCIETY.

The following paper, by the Editor of Photographic Notes, was read at the last Meeting of the above Society:—

ON THE NATURE AND PROPERTIES OF LIGHT.

Mr. Chairman and Gentlemen,

I HAVE felt great pleasure in responding to the request made me a few days since by your Secretary, to prepare a paper to be read at one of the Meetings of your Society, and my only regret is that I cannot be present amongst you to read it myself. My "insular position," among the advantages which it affords me of quiet and retirement, a delightful climate, and sufficent light all the year round for the prosecution of photographic experiments, has also the disadvantage that it cuts me off in some measure from becoming personally acquainted with many photographers whom I should like to know. Under these circumstances, I can but assure my brethren of the camera of the pleasure it will always give me to see any of them in Jersey; but more particularly any of the members of the Societies of Birmingham or Macclesfield. I have watched with much interest the formation of Photographic Societies, and am convinced that a great deal of good has been done by them; permit me then, to assure you of the pleasure it will always give me to be able, as a journalist, to assist you in your praiseworthy exertions, and I beg you will command my services at any time without hesitation. If I may be permitted to offer you advice with respect to the conduct of the affairs of your Society, I should say, you cannot do better than follow the excellent example of the Birmingham Photographic Society, the members of which have shewn great spirit in the general conduct of their affairs.

And now we will proceed to the subject of my paper, viz., The "Physical Nature of Light and its properties."

The question, "What is Light?" must have frequently occurred to the mind of every Photographer, and it is one to which science is able, fortunately, to offer a satisfactory reply. Since the days of Newton, I believe I may say that no subject has more deeply engaged the attention of scientific men than that of the Nature of Light, and a constellation of the highest talent has been brought to bear upon this problem. It is to a British philosopher, however, Dr. Thomas Young, that the honor is mainly due of having established the true theory of Light; and among other eminent British philosophers, whose researches have contributed to the elucidation of this subject, may be mentioned the honored names of Professor Airy, Sir John Herschel, and Professor Stokes, (all Senior Wranglers of Cambridge); not forgetting that of Sir David Brewster, whose experimental investigations in Physical Optics, have led to some valuable results. Among foreigners, the names of Laplace, Fresnel, Fraunhofer, Zantedeschi, Arago, and many others, are conspicuous, for the services they have rendered in this department of science.

Two different theories have been held with respect to the physical nature of light;—one called the "CORPUSCULAR," the other the "UNDULATORY" theory. According to the corpuscular theory, light is composed of material atoms discharged incessantly, and with enormous velocity, by the luminous body, and which after undergoing various reflections and refractions, impinge ultimately upon the organs of sight. According to the undulatory theory, light is the undulation of a subtle and elastic ether which pervades space. The corpuscular theory is incapable of explaining many of the most remarkable phenomena of optics, such as those of "Interference," in which the superposition of one luminous spot upon another produces darkness;—while most of the phenomena of light can be easily and satisfactorly explained on the undulatory theory. The latter has therefore received the general sanction of men of science, and the corpuscular theory is now abandoned as an absurdity. The undulatory theory has nevertheless had its difficulties to surmount, and apparent anomalies to reconcile,—just as the Law of Universal Gravitation has been at times shaken by the supposed impossibility of reconciling with it certain observed facts;—but these difficulties have been gradually overcome, and the two theories, viz., that of light consisting of the vibration of molecules,—and that of the universal gravitation of particles of matter, now rest on equally satisfactory evidence, and are admitted by men of science as equally true.

The following quotation from the preface to the Tract by Professor Airy on the Undulatory Theory of Light, will convince you that no doubt now exists on this subject:—

"The undulatory theory of optics is presented to the reader as having the same claims to his attention as the theory of gravitation; namely, that it is certainly true, and that by mathematical operations of general elegance, it leads to results of great interest. With regard to the evidence for this theory; if the simplicity of a hypothesis which explains with accuracy a vast variety of phenomena of the most complicated kind can be considered a proof of its correctness, I believe there is no physical theory so firmly established as the theory in question," &c.

I cannot do more within the limits of the present paper, than explain briefly and familiarly the nature of an undulation, and enunciate the theory as it stands. The evidence for it is not by any means of a popular kind, on the contrary, it involves a knowledge of the highest mathematical analysis, and consequently many years of preivous training. This, like some other scientific truths, must be taken for granted even by the great mass of educated persons;—but although the evidence would be difficult and laborious to master, the results may be briefly stated, and rendered intelligible in a popular form.

The undulatory theory of light is simply this:—

A luminous body is supposed to consist of material particles in a state of intense agitation. These communicate vibratory motions to the molecules of ether which surround the luminous body, and these are communicated from molecule to molecule of the ether, in a rectilinear direction through space, and with the velocity of 192,000 miles a second; so that a ray of light could travel eight times round the earth in a second!

The nature of these undulations will be understood by reference to those produced in a pond of still and deep water, when a stone is thrown into it. Each particle of water moves through a vertical space, without suffering any motion of translation in the direction in which the wave is propagated; and similiarly, each molecule of ether vibrates in a line at right angles to the direction of propagation of the ray, and the molecules to which its motion is commuuicated all vibrate in a plane passing through that line. Let us then consider first the system of vibrations which occur in one plane stretched like a ribbon through space. The velocity of light, although enormous, is not infinite, and time is occupied in the transmision of vibrations, so that whilst one molecule of ether is at one part of its short transversal path, another molecule is at some other part, and the curved line drawn through the instantaneous positions of a system of vibrating molecules exhibits a system of undulations. It will be understood that the molecules of ether do not travel *along* the line of the ray,—but merely oscillate through an exceedingly small space on either side of it, losing their velocity at either end of their path and having the greatest velocity when crossing the line of ray,—just as the bob of a pendulum which is describing small oscillations has its greatest velocity when crossing the vertical line through its point of suspension. The molecules of ether no more travel *along* the line of the ray, than the log which is thrown overboard from a vessel travels in a horizontal direction along the water, it being merely raised and lowered through a small vertical space by the undulation of the water.

The nature of an undulation of light is now, I hope, clearly understood. It differs from one of sound, (which is an undulation in the air,) in this important particular, viz., that in sound the particles of the air vibrate *in the direction* of propagation of sound, and not transversely to it; so that if Light is compared to the undulations in a pond of water, Sound may be compared to those of a field of corn when the wind sweeps over it, the motion of each separate ear taking place in a small circular arc, of which the root is the centre, and therefore occurring in the direction in which sound is propagated.

But a ray of common light is not composed of a system of undulations propagated in *one plane only*, but in an infinite number of planes, passing through the direction of the ray, and making all possible angles with it; and this brings me to the subject of "Polarized Light."

There are some transparent bodies whose internal structure is so peculiar that a ray of common light cannot entirely pass through them, so that the light which *does* pass through is altered in its character, or "Polarized," as it is termed. Tourmaline is an instance of this. The fibres of a thin sheet of this substance are supposed to be arranged like the bars of a gridiron, so that of the infinite system of planes of undulation of a ray of common light, only one ribbon, as it were, can be passed between the bars of the tourmaline, and the transmitted ray is thus reduced to a system of undulations in one plane only. A ray of common light may therefore be considered as round, like a ruler; a ray of polarized light as flat like a ribbon. If a second sheet of tourmaline is placed with its fibres crossways to the first, it will completely intercept the polarized ray; so that two layers of a transparent substance may be converted into an opaque screen!

If a ray of common light is incident upon the surface of a crystal of Iceland spar, it is divided into two rays, one of which follows nearly the ordinary law of refraction,—the other a totally different law; but both emerge parallel to the incident ray, and therefore parallel to each other; and both are polarized by refraction through the crystal,—the planes of undulation, or "planes of polarization" as they are termed, being at right angles to each other. This is called "double refraction."

There are other kinds of Polarized Light, called Circularly, and Elliptically Polarized Light. In the former case the undulation forms a spiral, like a corkscrew, about the line of direction of the ray; and in the latter case the spiral may be supposed to be coiled round an elliptical instead of a circular cylinder.

I have endeavoured to compare Light with Sound. Let us return to that comparison.

Sound travels in air at the rate of 1100 feet in a second, but it is much more rapidly transmitted through water, and more rapidly still through a bar of metal. Light travels through space at the uniform rate of 192,000 miles in a second. The length of a wave of sound varies from a few inches to several feet, the short waves giving the high notes, the long waves the low ones. The length of a wave of light is about the 40,000th part of an inch in the case of red light, and the 60,000th part of an inch in that of violet light,—so that the undulations of light are not only propagated with extreme velocity, but are also extremely small. You will perceive also that the difference between the colors of light depends upon the *length of the undulation*, the red having the longest and the violet the shortest wave. I would observe also that the supposed decomposition of orange, green, and violet light by absorption into red and yellow, blue and yellow, and blue and red, is a notion of Sir David Brewster's which is not admitted by men of science, and with respect to which Prof. Airy, Helmholtz, and others, are at issue with him; the general notion being that to each color of the spectrum belongs a wave of particular length, and therefore a light of a peculiar and distinctive physical character.

And now that we are on the subject of the colors of the spectrum, let me crave your particular attention to what follows. It is well known that the *short* waves of violet light produce most *chemical* action on the salts of silver and many other substances; that the waves of yellow light, of *medium* length, produce *Light* in its greatest intensity; and that the *long* waves of red light are those in which *Heat* prevails;—while beyond the spectrum, at the violet end, are invisible *chemical* rays, and at the red end invisible *heat* rays. May we not then conceive that Light, Heat and Actinism, and probably all the various forms of Electricity, are the same thing, viz., motion in one and the same universal ether which pervades space, and fills the interstices between these agents consisting simply in the *length* of the wave, and possibly the nature of the undulation?

Let us briefly compare Heat with Light, and Actinism. They all travel with the same velocity; Heat rays may be reflected, refracted, and polarized like those of light; and they all produce chemical changes in bodies;—while conversely, chemical changes are frequently accompanied with the evolutions of Light, Heat, and Actinism; a lime-ball for instance, in a jet of ignited hydrogen and oxygen gases, evolves Light, Heat, and Actinism. Again; when a body is held before a source of radiant heat. it becomes heated, that is, it becomes itself a source of radiant heat;—similarly, in the case of "solar phosphori," certain bodies, calcined oyster shells for instance, when exposed to sunshine, become themselves luminous when taken into a dark room; and, according to the recent experiments of M. Niepce de Victor, a sheet of white blotting paper, after exposure to sunshine, is capable of emitting in the dark actinic rays. Is it not then highly probable, nay, *certain*, that Heat, Light, and Actinism, are undulations in the same ether, differing only in the length of the wave?

These are, I think, suggestions worthy of your serious consideration. I do not advance them as either original or peculiar. They are not my notions alone, but are gaining ground day by day among men of science, and every new discovery seems to add fresh support to them.

Now with respect to the ether itself, and the ultimate constitution of bodies.

In mechanical science, the definition of matter includes whatever has *weight*. If a thing can be *weighed* it is material, if not, *immaterial*, or which amounts to the same thing, "imponderable." Now the ether in which light is propagated is far too subtle to be weighed; it does not therefore come within the definition of matter;—the molecules of which it is composed are not sensibly subject to the law of gravitation. Nevertheless it may be, and no doubt is, material. Indeed we cannot conceive of it as existing in any other form than that of matter. That it should not possess sensible weight might be concluded *a priori*, from the enormous velocity with which undulations are propagated in it. If the undulations in so subtle a fluid as air, produced by the discharge of artillery, and propagated at the rate of 1100 *feet* in a *second* are sufficient to break the windows of houses, what would be the effect of such undulations as those of light, proceeding at the rate of 192,000 *miles* in a second, if the fluid in which they were propagated had sensible weight, as air has? They would of course entirely smash and destroy everything on which they impinged. If a stranded vessel is now gradually broken to pieces by the battering of the surf, how long would she be able to withstand the action of such undulations as those of light, if propagated in a fluid which was sensibly material? She would surely be reduced to impalpable powder by the first flood of light that fell upon her. Knowing then the vast velocity with which light travels, we must not expect to find the lumeniferous ether sensibly ponderable when tried by any such tests as man can apply to it. Nevertheless its materiality might be provided in other ways. A material fluid pervading space would act as a resisting medium to the motions of heavenly bodies, and its effect would be to cause them to describe continually decreasing orbits about the centre of gravity of the system to which they belong, and ultimately, in the course of æons of time, to bring all the bodies of the universe to one single lump of matter, non-luminous, intensely cold, and having no motion either of translation or rotation, for both would be destroyed. If then the lumeniferious ether be a resisting medium, as it surely must be, its effect would first be perceived upon the comets of the solar system which revolve in short periods about the sun. Such are the comets of Encke, and Biela, the first revolving in $3\frac{1}{3}$ years, the latter in $6\frac{3}{4}$ years. Now it is found that *from some cause or other* the period of Encke's comet is diminished by a few hours in each revolution. Here then is something like evidence of what we should expect to result from the action of a resisting medium on bodies of so little mass as comets. But we must not be too hasty in jumping at conclusions, for there may be nebulous matter surrounding the sun, and this may produce the effects above alluded to upon a comet passing through it.

The question of the constitution of bodies involves of course much that is at present hypothetical, but the conjectures which I shall offer for your consideration are borne out, I think, by a good deal of sound reasoning based on observed facts. It appears then that there is no such thing in nature as actual contact between the ultimate atoms of matter, and that these are constantly in a state of vibration, the intensity of which depends in great measure, if not entirely, on that of the ether existing within the body. We know, for instance, that bodies in general expand by heat and contract by cold. But a solid piece of iron may expand and yet continue solid; how then can there be actual contact between the atoms in both cases? and yet solidity is not destroyed; the iron does not tumble to pieces on being warmed, it expands and yet remains solid. When a body is heated beyond the temperature of surrounding objects, it expands beyond the dimensions which are consistent with that temperature, and on removal ot the source of heat begins to contract. By contracting, the vibrations of the ether contained within it are increased in intensity, and intensified vibrations are therefore communicated to the surrounding ether, that is to say, the contracting body becomes a source of radiant heat. It appears to me that the sun may be now precisely in that condition: He may be contracting in volume, and thereby propagating undulations of light, heat, and actinism in the ether which surrounds him. The time may come when he will contract no more. Like the planets which were once incandescent globes of fluid, emitting light and heat,—but which have now cooled down, crusted over, and become opaque and non-luminous, the sun may himself contract, skin over with a solid crust, and cease any longer to be the lamp of our system. Ages ago the whole matter of the solar system was probably distributed in a nebulous form over a space far exceeding the orbit of Neptune; the temperature of this nebula being perhaps nearly as low as that of space; but the atoms were impelled towards a common centre of gravity by the law of gravitation, and the nebula began to contract, acquiring at the same time rotatory motion. The evolution of heat and light then commenced. As the vast whirling mass, now luminous, continued to contract, planets were thrown off, and as they by the operation of the same law became spherical, and contracted, rings were formed and satellites thrown off from them. Mercury is the last planet that was detached from the sun, but more may yet be detached;—the sun may go on contracting and throwing off planets; until at length the limit is reached, and then he may become encrusted with an opaque coat, and, like the planets, cease to be self-luminous. Such may be the fate of our sun; and the solar system may be doomed to roll for ages through the icy regions of space, a dark and cheerless cluster of frozen worlds;—possibly like other systems which have already passed through the self-luminous phase of their existance.

There are one or two other matters connected with the undulatory theory which will no doubt interest you, as photographers, and on which I will offer a few brief remarks. These are, the "Diffraction of Light, and the Polarization of Light by Reflexion

In Geometrical Optics a ray of light is treated as a straight line, and is not supposed to be capable of being bent round a corner; yet we find this to be a very imperfect view of the matter. When a carriage turns the corner of a street we still continue to hear, in a modified degree, the rumbling of the wheels; —and in the same way rays of light may be bent round the edges of bodies, and thus shadows are not bounded by well-defined straight lines. If light is admitted through a small hole in the shutter of a darkened chamber, a white screen placed opposite to the hole, and an opaque body placed so as to intercept some of the light and cast a shadow upon the screen, the shadow is found to decrease gradually in blackness toward the edge, and round the edge are arranged a number of colored bands separated by dark lines. This effect is produced, partly by the undulations of light being propagated *laterally* as well as *directly*, on passing round the edge of a body,—and partly by what is called the "Interference" of undulations,—the dark lines being produced by that kind of interference in which the crest of one wave exactly fills the hollow of another, and the colors by interference of a more complicated character, and which I cannot now discuss.

This bending of a ray of light, so to speak, round the edge of a body is called the Inflexion of light, or "Diffraction." It has been thought by some persons likely to interfere with the obtainging of a sharp, well-difined copy of a negative, by light transmitted through it, and received upon a lens; but I have no hesitation in saying that this idea is a mistake.

Light may be polarized by reflection, as well as by refraction. If a ray of light is incident upon a sheet of plate glass at an angle of about 57°, the reflected ray is completely polarised. Sir David Brewster discovered that in order for this to happen at the surfaces of different media, the tangent of the angle of incidence must be equal to the refractive index of the medium. The refractive indices of opaque bodies may therefore be found by this law of the tangent. The refractive index of a medium is, according to the undulatory theory, the ratio which the velocity of the propagation of the undulations in vacuo bears to that in the medium; it being understood that the velocity of light is diminished on entering a denser medium, and conversely. Since the rays of different colors have a different refractive index for the same medium, it follows that their velocity in a dense medium is not equal, as it is in vacuo. This was for some time a difficulty, but it has now been cleared up.

You will perceive that photograghs might be taken by light that is entirely polarized. I do not think this subject has received much attention.

And now, Gentlemen, I must conclude this paper. There are some among you, no doubt, to whom the interesting facts which I have stated are well-known, but probably others to whom they are new. If this brisk sketch of a subject which lies at the root of Photography should have afforded you any pleasure, or have whetted the curiosity of any of you for more information, my object will be answered, and I shall be much gratified at having been able to contribute my share towards the amusement of the evening.

THOMAS SUTTON.

St. Brelade, Jersey, June, 1858.

From Photographic Notes.

A COMPARATIVE VIEW
Of the New Orthoscophic Petzvel Lens, with the ordinary Single Combination Landscape Lens.

BY ANDREW ROSS, OPTICIAN.

As the subject of the claim of Professor Petzval to the invention of the new Orthoscopic Lens, is now clearly before those who practice photography, through the medium of Professor Petzval and M Voightlander,—also that its prominent properties have been shewn in those plain synthetical papers published by the Editor of the *Photographic Notes*,—it may now be consistent for the practical optician to present, in distinctly a popular form, a comparative view of this novel invention with the ordinary form of landscape-lens, consisting of one combination only, the observations being derived from the practical construction and well known theories of these different objectives.

Much has been vaguely said about the mathematics of this subject, which might lead those unacquainted with the practical construction of optical instruments to consider the complete and most perfect developement of form and arrangement of such combinations to be the abstract production of the studio; but this is not so; for however skilled and persevering Professor Petzval is in the resolution of the most abstruse mathematical formulæ, such as will form a new era in optical investigations, the Professor must have considerable practical knowledge of the propriety of arrangement in such instruments; for it is only by the combination of this latter acquirement that the mathematics could be rendered completely available.

The conditions of a landscape-lens having the maximum of practical perfection, are, that the chemical and visual foci of the optical combinations shall coincide; that the axial aberrations of both the central and the oblique pencils shall be balanced, that is, that all the rays of each pencil shall intersect its axis at the same point; and, resuluting therefrom, together with the other corrections affecting the whole surface, that the optical picture (and sconsequently the chemical effect) shall be simultaneosly equally depicted, free from linear distortion or perspective derangement throughout the whole screen.

Now, the erratic tendencies of the ordinary single combination landscape-lens which are opposed to these conditions of perfection, and which it is the chief object to correct, are,—that those rays of light principally producing the sense of vision, and those which are chemically, are differently refrangible;—that the image of a flat surface produced by a lens, is a curved surface;—that the rays of light reflected from the object forming a pencil which, when converged by the lens, goes to form the picture of that part, do not all cross the axis of the pencil at the same point, and in consequence produce a confused or indistinct picture of it (this is called axial aberration); again, that all perpendicular lines, or those which are nearly so, in the picture, except those which may pass through its centre, are more or less curved, and this is termed distortion;—that an excentrical pencil (or one, the course of which is directed by a diaphragm placed at some distance from, and usually having an aperture smaller than the semi-diameter of the lens) tends to place the subjects of the picture towards its margin proportionally nearer together than they are in the object, thus deranging the perspective of the picture. Another peculiar effect is produced in a camera-obscura picture which the single combination landscape-lens has no power to ameliorate, namely, the inclining of marginal perpendicular lines towards the centre line of the picture, which is referred to perpendicular perspective. This effect is not produced with ordinary vision; for in consequence of the natural narrow limits of its distinctness, especially in a lateral direction, each perpendicular line is made to pass through the centre of the picture on the retina (or nearly so) by the motion of the head or eye.

Now, in the construction of the ordinary landscape objective, consisting of one combination of lenses, the only *correction* which is produced by positive and negative qualities is that of the different refrangibility of the visual and chemical rays, and is effected upon the well-known principle of the compound achromatic-lens; when by similar management of the radii of curvatures, the chemical rays are compounded with visual, and both are made to converge together on the screen where the picture is formed; but those other tendencies which are opposed to the perfection of the ordinary landscape-lens, namely, axial aberration of the central and oblique pencils, also difference of foci, for near and distant objects, and the curving of the surface of the picture, cannot be *corrected* by a single combination, but only *ameloirated* by diminishing the aperture in the diaphragm; while the curving of the marginal perpendicular lines and the effect of the perpendicular perspective, are not only entirely uncorrected, but both having similar dispositions of distortion produce the greater ill-effect. These are the optical properties in connexion with the single combination photographic landscape-lens.

We will now si. ..rly trace the Orthoscopic construction, and review the effects of the second or negative combination, which by its opposite or negative properties tends directly to the correction of the erratic tendencies of the single combination.

The Petzval Orthoscopic combination may be considered as a construction of lens for transmitting small angular pencils of light, such only as are suitable for extensive pictures and landscapes. This is in contra-distiction to the portrait combinations, where the transmitted pencils are required to be large; and if the principles of construction of this latter were carried out to form a landscape-lens, the result would be a combination of extravagantly large dimensions. This new Orthoscopic-lens may then be consistently spoken of as a construction having the smallest possible combination for the specified purpose. It consists of two achromatic (or rather, chemically acting) combinations of lenses: the front one tends to converge the rays of light, and the back combination has an opposite property tending to diverge them, and is therefore called a negative combination. They are separated to about one-sixteenth of the focal length of the front combination; and the diameter of the pencil to suit the nature of the picture to be taken, is defined by moveable diaphragms near the back one. The rays then which diverge from the object are first converged toward a focus by the front combination; and, by the contrary tendency of the back, the focal length is prolonged to from once-and-a-quarter to once-and-a-half that of the first, where the picture is produced.

We must here introduce the observations, that with reference to a lens of small dimensions, an attempt to substitute a small single combination for the ordinary form of landscape-lens has recently been made; but the original experiments being merely adventitions, and unguided by fundamental principles, the essay was soon given up. All experienced and correctly-informed opticians know that with one actinic combination of two or even three single lenses, cemented together at their contiguous convex and concave surfaces, however they may be modified, the above requisites of a landscape-lens cannot be produced; and it remained for the inginuity and skill of Professor Petzval to accomplish the construction of the smallest possible arrangement by the introduction of a second actinic combination of such quality of focal power, and position in the instrument, that all the requisite corrections can be approximately accomplished. Again, the second combination being placed at some distance from the front one, together with the peculiarity of that combination to diverge the rays of light, the foci of those converging pencils which are incident upon it, after emergence from the front, are prolonged, and this effect virtually produces a larger picture than is due to the back focal length from the negative combination, and that, in the proportion of the distance to which the rays emerging from the front combination are converging, to the greater distance they are made to converge to, after refraction by the second combination; consequently the saving in the length of the whole camera with relation to the size of the objects in the picture produced.

As this Orthoscopic lens consists of two achromatic (or rather, actinic) combinations, a more perfect and active effect in this respect can be produced; also by the property of the negative combination relatively prolonging the foci of the more marginal pencils, together with the opportunity of varying its curvatures, also its focal power, the other erratic tendencies of a single combination can be corrected. The restrictions to the correction of the axial spherical aberration of both the central and excentrical pencils, imposed by the ordinary combination, having its means of such correction absorbed in the production of an approximate flatness of field, are in this Orthoscopic one overcome, and the correction of axial spherical aberration effected to the second degree of approximation. The curving of the surface of the picture can also, by means of the negative combination prolonging the marginal foci, be directly corrected, while at the same time the curving of the marginal perpendicular lines making the straight sides of a square appear curved or barrel-shaped, as produced by the ordinary single combination landscape-lens, is by the same property corrected, as is also the derangement of the marginal perspective. This property of the negative combination to prolong the focus of the marginal pencils is likewise employed to ameliorate the effect of perpendicular perspective at the upper part of the picture; but as this perspective produces inwardly-inclined straight lines, and the tendency of the correction is that of outwardly-curved lines, although not producing geometrical exactness, considerably ameliorates the ill effect, which, together with the aid of the photographer in slightly tilting the camera and placing the horizontal line rather high in the picture, the visibility of this defect is nearly obliterated. With reference to the subject of the variation of the focal length of a lens in proportion to the distance of the object, this Orthoscopic lens is under the same optical laws as the ordinary single combination, and in this respect requires a suitable modification of aperture to produce distinct images of the various prominent objects in the picture situated at different distances; but the perfection of the corrections of the aberrations in this Orthoscopic lens, gives to each point of the picture a more perfect concentration of light than the ordinary one, producing quickness of photogenic action; but as this is accomplished by a second pair of lenses, light is lost by reflection at their surfaces: hence upon the whole, the old form may be the more quickly acting lens.

In the employment of the means of direct correction afforded by this lens, the optician has to produce that amount of flatness in the picture which is suitable to the focal length, and consequently size, of the picture yielded by each individual lens; as in the practice of photography for landscapes, the focal length of the lens, or size of the camera, will be prescribed by the distance of the nearest object in the foreground, which must be distinctly shewn. As an example of this condition, our Orthoscopic lens, of $2\frac{1}{8}$-ins. diameter, and 16-ins. back focal length, is made to exhibit all the detail of a landscape in one focus, with an aperture at the second combination of $\frac{3}{4}$ of an inch diameter, when the nearest distance of the principal objects is 40 yards, and the greatest indefinite. For the grouping of objects the whole aperture of combination, namely, $1\frac{3}{8}$-in. may be employed, and the diaphragms with the smaller apertures for copying.

The superiority then of this Orthoscopic lens is that the actinic focus being more intense, and the marginal definition being nearly as perfect as the central, and the flatness of the picture under control, a freedom from distortion, and nearly perfect perspective over an angular picture of great extent, all of which can be produced by the experienced optician, with the elements of correction possessed by this new construction, together with the exterior advantages of the capability of combining a perfectly constructed portrait and landscape lens in one arrangement, and in one half the bulk as regards the landscape part, a reduction in the length of the camera for the size of the picture as compared with the ordinary one, and a corresponding diminution of price in both camera and lens.

These advantages are obtainable by the instrumentality of this double combination, and which no single cemented combination can accomplish.

We have just received an account of a camera-obscura lens recently patented by Mr. Grubb, who expects it will be found more suitable for photographing views than any other extant.

The first argument in support of this opinion, is, by bringing his patented form of single combination into comparison with Professor Petzval's Orthoscopic lens, consisting of two combinations, with reference to their comparitive quickness of photogenic action; and, secondly, that this patented lens has its spherical aberration nearly corrected, thereby affording, either a more distinct picture than the ordinary lens (if similar apertures be used), or an image as distinct as that given by the old lens, using a considerably increased aperture of the new.

In regard to the first argument the representation might be strictly correct, as an ordinary single cemented combination can neither obstruct nor reflect so much light as one consisting of two combinations; consequently, on this individual point, the single combination would promise the quicker action. But the whole of the case for and against has not been shown. The Orthoscopic lens may, as before stated, be made to include more of the actinic rays than the single combination, and these can, in the Orthoscopic, be brought to more definite foci; hence the comparative quickness of action of the two lenses is resolved into a balance of advantages; but my experience would dictate the single combination would produce the quicker action with similar apertures.

His second argument,—that of the spherical aberration being nearly corrected,—is not to be granted as an improvement, unless it is shewn that other veritable conditions co-exist, the production of which has been previously understood to interfere with the correction of this axial aberration; but this has not been shewn; and in the course of my experience I have determined that when that indispensable quality of a consistent amount of flatness in the picture is provided, and which can only be produced by a bending of the combination, all other errors must remain as they happen, the means of optical correction provided by the single combination being exhausted; and when a certain amount of *flatness is obtained*, the lengthened and otherwise deformed focal points of the excentrical pencils equally ensue, the position of the lenses with reference to the picture being ultimately of little consequence, but as the greater command of the quality of flatness is obtained when the crown lens is toward the picture, we have continued that practice. Again, the claim that a "considerably increased aperture of the new lens" is afforded in consequence of the spherical or axial aberration being nearly corrected, which is at the expense of flatness of picture, we demur to; for even without this exception, the condition of aperture is dominated by others *in this single combination*. It is not the state of the axial aberration of the more central pencils that determines the diameter of the aperture to be employed,—it is the size of a pencil afforded by this necessarily imperfect lens which is sufficiently indefinite to exhibit a picture at the different distances resulting from the roundness of field or curving of the screen due to the object, together with the different depths of the focal points arising from the different distances of the objects forming the picture. This latter limit of aperture is inseparable from the subject, and applies to the use of all lenses, in degree according to their properties; but Mr. Grubb leaves untouched that most important point of correct representation; for even if his second argument had any validity, the arrangement he has patented necessarily leaves all the geometrical errors without correction and as they happen, and which are fully described in the former part of this paper.

For the Photographic & Fine Art Journal.

PHOTOGRAPHY IN GERMANY.

Leipsic, July 11th, 1858.

Mr. H. H. Snelling—*Dear Sir*—According to promise, I will endeavor to give you a short sketch of the present condition of the Art of Photography in Germany.

The first thing you notice here is the entire absence of *untouched* photographic portraits. The reason for this is, that they do not understand *how* to make a good picture by photography alone, and not because people wouldn't take them untouched, as a photographer here wanted to make me believe. He tells me that he can make perfect pictures, but that it is no use doing so; people don't want them. But the truth is, experience shows the contrary. Specimens of the best untouched American photograph-portraits never fail to be highly admired and eagerly sought for here.

The most general excuse for this inferiority is the "atmosphere." Now this is merely ridiculous; the atmosphere may have something to do with the greater beauty of Daguerreotypes in America, but certainly not with collodion pictures. The atmosphere is generally believed to contain here more moisture, which may indeed influence a daguerreotype plate, but can only be favorable for collodion processes. And as for clear days, there are here certainly about as many as across the water.

Next, it could hardly be said that Germany has not photographers just as experienced as can be found in the New World —only with this difference, that the experience of the latter is coupled with great competion, which is the principal mover towards perfection.

In going round the establishments of this kind one will soon see where the difference lies—not in the atmosphere, but principally in the Atteliers. Almost without exception they do the sitting in a so-called "glass saloon," that is, a cage about 20 feet by 12, built of boards and glass in a garden; the roof and sides, with the exception of one end, made entirely of sash. Not only does the sun shine in all day long, but they are generally so placed near houses and trees, that all manner of shadows and reflections must necessarily interfere with the sittings. The only thing that could remedy this to any extent, a side screen, I have no where met with. Any American operator can imagine what sort of pictures such an arrangement will produce! This is the reason why most of the untouched pictures are so poor and so little liked;—the best artist cannot make a round and effective picture out of a flat photograph. The relief and roundness of a good American photograph appears to them like a mystery.

Next to the light, comes the apparatus, it explains why their pictures are so full of spots, stains and streaks. I have seen plateholders used for wet collodion, made the same as those for daguerreotyping, where the plate lies all around in contact with the wood. I have seen them operate without an upright silver-bath, using merely a dish for sensitizing the plates; camera boxes with the groundglass clear out to the end of the box, so that it is a hard thing to get focus.

As to their way of using the chemicals I cannot say much, as in this they are just like their American competitors, and like to make a secret of their particular way of preparation. Pyrogallic Acid seems to be the principal developer, and of course they think that they cannot get too much light for making a negative without too long a sitting.

The best untouched photographs I have seen, were made in Vienna. At this year's Easter-fair in Leipsic, a number of Photographs were exhibited by different producers of Germany and France, giving an insight into what is done in this branch.

Most of them were photographic copies, engravings, paintings, statues and architecture. Among the photographs from statues there were some of large size and beautifully done, coming I believe from Cologne. Some prints of copies of engravings on albumanized paper toned with gold were well executed, the only drawback is the great difference in tone and strength of impressions from the same subjects, which makes it unpleasant to have to order from a distance. More uniformity is seen with impressions on plain paper toned black. Ammonia-nitrate paper I believe to be seldom used.

Colored photographs are hardly ever called for, the bulk is touched up in India Ink.

In Dresden there is an operator from Philadelphia, making Melainotypes, otherwise these pictures have not yet been introduced here. Positives on glass are rarely seen, they go to the trouble of transfering the film to black oil cloth, which process of course destroys its original beauty. The best of this kind of pictures (sold under the name of panotypes) must be despisable things to every man of taste.

As for life-size photographs, they have not been seen here yet; a few have heard about them, and are trying their hands at it—but anything like a first success seems not to have been achieved; whether this kind of picture finished in Oil, will find favor here or not remains to be seen; any how they would have to be offered for half the money they bring in New York.

In the June number of thePhotographic and Fine Art Journal there is an inquiry after Saxe-paper. I will say here for general information that this paper is manufactured by Ferdin Fluisch, whose principal Depots are in Leipsic and Frankfort on the Main; he received lately an order for 12 Reams from a Mr. Forster in Philadelphia, part of which quantity only could be sent. The fact is, that he cannot manufacture enough of it to keep any on hand, and has many orders from photographers themselves in France and Germany to supply them. I have been assured that this paper never varies in quality, and can therefore always be depended on, which is a great advantage.

In the pleasant expectation of soon meeting you again.

Yours, very respectfully,

Osc. J. Wallis.

For the Photographic and Fine Art Journal.

PHOTOGRAPHIC SOCIETY.

Pittsburgh, August 16th, 1858.

H. H. Snelling, Esq.—*Dear Sir*—In looking over last months Journal, there is a communication over the signature of F. J. E. for the organization of Photographic Societies throughout the country. It is to be regretted that there is no action taken upon the subject by practical men, for, I believe if the ball was once set in motion it would be like the snowballs of our boyhood, its proportions would increase in size and weight at every revolution. It appears to me that a few energetic gentlemen, *yourself taking the lead* in New York could put the thing into shape; say for instance the head of the society to be in the city of New York, to be composed of a president, vice president and a recording secretary, the last named office to be elected annually at a salary of $800 or $1000 per annum, whose duties shall be defined by the society; that each member shall pay a fee of membership yearly, say $10 if necessary, and upon becoming a member he shall receive a diploma from the society.

The object of the Society to be the advancement of the Photographic Art, and the upholding of the prices of Pictures to a uniform standard throughout the country. The object I believe could be attained if the leading Gentlemen in the business would pledge themselves only to buy of the manufacturer and stock dealers who are members of the society, and in return pledge themselves to put the prices of stock up fifty per cent. to those who are not members of the society, which can be easily ascertained by the society, furnishing to each of its members a Photographic Directory in which each name, place of business, city, town or state, is recorded. It appears to me Mr.Editor, we can crush this cheap picture business if we put our shoulders to the wheel, if we do not it will crush us, for I am sorry to say that cheapness appears to be the great desidratum with a majority of the people in our city; we have several twenty-five cent establishments, and to mend the matter we have several wagons located about the city, and when business gets dull in one part they hitch up and go to another, they take pictures in cases from tweny-five cents up. I shall now close hoping that this may have a tendency to awaken our photograhic friends to their own interest, and that of our beautiful Art.

I am, dear Sir, Yours, &c.

J. R.

From Photographic Notes.

LOG OF A PHOTO-YACHTING EXCURSION TO THE COAST OF BRITTANY.

BY THE EDITOR.

There are probably few of the readers of this Journal who have had the good fortune to enjoy the combined pleasures of a photographic and yachting excursion, in the height of summer, to a romantic and interesting locality; I have therefore no doubt that a brief account of a trip from which I have just returned, and which proved in every way most delightful and satisfactory, will be read with interest,—particularly as I have received *carte-blanche* from the hospitable owner of the yacht and my agreeable *compagnons de voyage*, to mention the full particulars of the expedition.

Well then, on Monday morning, July 26th, the beautiful fore-and-aft schooner yacht "Rosalind," of 101 tons, made her appearance off St. Brelade's Bay, and her gig, manned by four strapping rowers, and steered by the owner, Mr. Birchall, of Preston, came ashore and took me on board. I had to start at a moment's notice as the vessel was laying-to in a heavy sea a mile outside the bay, and under reefed sails; but I had everything ready and not an instant's delay occured. I took with me a stereoscopic camera, six or eight dry plates which I had received from Dr. Hill Norris nearly a year ago, and a stock of clean glasses for working wet collodion, all the other paraphernalia being provided by Mr. Birchall. The stereoscopic camera is fitted with a pair of portrait lenses, with stops of various sizes from $\frac{1}{8}$th of an-inch upwards, capable of being inserted between the front and back lenses of the combination;—the lenses being mounted $2\frac{1}{2}$-inches from centre and having a focus of 4-inches measured from the back lens. This form of instrument I consider the best, because in the first place it is strictly correct in theory, and in the next place instantenous pictures can be taken by removing the stops and fixing a front shade to the camera to prevent the effects of diffused light.

We had rather a stiff pull on board, and the long, narrow gig, propelled at full speed by the rowers, leaped merrily from wave to wave without shipping a drop of spray. Should any nautical reader enquire why the vessel laid-to so far outside, I would inform him that this coast, although beautiful to look at, is beset with dangers in the shape of rocks and tides, and to approach it too near without a pilot in a vessel drawing 11 feet of water is an act of which no prudent captain would be guilty, for ship's bottoms are not exactly calculated to withstand much bumping upon Jersey granite.

Some little dexterity is always required in getting on board a vessel from a boat when rolling in a heavy sea, because there is a chance of the boat being stove-in; but a yacht's crew is expected to be particularly dexterous in all manœuvres of this kind, and there certainly never was a finer set of men than the ten well-disciplined and good-tempered fellows who compose the crew of the "Rosalind"; so the word "in bow" was given at the proper moment by the steersman, oars unshipped, boat-hooks and fenders put out, and the gig brought alongside the lee-gang-way, through which we jumped on board one after the other as the vessel gave a lee roll, clawing hold of a couple of beautifully white cotten ropes fastened to brass stanchions, and scrambling up a mahogany step ladder. The helm was then put up, the sails filled, the weather fore sheet let go, and away we went, close hauled on a wind, for the Isle de Brehat, on the coast of Bretagne, distant some fifty or sixty miles from Jersey. In the course of half-an-hour or so the wind moderated, the sea went down, the sun came out, and so the reefs were shaken out, and a gaff-top-sail set upon the main-mast. Then my dear little island soon began to look blue and hazy, and at one o'clock the steward announced "lunch." Our party in the main cabin was a quartette, my three companions being all Preston gentlemen, two of them Aldermen, the third a Clerk of the Peace, so I found myself in august society. As the vessel heeled over considerably under the press of sail we were carrying, the swing table was brought to an amusing angle with the floor, so that while my plate nearly touched my chin, that of my *vis-a-vis* was literally upon his knees and at arm's length from his mouth; but the freaks of Old Neptune did not appear to spoil the appetites of any of the party. In the afternoon the wind went down entirely, and we had a roasting sun and a flat calm, the sea looking as if it had been oiled. As the flood tide was running strong and drifting us towards a reef of rocks called *Les Minquiers*, the captain thought it prudent to anchor, so there we lay until about seven o'clock, midway between Jersey and the French Coast and nearly out of sight of land. But the sun went down somewhat suspiciously, and the weatherwise predicted wind and rain before many hours. Dinner was served at six, and we turned into our berths at midnight just as a light breeze was springing up.

Tuesday, July 27.—I was aroused this morning at six from a profound sleep by the rattling of the chain-cable through the hawseholes, and on enquiring, found we were anchoring in the roadstead at Brehat. This is an island lying close to the main land, and about two or three miles long and a mile wide, but of very irregular form, and surrounded with rocks of all shapes and sizes. It was pouring with rain and blowing very fresh right in to the roadstead, nevertheless we determined after breakfast to go ashore, so mackintoshes were donned, the gig manned, and away we pulled for the little harbour. I must not forget to mention however that the "Chef des Douaniers" first paid us a visit on board, and after a great deal of jabbering in French a small fee was paid *pour la sante*.. Mr. Birchall had been once before to Brehat, so he took us direct to the great curiosity of the Island, viz., a remarkable old chuch and church-yard well adapted for photographing. But the weather was so bad that nothing could be done that day; so we returned on board, eat, drank, played chess, and cleaned plates, and thus whiled away the hours till bed-time.

Wednesday, July 28.—Rain and wind again. I was pronounced the "Jonah" of the ship, for on Monday I had brought with me a flat calm, and ever since we had rain and wind;—in fact we were all as sulky as bears. About two o'clock however it left off raining, so although the light was bad we determined to try our luck at photography, rather than remain idle and out-of-temper on board. I took with me my dry plate and stereoscopic camera, and Mr. Birchall a camera for views 9 × 7, and all the wet collodion paraphernalia. We got an out-building close to the church-yard, hung up yellow cloths before the window, and employed two of the crew in carrying water, cameras, &c. It was nearly four o'clock before we began work, and the light was very bad. I exposed one dry plate ten minutes with a $\frac{1}{4}$-inch stop, and another half-an-hour. Mr. Birchall's first wet plate, exposed three minutes, gave only a grey and feeble sky; but the bath was too acid, so we added some carbonate of soda and tried again; the second plate, with a longer exposure, gave a decent positive quite free from fog. These first attempts were not encouraging, so we returned on board and spent the evening as usual. At midnight it was a flat calm and the weather seemed improving.

Thursday, July 29.—A fresh breeze and cloudy sky, but with patches of blue in it, and the weather evidently clearing up; so arrangements were made to go in the gig with all the photographic traps to Beauport Abbey, a fine ruin, situated at the head of a creek about three miles from our anchorage. We took with us a large tent, and the chemicals, cameras, &c., packed in a huge basket, and started immediately after breakfast. The wind was fresh and on the beam, so a sail was set upon the gig large enough to have capsized her in an instant had not six out of the eight persons on board sat well to windward, and then it was exciting in the extreme to see this long, narrow boat, five or six times her beam, tearing through the water against the tide (and with a good lop of sea on outside the headlands which we had to weather) without shipping a single drop of spray. I mention these performances of the gig because I hold certain theories with respect to the construction of boats and vessels which I intend some day to publish in a pamphlet on the mechanics of sailing boats. My idea is that speed is to be obtained by means of *length*, the height of the sails and rig depending not upon the length but the beam, so that a long vessel is not necessarily more crank than a wide one, since it may be considered as equivalent to two or more wide ones fastened together fore-and-aft; at the same time I believe that modern experience has established the fact that a bluff bow is a wet, and a sharp bow a dry one; but this Journal is hardly the place for discussing questions of this kind.

Somehow or other we mistook the landing place, and surprised a party of ladies from the neighbouring town of Paimpol, in the act of making their toilet after a bathe. One of these, whom we dubbed the "blue lady" from her wearing a blue polka, excited the particular admiration of one of our party, as gathered from his frequently turning his eye-glass in her direction and from the dreamy and sentimental mood in which he indulged until he paid Paimpol a visit on the following morning, which appeared to dispel the romantic illusions of the previous day. For my part I have somehow got to regard *everything*, even the *pulchrum sexum*, in a photographic point of view, and my first thoughts are always how to get a good pose, or make a good composition; now this is an abnormal state of mind which ought not to be encouraged. Certain it is however that the "blue lady" tripping about upon the wet beach with shoes and stockings off and lower garments clued up, hunting for shells, or sea-weeds, or shrimps for her aquarium, and surrounded like Nausicaa with her attendant nymphs, would have made a charming study for the camera.

Having mistaken the landing place we had to cross another creek on foot, and to wade through the mud for about a mile, two of the sailors carrying the the traps slung from the sprit of the boat. One of the men, nicknamed "Toby," (as handsome a fellow as one often sees, and a Hercules in build,) was with Lord Dufferin a year or two ago, on a yachting trip to the Artic Regions.

We got to Beauport Abbey about two o'clock, and at once pitched the tent under some trees. It was a lovely afternoon,—cloudless and calm, and the ruins of Beauport far surpassed my xepectations. Strange to say this part of the coast is beautifully wooded and the scenery of a pretty inland character, altho' the tide washes the Abbey grounds. I worked up two or three more dry plates, and also took two or three stereoscopics upon wet ones. The chemicals were in good order, and Mr. Birchall got three or four exceedingly good negatives. The tent he worked in is on the military principal,—that is, it has a pole at each end, and is fastened to the ground with ropes and pegs, so that when up it resembles a high pitched roof with two gables, through one of which you enter, and in the other is a yellow window. The plan is very good when there are two men always at command to shut you in, let you out, and so forth, but otherwise I hardly approve of it. My ideas on the subject of a tent shall be given in a future number.

This successful photographing put us all in good humour, and we had a glorious sail back to the yacht, arriving in time for a roast goose at 9 p.m.; and ending the day in a very jolly manner. Just before turning-in I went on deck to look at the weather. There was absolutely no wind, the stars were twinkling, and the sea calm as a mill pond, while upon its surface, appearing as if sown broadcast were a thousand rocks, large and small, which now scarcely provoked a ripple, and on the land side the funny little Island of Brehat with its amphibious population. And beneath my feet lay the beautiful "Rosalind," asleep upon the water, with her tall raking masts, and taught rigging, and luxurious appointments; and in their berths her intellectual and hospitable owner, and our agreeable companions the gentleman dreaming of the "blue lady," and the musician of the party, (of whom more to-morrow), and the skilful captain:—and in their hammocks the gallant crew, and the glorious old cook, who was never seen on deck after six in the morning, and the obliging steward,—all in fact but the "anchor watch," the one man forward chewing his quid in a red nightcap. It was a scene never to be forgotten; and such as makes us wiser and better men beyond a doubt.

Friday, July 30.—Aroused this moining at an unearthly hour by an unusual wishing-washing-slushing-scraping-scrubbing over head, for altho' the decks were scrubbed divinely every morning, it was thought proper on this particular occasion to make an unusual business of it. All these operations on shipboard, together with the strange noises one hears,—for instance, the gurgling of the water close to one's ears all night, the creaking of the bulkheads, groaning of the masts, tramping over head, thumping of ropes on deck, and rattling of chains, are very exciting; and then the tossing and tumbling one gets, one-half the night over to leeward in one's berth and down where the keel ought to be, and the other half up to windward, with the fear of being pitched out bodily, and having to hold on "like grim death";—the novelty of all this sort of thing has for me a peculiar fascination, for I do not often suffer from sea-sickness, and heartily enjoy anything in the shape of adventure; as, in fact, do most people.

The sun was shining brightly, and from that moment to the end of my trip I do not remember that a single cloud crossed his blessed disc. We determined to make one more trip to Beauport, and take some more views, while the other two of our party went off to Paimpol. The first two or three plates did not turn out quite so well this morning, and one of them decidedly fogged from alkalinity of the bath, but a few drops of acetic acid put matters right at once, and then the chemicals worked beautifully, the process being reduced to a dead certainty. I worked to-day on my wet plates, and got some nice little stereoscopes, and Mr. Birchall did capitally on his 9×7 plates, so that all went "merry as a marriage-bell."

The Abbey of Beauport belongs to a French lady who married lately a Polish refugee. The site has been chosen with that keen appreciation which the old monks appear to have possessed for fine natural scenery; and it is not difficult to understand why men of educated minds and quiet habits should in dark and troublesome times have congregated together in remote and beautiful spots as far away as possible from the tumult of a badly-governed, fighting, squabbling world, and lived on the produce of the rich and smiling vallies which surround their common dwellings,—not however exactly like angels, or entirely free from the vices and wickednesses of humanity.

This evening we were all in glorious spirits with the day's work. I have said that one of the party was musical. He is in fact an accomplished musician and singer, and either is or was president of a glee club in the North. This evening then we had a musical *soiree*, and never did I enjoy "Tom Bowling," "Sam Spritsail," "Fly not yet," "The Thorn," and several of Tom Moore's and Burns's immortal songs so much as when rendered by Mr. Burnett on this occasion. His execution was full of "fine detail" and "half-tone," and in finish and taste perfect. Between the songs we were favored with some vocal harmony from the men for'ard, some of whom have good voices and musical tact. Then followed speechifying, returning thanks, and similar jollyfication, which we kept up till after midnight and concluded with a song or two on deck. That evening will ever be with me "a green spot in memory's waste." Our kind entertainer is a noble fellow. "May his shadow never grow less."

Saturday, July 31.—This day was spent in Brehat, taking the old church and church-yard over again from various points of view. We worked in the tent, and everything came out capitally. When one has all the paraphernalia at hand there is no process like wet collodion. The church-yard is full of wooden crosses, painted black, upon which the name of the departed is inscribed; a bottle of holy water is placed at the foot, and on the back of most of them are painted flames, pointing upwards, and a skull and cross bones; at the end of every inscription is added; *Priez Dieu pour le repose de son ame!* I got good stereoscopic negatives of this church-yard, and have no doubt they will be very effective when printed. Many of the graves are planted with flowers, and some with weeping willows. Fortunately not a leaf stirred, and our negatives are sharp and perfect.

This was our last day in Brehat. The island has but little interest and the houses are stiff and ugly. The population during the summer months is composed principally of old men, women, and children, most of the young and able-bodied men being at sea. There are several good houses upon it inhabited by *capitaines de long cours*, who have realized an independence at sea

Sunday, August 1.—We started at three o'clock this morning for Roscoff, a small town situated on the coast near Morlaix, and about 60 miles from Brehat. An old pilot took us as far as the Isle de Batz, and then another came on board and took us into the roadstead of Roscoff. The wind was right aft, and we bowled away at about 9 knots, with square-sail and square-top-sail set upon the foremast, so that I had the pleasure of seeing the "Rosalind" in "full feather."

It was a glorious sail. We passed in succession the Heaux lighthouse,—the seven Islands,—a dangerous reef of rocks called the Triagons,—and then came in sight of the lofty spires of Roscliff, and of the magnificent Creisker and Cathedral of St. Pol de Lèon,—the spire of the Creisker being rather higher than that of Salisbury, or the cross of St. Paul's. An amusing and exciting incident occurred when passing the Seven Islands. A large French government cutter, accompanied by two smaller cutters, came so close to us, as to enable Mr. Birchall and the captain of the large cutter to exchange courtesies by a wave of the hat. The Frenchman was close-hauled, and we were running with the wind right aft, the most unfavorable point of sailing for a fore-and-aft schooner; but after having saluted us he bore up, and gave us a race, setting all the sail he could upon his vessel, viz., square-sail, gaff-top-sail, and half-top-sail. In half-an-hour we left him a mile a stern, and saw him haul down his square-sail and half-top-sail, *defeated*.

The "Rosalind" is built somewhat on the model of the "America," and is one of the fastest yachts afloat. She has only raced once, and then carried off the cup. Every sailing craft we came in sight of was beaten "into fits," and many of the large trading cutters which ply between France and Jersey, and carry provisions, and frequently live-stock, are fast and fine vessels,—but these and other craft when on the same tack with ourselves were generally left "hull down" in a couple of hours.

The coast of Brittany, which we were now skirting at a distance of six or eight miles, was once in a high degree a land of romance and sanctity. Here King Arthur is said to have had his encounter with the dragon, and the Bretons dispute with Glastonbury the honor of possessing his remains;—at the same time the numerous ruins of fine ecclesiastical buildings in this part of France bear witness to the former sanctity of this locality.

We anchored in the roadstead of Roscoff in the afternoon, took a stroll to the Isle de Batz, and went ashore at Roscoff in the evening. The church has a tower and spire, built in the time of Louis 14th, which struck me as singularly elegant, and I regret exceeding that we could not find time to get a photograph of it. About a mile from Roscoff, in a garden formerly belonging to a convent or Franciscans is an immense fig-tree, probably the largest in the world. The branches are extended literally and supported upon stone pillars. I measured the diameter of the space covered by it as nearly as I could by stepping it, and the distance was twenty three long strides, so that three-hundred people could probably stand beneath this tree. It was loaded with fruit.

In the neighborhood of Roscoff great quantities of onions, asparagus, and other vegetables are grown for the English market, and these are conveyed across the Channel in a kind of lugger called "Chasse-Marée."

Monday, August 2.—Started at eight this morning in a most wonderful French trap for St. Pol de Léon, a distance of three miles, taking all the photographic apparatus with us, and the useful man "Toby." Put up at the Hotel de France, equidistant from the Cathedral and Creisker, and got a room there to work in, so the tent was unnecessary The tower of the Creisker is a marvellous piece of architecture, running up straight like an Italian Campanile to the height perhaps of 200 ft. or more, and then terminating in a spire, the entire height being 393-ft. It is of elegant design. We got three or four successive views of it, both on the 9 × 7 and stereoscopic plates. The best view of the upper part of the spire is got from a stage on the top of the Hotel de France. The Cathedral offers nothing remarkable in its exterior, except a rose window, but the interior is very fine. Since my return home I have received from Mr. Larkin, of Lichfield, a stereoscopic view of the interior of Canterbury Cathedral, which is so perfect that I greatly regret its not having occured to me to try the interior of the Cathedral of St. Pol de Léon. There are some curious skull-coffins here. The practice was to disinter the body some years after burial, cut off the head and place it in a small box like a dog-kennel, having a cross on each gable, and a hole in the shape of a heart at one end through which the skull is seen. Outside is an inscription commencing thus: *Ci git le chef de*——, and ending with: *Priez Dieu pour son ame.*

We returned to Roscoff by the same ricketty conveyance in the evening; but too late to take the elegant tower of that place. I would observe that in the corner of the church-yard at Roscoff is a curious building, unlike anything I have seen before, and which I believe to have been an ossuary, or place for containing the bones of those bodies from which the head was removed to be deposited in a skull-coffin.

Tuesday, August 3.—Got under weigh this morning at eight with a fair wind for Jersey, and were soon bowling along at ten knots under square-sail and square-top-sail, as on Sunday, which we considered a piece of extraordinary good luck. This was to be the last day of my holiday, and my kind friends, who were anxious to witness the approaching ceremonies at Cherbourgh, were going many miles out of their course for the express purpose of putting me ashore at Jersey. As the spires of Roscoff and St. Pol de Léon, and the various objects on the French coast receded from view I took my leave of them in a sort of mournful reverie from which I was aroused by a cheering proposition from Mr. Pedder, the naturalist of our party, to try and obtain a portrait of Mr. Birchall on the deck of his yacht, with the bulwarks, sails, &c., for a background. In this matter there appeared to be no difficulty, for although the vessel was tearing through the water with all the sail set she could stagger under, and tossing and rolling right merrily, still as the camera moved with her, her particular motion during the exposure was of no consequence; so we darkned the after cabin skylight with black and yellow curtains and got to work. Mr. Birchall stood in the shadow of the mainsail with a telescope in his hand, and the background as it happened, and a No. 2 Ross portrait-lens was brought to bear upon him. On focusing I could discover no traces of diffused light, for the precaution had been taken to place a diaphragm of about $1\frac{1}{2}$-ins. aperture immediately in contact with the front lens, which cut off the ring of light generally seen round the edge of that lens when working in the open air without a shade to the front of the camera. The operation therefore offered no difficulties, and out of three trials two excellent full-length portraits were obtained with an exposure of two seconds in the shade. We next took three or four stereoscopic views of the vessel from the stern, including the captain and crew, (save the mate at the helm), together with my three cabin passengers. These came out admirably with an exposure of twenty seconds and the $\frac{1}{8}$-in. stop between the lens Then followed an attempt to take the waves instantaneously. It was now six o'clock. I knew it would be of no use to employ the full aperture of the portrait lenses, as my stereoscopic camera is badly constructed and lets in diffused light when no stops are employed, so I tried with a $\frac{3}{4}$-in. stop between the lenses, and gave an instantaneous exposure by quickly uncovering and recovering the lenses by a black glazed hat. The sky came out quite dense and the horizon well-defined; the distant waves were also sharp and crisp, but the near ones under-exposed and devoid of detail. The sun was at my back; there was no fog on the plate, and the lines of the picture are intensely sharp. I have no doubt whatever but that with a properly constructed camera, and lens properly mounted so as to prevent diffused light from entering and permit of the whole aperture being used, the waves of the sea might be taken in broad daylight with great ease and certainty. In fact photography may, *I am quite certain* be turned to a most useful purpose in navigation; I mean for taking the marks described in books of sailing directions, and also the various appearances presented by the coast, while the vessel is under weigh. The governments of civilized countries should take this matter up at once. It would doubtless save many shipwrecks, and prevent much suffering and loss of valuable property. I conceive this matter to be so important that I propose in the next number devoting a special article to the consideration of it.

We did not save our daylight into Jersey, and therefore lay-to outside the dangers of the coast until daybreak the following morning, when we ran in and anchored in St. Aubin's Bay.

I found all well at St. Brelade's, and heaps of letters requiring my immediate attention. To my kind friends Mr. Birchall, Mr. Pedder, and Mr. Burnett, I am indebted for a delightful holiday, rendered intellectual by photography, natural history, and music; and to the skilful captain of the Rosalind, Mr. Trout, for some valuable information in nautical matters, and many amusing anecdotes of trips to Iceland, Norway, the West Indies, &c., &c. All this enjoyment, and my introduction to these kind friends, who have given me a pressing invitation to visit them at Preston, was brought about by Mr. Birchall breaking a bottle of collodion on a former visit to Jersey, and applying to me to replace the loss. Among my readers there are probably few who have not made some valuable acquaintances, or even esteemed friends, through photography.

I took my last look at the beautiful "Rosalind" on Wednesday afternoon as she passed St. Brelade's on her way to Cherbourg.

The 10th commandment has not the especial clause "Thou shalt not covet thy neighbors yacht," but in the "nor anything that is his," I suppose the yacht is included; I must not therefore covet the possession of the beautiful "Rosalind"; but if there is anything on earth I should like to possess, it is a yacht big enough to take me on a photo-excursion to the Mediterranean. Five or six years ago I built, in my own garden, a schooner of forty tons on the model of a trading vessel, the hold being fitted up temporarily with bulk-heads and cabins, and in this little craft took a few trips to France, but the *res angusta domi* compelled me to dispose of her and give up marine pleasures.

And now I must bring a long story to an end, with an apology to the reader for having trespassed perhaps too long upon his patience. I would observe however, that the collodion we used was my own make, after the formula of Mr. Hadow, given in my Treatise, and iodized only with iodide of potassium; and that we used both acetic and citric acids in the developer, Mr. Birchall giving the preference to the latter.

Since my return home, I have developed two of the dry plates. The first was under-exposed, the second quite successful. It will be remembered that these plates have been kept for nearly a year; there is no fog, the blacks are extremely dense, and the definition perfect. Dr. Norris's process is really admirable; it deserves to be recommended extensively, and is a great step in photography. [Ed. P. N.]

For the Photograpic and Fine Art Journal.

SOME ITEMS, RELATING TO THE PROCESS OF SITTING FOR A HELIOGRAPHIC PORTRAIT.

Mr. Editor,—There are so many circumstances connected with a Heliographic Sitting, which bear directly and essentially upon the character of the result to be obtained;—circumstances any one or more of which, if *mismanaged* or *neglected*, will leave the picture either defective or positively blemished,—that one cannot but marvel at the *recklessness* with which this profession is assumed by many, who have hardly a quality either *native* or *acquired* to fit them therefor.

How continually, for example, do we witness a stupid blunder committed at the very outset, in the awkward placing of the subject's face and figure in relation to the Camera! The face and head instead of being sketched diagonally, or so as to exhibit a partially *side* as well as *front* view are represented, as staring *directly afront*, and consequently being so *broadened* as to appear absolutely *distorted* and deformed. You may perhaps look over a collection of *fifty* Heliographs without finding *five* that vary from the aspect of *gazing straight a head!* And all this, too, when a single glimpse is sufficient to show the measureless superiority of the side view over the view so generally adopted.

Consider, again, of how much importance are a score of matters pertaining to the operating room, such as the admission and regulation of the light, &c. &c.,—any one of which being misadapted and misarranged may greatly injure, if not positively spoil the picture.

How very important, moreover, is the regulation of that delicate process, the play of lights and shadows over the head and face and figure—which to the Heliographer must execute the work performed with *colors* by the painter,—must mitigate, or cast entirely out of view defects and blemishes in either, and bring the fine points conspicuously into sight! How insufferably absurd the idea that nothing else is required of the operant than to station the subject directly before the camera, whatever is necessary *beside* being performed by the sunbeam itself!

What a rapidly working and infallibly sure eye,—how familiar an acquaintance with the constituents of the sunbeam and with optical instruments are required of the practitioner,—and yet stupidity and ignorance dare to commence Heliographic practice, after a few weeks' *mechanical* manipulation?

How much versatility and power of *adaptation* are also required of the Heliographer? For, if fully alive to all the requirements and exigencies of his profession, he will find, that nearly every successive subject demands a different arrangement of light and shadow with a different location in the room, view of the face &c., accordingly his genius (for nothing else can) will suggest such a change in the position of the camera, in the background, and in all the other conditions, as is needed for producing a likeness both true and artistic.

The items hitherto mentioned in this article, as aiding in the production of the picture, are chiefly, if not wholly mechanical in kind, and yet not the less useful to the artist in his work. Without their observacne, his specimens will be faulty and defective. These, however, are but a *portion* of the things requisite; he must also, and most especially so operate upon the *mind* of his subject as to call up the expression of *character* desired. There are various *means* to be employed for this end.

For example, is his subject a *public speaker*, political or other? Or is he a *literary* man, writing prose, or poetry, or both? According to which of these characters he bears, will the artist *vary* in the method of approach and the expedients to be used for exciting and interesting. It *might* be advisable to make a difference in the *positions* of these different subjects. Thus it might be best, that a Clay or Webster should be represented in that *standing* attitude to which they have been accustomed in those moments of greatest intellectual and moral excitement, which stamp expression most powerfully upon the face and form. But Irving, Bryant, and Longfellow might best be represented as *sitting* surrounded with books and papers, which use has associated with their seasons of highest interest and enthusiasm. These brief suggestions will show the *principle* involved in this matter; and the reader will easily make abundant other *applications* of the same for himself.

At the same time, that the subject is instructed to assume an attitude and is aided to surround himself with objects and conditions, which have been wont to be associated with his most interested and highest moods, and thus to *arouse* and *elevate himself.*—The artist should bend his own efforts in the same direction In other words, he should strive to introduce into the conversation the topics most likely to touch and excite his subjects feelings in a manner at once the strongest and most agreeable. The more *powerful* an emotion is—provided merely it be not absolutely painful and oppressive—the more pleasing it is to the majority of persons. And no feeling is so capable of calling forth the fullest and noblest expression of one's nature, as one that is *both* potent and pleasing.

Now let the artist possess a genius however rich and finely toned, it will not completely subserve his purposes without the most careful and unremitting cultivation. A knowledge of human nature in its myriad forms and shades, so as to be able, on slight intercourse to decide upon the character and dispositions, is of measureless value not only to the artist, but to well nigh all others—and to gain this should be a leading object with all. Of scarcely, if any, less importance is the power to act upon men's minds and hearts, whether through the medium of written or vocal address, or the more familiar modes of conversation, and to cultivate this, should also, be with all a paramount end. To the Portrait-taker, with whatever implements, conversational influence is more especially important. For on his possessing this, must it depend in a great degree whether he will even be competent to produce an *expressive* picture,—or, in other words whether he has any claim to the title of artist. I have now occupied all the space for the time at command,—and if I follow this topic further it must be in another paper.

Yours &c.

M. A. ROOT.

Philadelphia, Aug. 6th, 1858.

From Photographic Notes.

ON THE TREATMENT OF NEGATIVE NITRATE BATHS THAT ARE OUT OF ORDER.

If a negative nitrate bath for collodion is simply alkaline, acidify it with *acetic* acid, adding a drop or two at a time, and testing it with litmus paper between each addition of acid.

If too acid with *nitric* acid, add so much of a solution of carbonate of soda as is necessary completely to neutralize the nitric acid, or even to render the bath alkaline, and then acidify it again with *acetic* acid. On first adding the carbonate of soda a yellow turbidity is produced, with effervescence; this is due to the formation of carbonate of silver, which is speedily re-dissolved and carbonic acid liberated. As soon as the carbonate ceases to be re-dissolved, the whole of the free nitric acid is neutralized. On adding acetic acid the carbonate of silver is decomposed into acetate of silver and carbonic acid. A small portion of the acetate of silver (which is a white salt insoluble in water) is then dissolved by the nitrate of silver in the bath.

Never add ammonia to a negative bath, and never use the ammonical salts in photography, (except the iodide of collodion positives, and even in this case it is a question whether iodide of potassium is not better). The salts of ammonia are all very unstable, from the volatile nature of ammonia, which causes it to escape from its compounds. Besides, ammonia and nitrate of ammonia are solvents of oxide of silver, and generally ammonia forms complex and unstable compounds in the nitrate bath.

Sometimes the bath fogs the plate and is nevertheless acid;—and it commonly happens that a new bath fogs and works badly. When a bath is in this state it requires energetic treatment.

1st. Expose it to sunshine for a day or two, with a piece of muslin tied over the neck of the bottle. This will precipitate most of the organic matter in combination with sub-oxide of silver. Then filter the bath without disturbing the precipitate, add a little nitric acid, boil it down in an evaporating dish on a sand bath, and recrystallize it. The crystals of nitrate of silver may be mixed with crystals of nitrate of potass or other salts, but the impurities are removed by crystallization, and unless these salts exist in great excess they may be harmless. Redissolve the crystals in pure distilled water, and try the bath again.

2nd. Throw down all the silver in the bath as a brown oxide by adding liquor or potassæ to it. Wash the oxide in several waters, dry it, and roast it in a crucible. In this way organic matter will be burnt off and the oxide reduced to sub-oxide or metallic silver. Re-dissolve it in nitric acid, evaporate, and crystallize.

3rd. Throw down all the silver as a yellow carbonate by adding carbonate of soda to the bath. Wash it well in several waters, roast it in a crucible as before, re-dissolve it with nitric acid, evaporate and crystallize.

Should these plans fail, throw the silver down with salts as chloride, and send it to the refiners, who will give pure silver in exchange for it, making of course a fair deduction for their trouble.

We advise photographers to make their own nitrate of silver for the negative bath. The plan is to obtain pure silver from the refiners, pure nitric acid from a respectable chemist, and to make their own distilled water with a large glass retort, and a Liebig's condenser. Then they will know it cannot contain lead or organic matters. All that now remains is to dissolve the silver in the nitric acid. This done by adding to it a sufficient quantity of nitric acid, diluted with three parts of water, it is of no consequence if the diluted acid be in excess. It must be done out of doors or under a chimney as suffocating fumes are given off. The water is necessary in order to oxidize the silver. When the metal is dissolved the solution must be evaporated and crystallized; or if it be thought desirable to drive off the whole of the free nitric acid the crystals may be fused; but this renders them alkaline, probably because a little oxide of silver is formed and held in combination with the nitrate; the remedy is acetic acid. A bath thus made is pretty sure to act well at first. In cases where a bath acts badly at first, either the nitrate of silver, or the distilled water, or both, must be in fault.

Distilled water, so called, is frequently nothing but filtered rain water, which has been collected in leaden tanks, and holds oxide of lead in solution, besides other impurities. The lead may be detected by *pure* sulphuric acid, which renders the water cloudy. [Ed. P.N.]

From the Liverpool Photographic Journal.

SUGGESTIONS RELATIVE TO TESTING QUALITIES OF GLASS INTENDED FOR PHOTOGRAPHIC OPERATING ROOMS.

By the Editor.

The sub committee of the Liverpool Photographic Society, which has been charged with the investigation of the question above indicated, as well as the changes which various kinds of glass undergo, is composed of members too much in earnest in the promotion of photographic science to take umbrage at having a few suggestions offered for their consideration, which we consider calculated to enhance materially the value of the result of their labours.

It has been argued by one side, that glass tinted of a light blue color is preferable to simple white glass for the purpose, while the other side contends that blue glass has already been tried, and found inferior to the uncolored sort; but further, that the colored glass is found by experience to deepen in shade by exposure, and at the same time to retard the actinic action materially. A reply has been given, that glass of a *dark* blue has been tried, but that the recent recommendation has been for a lightly-tinted article, and that by no means follows, that because color in excess may be baneful, a smaller amount of intensity is necessarily equal, or even proportionably injurious; and further, that every kind of glass that is tinted does not become deeper by exposure.

In the discussion that has taken place nothing appears to have been said about the medium by which the color is produced as bearing upon the question of retardation of the actinic force, although it has been noticed with reference to the change by exposure; but in our opinion, this point is deserving of far more attention than has hitherto been accorded to it. We have a notion, founded upon more than surmise, that it will be found upon trial, that the nature of the materials employed in the manufacture of the various kinds of glass has as much to do with the effect as *color*, possibly more.

In fact, we think we can trace a suspicion of this supposition in the remarks made by one of the gentlemen of the committee, and we would strongly urge him to experiment in this direction, the more particularly as he has opportunities for so doing above the generality of photographers.

Let us review what has already come to light bearing upon this subject, and we shall probably be able to arrive at some conclusion as to the possible utility of such an investigation as we have indicated.

Professor Stokes, to whom photographers are deeply indebted for some valuable researches into the nature of fluorescent bodies, has shewn that a solution of disulphate of quinine, of about an inch in depth, is capable of arresting *the whole* of the actinic part of the solar light—the solution named being of a purely limpid and colorless nature—although the arrested rays are capable of being perceived by the eye, when looking nearly at right angles to the plane of interception, and present a somewhat blueish appearance. In a similar manner he has also shewn, that an infusion of the bark of the horse-chesnut, and also of the seeds of the datura-stramonium are endowed with a similar property. The first-named instance is that, however, which bears most strongly upon the matter under consideration, as shewing that the effect is not due to any *color* in the material; the others are valuable, as shewing that the solution first cited is not the only one possessing this remarkable power. At a lecture given by this gentleman at the Royal Institution, he exhibited many interesting experiment relative to the powers of certain media in stopping the passage of the actinic rays; amongst others, he shewed that glass stained of a light yellow color by means of oxide of bismuth, possesses this quality in an eminent degree.

Professor Robert Hunt has also noticed the fact, that of two samples of glass, stained of a yellow color, of equal intensity (the one by means of oxide of silver, the other by means of carbon), the former is much more active than the latter in arresting the chemical rays.

It is also pretty notorious that the time of exposure required in any glass-room is greater than in the open air, though some rooms are more obstructive than others, and that not always in proportion to their apparent light.

With regard to light reflected from variously colored surfaces, the molecular condition of the surfaces exercise a material influence upon the comparative results, as the following examples will testify, viz:—In landscape photography the peculiar condition of the foliage is a most important point in determining the beauty of the results obtained. In spring time, when the leaves are young, they appear to make a much stronger impression upon the sensitive media generally employed, than when they have attained maturity. Leaves with a polished surface act more vigorously than those destitute of this peculiarity, probably owing to their reflecting a portion of the ordinary white light, as well as radiating that of their own proper color; but there are few observant photographers who have not noticed that there are numerous occasions when foliage comes out well very unexpectedly, and others, when the reverse is the case, and such exceptions are not capable of any such explanation as that indicated above. Again, some kinds of yellow flowers are very active in impressing the sensitive surface, whilst others are equally inactive. Buttercups, for instance, almost invariably appear as small *white* specks in a photograph; while yellow chrysanthemums, of very nearly the same shade, appear as black flowers; as also calceolaries. The dark green leaves and bright yellow clusters of flowers of the berberis (the former being very polished) both impress the film with about equal vigor, although the contrast in nature is very marked. Similar variations may be noticed amongst the blue shades and their compounds; but the point to which we desire to draw particular attention is, that our results are not constant with the conditions of illumination vary.

We remember seeing some few years back a curious illustration of the effect of a *slight* tinge of color in producing a most marked effect. Our friend Dr. Diamond had been taking the likeness of a little girl (glass positives being then the favorite method), and had experienced two or three failures in consequence of a stain upon the light part of the figure, represented in this case by a pinafore; but, noticing that the from of the stain was alike in two instances, he examined the article of dress itself, and found it slightly soiled by some of the juice of an orange which he had given her to keep her quiet while preparing his plates. Every photographer must have experienced the annoyance of finding a sitter's face appear as if splashed with ink, owing to the presence of freckles: and this defect is sometimes more conspicuous when the sitters happen to be young ladies with very fair and delicate complexions. A remedy for this defect is not unfrequently found in applying a little violet powder; but who knows a remedy for the transformation produced in the appearance of an individual, so far as his photographic portrait is concerned, if he happen to be supplied with the adornment of red hair?

With regard to copies of paintings, we have only to look at many examples in the Photographic Exhibition at South Kensington to be convinced of the undesirable alteration of effect produced by the photographic interpretation of many of them.

We take it that it is a fact beyond question, that *photographers* by *profession* are deeply interested, as a class, in a solution of the difficulty of a correct rendering, in light and shade, of variously colored paintings, because there are very many artists and connoisseurs who would gladly avail themselves of the skill of an able photographer, in order to multiply, to a moderate extent, copies of their conceptions or possessions in art treasures, provided such a task can be accomplished without the introduction of an amount of caricature.

From certain experiences of our own, we are convinced that a solution of the problem indicated is by no means an impossibility, or even an improbability, and it is to this task especially that we would invite the attention of the committee of investigation on the influence of various kinds of glass used in photography.

In proposing to these gentlemen the undertaking of an arduous, but by no means unpleasing task, it is but right that we should suggest the course of proceeding that strikes us, as being the most ready, having but little doubt that, should they adopt the idea, they will easily improve upon our first crude notions.

We propose, then, the construction of an oblong deal box, say eight feet long, and from eighteen to twenty-four inches square, or perhaps eighteen inches wide by twenty-four inches high—the dimensions not being important, except as regards the general size of sheets of colored and other glass obtainable. The box should be blackened inside, and at one end a circular aperture made sufficiently large for the introduction of the lens attached to the front of any camera to be employed. A length of about two feet at the opposite end of the long box should be removed from its upper surface, and also from one side (either the right or left), and in these openings some kind of sash or framework should be contrived, capable of receiving temporarily panes of the glasses to be tested. The end of the box itself should be capable of opening upon hinges, in order to allow of the ready introduction of back-grounds of any colors, as well as the subjects to be experimented upon, which may consist of colored pictures, vases of natural and artificial flowers, porcelain and other figures (white and colored), in short, every variety of object that can be included within the dimensions of the box. By this arrangement we conceive that all the advantages of a glass operating room for conducting these experiments would be obtained at a small expense, and with the facility of changing the glazing at the cost of a couple of good sized sheets of glass of each kind to be tested.

With regard to the proposed investigations, they will naturally divide themselves into two classes, viz:—first, the examination for ascertaining what kind of glass permits the passage of a maximum amount of the actinic rays; and secondly, the shades that illuminate paintings, or other colored objects, in such a manner as to allow of a correct representation, in light and shade, of the effects presented to the eye.

We have no doubt that light greens, yellows, reds, and browns will all be found useful under certain circumstances, because, although it may not be possible to stimulate an *inactive* color, it may be quite practicable to *retard* the violent action of one that is powerful, such as white, or light blue, while the retardation of the more inert kinds is scarcely perceptible.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The last meeting of the above Society was held on the 30th ultimo, at the Literary and Philosophical Society's house; Mr. Sidebotham presided.

A very beautiful collection of photographs, printed from collodio-albumen, collodion, and oxymel plates, were placed upon the table by the Chairman, and Messrs. Mabley, Parry, Young, Wardley, Brothers, and Mann, which two last gentlemen presented three prints for the Society's portfolio.

Mr. Sidebotham reported his success with an orthoscopic lens eleven inches focus, seven-eighths aperture, five minutes exposure, with collodio-albumen. He produced some very satisfactory views of Stonehenge, the Needles, a portrait of Handel, from a German lithograph, and a view of the interior of Bowden Church, now undergoing demolition—this last had been exposed twenty-five minutes.

A plan for making vignetting glasses was shewn, consisting of a black oval, painted on a board, an image of which being taken with the lens out of focus, answers for this purpose very well.

On the subject of blisters a Member remarked that his bath being by accident only partly full, the part of the plate undipped rose in a large blister, while the immersed portion remained perfectly free from that annoyance. It was said that to avoid blisters four requisites must be observed:—

1st.—Plates to be well dried.
2nd.—Collodion to be thin.
3rd.—Collodion to be allowed to set well before sensitising.
4th.—Albumen to be dried rapidly.

A conversation followed as to some collodio-albumen plates prepared in the broad daylight; after the following letter from Mr. Roscoe was read, and the meeting terminated:

Owens College, Manchester, May 4, 1858.

Dear Sir—I inclose, for the inspection of the Society, some drawings, sent me by Mr. Campbell, of the Board of Health, Whitehall, shewing the amount of direct sun-light, as measured by his sun-dial, for three half years, from 1854 to 1856.

The description of this registering sun-dial is contained in one of the late numbers of your *Journal*, and will therefore be know to most of your members. It consists simply of a semi-spherical cup or vessel of wood, having a solid spherical glass lens placed on a support in the centre of the cup, so that the focus of the lens falls upon the surface of the wood. The sun, when it shines, burns, therefore, a track in the wood, and the amount of direct sunlight is thus registered.

The results obtained by this instrument, and tabulated in the manner seen in the drawings, will form important additions to our knowledge of meterology; and as every subject connected with the solar rays is of interest to the photographer, I thought that the members might like to see the relative amount of the sun's burning power, as estimated by Campbell's instrument for three cosecutive half years.—

Believe me, dear sir, very truly, yours.
HENRY E. ROSCOE.

Samuel Cottam, Esq.

FRENCH PHOTOGRAPHIC SOCIETY.

The ordinary monthly meeting of this Society was held, at Paris, on the 28th May, when the chair was occupied by Mr. Regnault, the President Two new members were elected and several presents were received. The following letters were read, viz. :—

From M. Alexander Vattemore relative to the collection of American photographs, presented by Major Bowman.

From Charles Chevallier, accompanying a model of a diaphragm of variable aperture, made by him in the year 1840, together with a printed statement of the same date, as follows :

"I have also adapted to my apparatus a variable diaphragm or artificial pupil, which permits of obtaining with one bi-achromatic object-glass, the same sharpness for objects situated at a distance from or near to the instrument." The diaphragm consists of a series of metallic plates simultaneously acted upon by a rack and pinion, causing the edges of the plates by their intersection to form an opening approximating to a circular figure.

It appears, then, that the object aimed at by the diaphragm is precisely similar to that of M. Mangey, though the mode of carrying it out differs entirely.

The Abbé Moigno communicated the extract of a letter from Professor Govi, of Florence, claiming to have been the originator of the pupillary diaphgram, constructed of vulcanized india-rubber, in the year 1851, and citing some occasions when it had been publicly exhibited at the professor's lectures.

M. de la Blanchère exhibited some positive impressions from negatives, by his own process, with dry collodion.

M. Quinet presented a negative on glass of about twenty-one inches by seventeen, obtained upon dry collodion, as prepared by himself, the exposure in the camera having lasted five minutes.

M. Jamin exhibited two negatives of about sixteen and half inches by thirteen inches, being enlarged copies of engravings, taken on moist collodion, by lenses constructed by him upon the "orthoscopic" principle.

The thanks of the Society having been accorded to the respective exhibitors and donors, the following letter from M. Hocédé du Tremblay was read :—

"Gentlemen and Colleagues,—The new process for the proproduction of positives, discovered by M. Nièpce de St. Victor, has been accompanied in several photographic journals, as also in the *Moniteur*, with praises calculated to cause its adoption with eagerness by photographers.

"To render the proofs unchangeable, and to suppress the use of hyposulphite of soda would be at once the triumph of this new process above all others.

"But still it would be requisite that the artistic quality of the results obtained should be preserved in a sufficient degree. Then comes the question of economy, a secondary one, no doubt; but of some importance nevertheless.

"If it fulfils the conditions so highly announced, the adoption of Nièpce's process is as useful as desirable; but is this sufficiently proved to induce one to adopt this method without any fear of being deceived? One can form an opinion by comparative experiments, but many amongst us rightly entertain some mistrust, and their remoteness from Paris leaves them dependent upon the information obtained from the journals, more or less acquainted with it, more or less explicit: is the a failure to be attributed to the process itself or to their inexperience?

"Hence arises amongst our colleagues and subscribers to the *Bulletin* the legitimate desire to receive advice and counsel from this meeting of photographers, associated to encourage, propagate, and examine, each to the utmost of his power, works of photography, and to indicate and record the progress.

"Useful to all—these counsels are indispensable to those ignorant of chemistry.

"As far as regards myself I admit that I regret having found nothing in the *Bulletin* relative to the printing process of Nièpce. Will the Society remain silent on the carrying out of a method signalized as one which ought to produce a revolution in photography. I shall, without doubt, only anticipate the intentions of the Council in requesting them, in my own name, and in that of several of our colleagues, to be kind enough to take the following questions into consderation, viz. :—

"1.—Is the process of printing by nitrate of uranium, and fixing with pure water, superior to the old method, in which the unalterability of the proof is insured by substances destructive of the sensitive agent?

"2.—Respecting the quality of the proofs obtained by this process, the brilliancy, the richness of tone, in fact, the artistic value, is it equal or superior to that of those hitherto obtained?

"3.—Is it economical?

"4.—What are the comparative advantages and disadvantages of the two modes of manipulation under consideration?

"I dare to reckon, gentlemen, upon a favorable consideration of these questions, trusting, in common with all those devoted to our art, that a serious examination will bring a new glory to that name which is deservedly so dear to us, and place a new discovery more within the reach of us all."

The President remarked, that M. Nièpce de St. Victor considered the facts which he had published as belonging rather to the domain of scientific observation, than to that of practical photography. His intention was to throw open a new field for researches, in which photographers ought to exercise themselves. He thought further that the methods derived from the facts that he had observed *required the sanction of experience*, and that it is not at first that the best results are obtained. If then the Society appoints a committee to examine this process, it is only on the ascertained facts that they ought to report, rather than on the probable future of the process itself.

M. Paul Perier seconded the proposition of M. Hocédé du Tremblay. It appeared to him in fact difficult for the public to separate the discoveries of M. Niépce de St. Victor from that which has been said in connexion therewith. No one would be more pleased than himself to see realised all the promises made in connection with this process, not so much by M. Niépce de St. Victor, as by those who have published them with an enthusiasm which he is far from disapproving, but which he should like to see light itself perform. It has been stated, in fact, that the nitrate of uranium processes presents such advantages over those in common use, that the latter should be abandoned in favor of the former. In the face of these assertions, those photographers who, far from head quarters, are left to their own exertions, find themselves exposed to such embarrasments and discouraging failures, that they are unable to succeed in their attempts. The *Bulletin* of the Society ought then to come to their assistance, and it would not be natural that in such a question it should remain silent, after having simply inserted the two *Memoires* of M. Niépce de St. Victor; for a publication of this kind is not so much for those who know most, but for those who know least, and who need to find in it guidance and advice. It would not be proper, it is true, to attempt to predict the future of this process; but the Society ought to publish in its *Bulletin* that which the operators may expect of the process such as it is at present. M. P. Perier asks then that a committee be named to examine the actual value of the process as regards the threefold qualities of artistic excellence, stability, and economy. He affirmed, in conclusion, the importance of enligthening the members of the Society on these points; for, to cite but one example, it has been stated that proofs from the nitrate of uranium enjoy a peculiar stability, resisting the most energetic chemical agents, whist he knew for a certainty, from the results of some experiments which had been communicated to him from some of the members of the Society, that these proofs fade and change under the same conditions in which ordinary proofs suffer deterioration, when, for example, they are exposed to the action of moist sulphuretted hydrogen or of hydrosulphate of ammonia.

The Abbé Moigno added, that the process is still in its infancy, and that no one could say hitherto that he had seen a beautiful commercial proof obtained by nitrate of uranium.

The matter was referred to a committee, consisting of MM. Balard, Paul Perier, Bayard, Davanne, and Girard.

M. Balard proposed that M. Tremblay's letter, as well as the observations to which it had given rise, should be inserted in the *Bulletin*, which was agreed to.

M. de Blanchere said that he was charged officially by M. Nièpce de St. Victor with the investigation of the practical application of his processes. He offered to communicate to the Society a long mémoire that he had written on the subject, and the publication committee were requested to extract for the *Bulletin* such part as they might consider advisable.

M. Delahaye exhibited several uranium prints produced by M. Houday, of Lille, and which were more on the surface than in the fabric of the paper. They were accompanied by a letter laudatory of the process by which they were obtained, which was described as follows:

The paper is prepared with gelatine and nitrate of uranium as directed by M. de Blanchére, developed after insulation with aceto-nitrate of silver as employed for exciting waxed paper for negatives, then floated on a bath of

Water	1 ounce
Propostulphate of iron	40 grains
Acetic acid	10 minims

The impression acquires on this bath a considerable vigour, and leaves the fabric as it were to appear upon the surface of the paper. If the exposure has been too long, it is necessary to wash the proofs slightly before submitting them to the iron bath. When removed from the bath they are of a sepia tint, but may be toned of a black color by a bath of chloride of gold, half a grain to the ounce of water.

M. Regnlaut enquired whether the photosulphate of iron was the only agent that had been employed.

M. Davanne said that he had seen the Comt Olympe Aguardo and M. Robert, of Sevres, make some trials in this direction with gallic acid, and that the proofs were decidedly superior to those obtained with the uranium salts alone.*

M. Porro presented his third and concluding paper on the improvements to be introduced into the construction of photographic object glasses. He also presented a lens of new construction applicable to the production of panoramic views.

The thanks of the Society were accorded to M. Porro, and his communication was directed to be inserted in the *Bulletin*.

M. Davanne reported upon M. Gatzel's modification of Taupenot's process. The report was adopted.

MM. Davanne and Girard presented a continuation of their researches on paper positives, which was ordered for insertion in the *Bulletin*.

M. Georges de Bello exhibited a gutta percha funnel, which he had constructed for use in filtering solutions into flat dishes without any extraneous support; the neck of the ordinary funnel being absent, a branched foot is attached, which is done so as to admit of its being stood on a flat dish, or on the neck of a bottle.

A report of the sale of photographs on behalf of the Society concluded the proceedings.

* This is a very imperfect description of the method formerly recommended by Mr. Burnett for producing uranium pictures, to which we made allusion in our last. Truly the coolness with which *published processes* are claimed as new discoveries is one of the marvels of the present day.—Ed.

ON VARNISHES FOR PHOTOGRAPHIC PURPOSES.

By D. Van Monckhoven.

From La Lumiere.

One of the most important questions in connexion with photography, is that of covering the tender and fragile film forming the image with a coating of some much harder substance, and which resists perfectly the conditions demanded for the printing of a considerable number of proofs.

During the year 1857, we have submitted this question to a careful and extended research, and purpose detailing here the result of our labours.

The ordinary varnishes of commerce differ from that adapted for photography, in that the latter demands some special qualities (we allude particularly to that intended to protect the film of collodion while printing a number of positives), for instance,

First, it ought to be sufficiently fluid, in order not to give too great transparencey to the negative, so as to cause it to lose vigour, yet to be sufficiently thick to preserve the collodion perfectly.

Second, it ought to be insoluble in water, so that the possitive shall not become attached to it, in consequence of moisture which condenses on the glass under the influence of the solar rays.

Third, it must not soften under a temperature of from 140° to 200° Fahrenheit.

Fourth, finally, the liquids which enter into the composition of photographic varnish must not be subject to become resinous.

Let us now consider the various varnishes which have been proposed in France, in England, and above all, in the United States of America.

Amongst the various substances, resinous and liquid, employed in this kind of manufacture, we may mention,

Copal	Melted amber
Soft copal soluble in alcohol and benzole.	Essence tupentine
	Benzole.
Sandrac	Alcohol.
Mastic.	Ether.
Yellow and white lac.	Chloroform.

All these substances, mixed in proportions more or less different, produce photographic varnishes.

M. Legray recommended commercial copal varnish, diluted with an equal bulk of benzole; but we have before remarked that liquids which became resinous are not adapted for photographic purposes, while it is well known that turpentine, which enters into the composition of copal varnish, becomes resinous in contact with the air, with the utmost facility; consequently this varnish gives but poor results, for it dries with difficulty, becomes sticky under the solar rays, and rises up in parts, forming veins which become effaced under friction, thus injuring the proofs.

If we dissolve soft or oxidized copal in benzole we obtain a perfectly colorless varnish, the proportions being 40 grains of the former to 1 oz. of the latter. The solution is rapidly effected, and the filtration through paper easy.

If varnish is poured on the negative, a film is obtained which dries very rapidly—(at the end of a few hours)—and which is very brilliant, but which is subject to become adherent to the paper when the solar rays become powerful. In England this varnish is very much demanded, because it can be used without heat; but in the countries further south, as Italy, Spain, and the interior of France, its employment would be very restricted, because of its becoming softened under the influence of heat.

We come now to the hard varnishes capable of being applied cold. A varnish, the preparation of which we have not hitherto seen indicated, is one composed of amber and benzole, and as its preparation is easy we shall describe it.

Amber is a resinous substance, met with on the shores of the Baltic Sea and is used for making beads, mouth-pieces, &c., in the fabrication of which a number of waste fragments are produced, and as these are generally ot the best quality, and of moderate price, they are of the kind most suitable to the purpose in view.

The amber is to be first pulverized, and after having placed it in a closely covered vessel, with a small opening in the lid, it is to be heated gradually up to about 570°. A quantity of white vapour becomes disengaged, which is allowed to pass off, and the amber gradually softens, melts and bubbles, when the vessel is to be removed from the fire, and the mass allowed to cool. Amber thus modified is extremely soluble in benzole and in chloroform, and is to be dissolved in the proportion of from forty to fifty grains to the fluid ounce.

With benzole a brownish varish is obtained, but which produces a film on the negative but slightly colored, and dries after the lapse of a few minutes ; it is then very brilliant, so much so that it is frequently difficult to distinguish the varnished side from the plain glass, and what is also valuable, it does not soften under the action of the sun's rays.

Chloroform may be used as a solvent, but is more costly, and the varnish produced thereby is much more brittle, and liable to injury by rapid changes of temperature. The solution in benzole is, however, highly to be recommended.

The following varnish requires heat in its application:—

Place in a flask

Alcohol at 90°	1 quart.
White stick lac	3 oz.
Picked sandrac	3 drms.

Raise the temperature slightly by plunging the flask into hot water, and in a few minutes the solution is effected, with the exception of a few light filaments of insoluable lac. Filter through bibulous paper, and the light yellowish liquid is fit for use, as follows:—

The glass is to be heated before a fire, or over a spirit lamp, to a temperature of from 100° to 140°. After applying the hand to ascertain that it is not too hot, the film of varnish is to be applied in precisely the same way as is employed to spread the collodion, returning the surplus to the bottle, and the varnish dries with a brilliant surface.

If the glass be made too hot, the varnish dries very rapidly, and forms veins, which, however,do not appear on the paper proof. A few drops of essence of bergamot are sometimes added to give a perfume.

There is one point of the highest importance to be borne in mind, that is, never to attempt with this varnish to give a second coating to the negative, as by so doing it would be inevitably spoiled.

A similar varnish is used to produce the effect of ground glass with transparent positives, as follows, viz.: alcohol four oz. white stick lac, ninety grains, sandrac sixty grains—dissolve as before. This is to be applied cold, and the glass allowed to dry by being stood on end, resting against the wall.

From the Liverpool and Manchester Photogrpahic Journal.

A WEEK WITH THE CAMERA AMONG THE KENTISH HILLS.

The following paper, by Mr. Travers B. Wire, is that mentioned in No. 12 of our *Journal* in the report of the Blackheath Photographic Society :—

Mr. President and Gentlemen,

Last May, Mr. Ledger and myself, having a day or two to spare, determined to visit Hever, in the hope of obtaining a few views of the old castle there, so rich alike in picturesque beauty and historical reminiscence. We fixed upon Monday, the first of June, as our opening day, and proposed going to Hever by rail from London, *via* Edenbridge. Our plan was to look about us on our arrival ; and having determined the best points, to photogragph them upon Tuesday and return on Wednesday to London.

But having mentioned our intended trip to Mr. Wood, he expressed a wish to accompany us, to which proposal we, of course readily acceded.

By his suggestion we altered our original plan, thinking, upon reconsideration of the proposed route, that we might experience considerable difficulty in taking to Edenbridge by rail, and thence to Hever (possibly on our shoulders), our camera, bath, plate-boxes, camera stand, chemicals, and all the *materia photographica ;* the successful transmission of which practical operators know to be equivalent to the gaining of half the battle. Visions arising of ourselves toiling along dusty roads, under a June sun, and the weight of our *impedimenta*, soon made us fall in readily with our friend's proposition ; which was, that we should drive down instead, and thus obtain a chance of catching a stary view or two upon our road, and would certainly make us very independent.

A dog-cart was considered the most convenient conveyance for photographic purposes, and forthwith procured. We constructed a tent to fit on to the back of the vehicle, so that, were it impossible to obtain a room upon the spot (which, by the way, we always preferred to the confined space and heat of the tent), we should not be altogether non-plussed for want of a second string to our bow.

Monday, the first of June, at last arrived—as lovely a morning as any photographer could wish for. We left Lewisham about seven o'clock, with a full cargo of photographic apparatus, carpet bags, a large stone bottle of water, and some Macintoshes. We had taken the preaution of providing ourselves with the ordinance map of the N.W. corner of Kent, and a pocket compass; which articles we found of the utmost value. Without them, an intimate knowledge of the country and of the relative position of every village is indispensible : the information to be derived from the rustics being of little value, as their photographical knowledge rarely extends to more than a circuit of three or four miles from the places where they are bred.

After about five hours' delighful and amusing "jog-trot" (for we had a remarkably sober old horse, who did not at all see the fun of proceeding faster than a walk), we reached Hever. In the gateway we found a small room, in which was a quantity of old broken furniture. This we speedily removed, and nailing a large yellow curtain, which we had brought with us, over the doorway, we went to work.

At Hever we succeeeded in obtaining five 10 × 12, and two 10 × 8 negatives; we then explored the old place, which is interesting from its many historical associations of the time of bluff King Hal.

Here it was that he courted Anne Boleyn; here died Anne of Cleves. In the church is a fine old tomb to the memory of Sir Geoffrey Boleyn, grandfather of Anne.

We found with regret that we were unable to photograph this church, from its being situated on the top of a hill, a weakness prevalent amongst many Kentish churches.

The next morning, June 2, we wheeled out our dog-cart, and fixed up our tent for the first time to take a distant view of the old castle. The shafts of the dog-cart were strapped tightly to the church-yard fence, to keep our vehicle in a horizontal position, it being one of the two-wheeled kind.

A plate was prepared and exposed, but as I was developing it, I was impelled, by the appearance it presented, to sing out that the tent was a complete failure, and that the picture was spoiled, as I fancied that light must have been somehow admitted. This we could hardly understand, as the tent was composed of two thicknesses of yellow calico, with an external covering of black. However, upon dissolving out the iodide, to our astonishment this appearance vanished, and, instead of a spoiled plate, we had a very passable negative; and our tent, of course, rose wonderfully in our estimation. We here ascertained that about two miles off was a little village called Chiddingstone, which we found, as described, a most picturesque place, composed of houses in the half-timbered style. After some little search we found an obliging cobbler, who readily gave us the use of his stall, and we proceeded to work.

Much to our chagrin, upon focussing for the first picture we found a rent in the India-rubber cloth body of the camera, probably made in getting over a hedge at Hever. This accident we thought would seriously impede our proceedings, but a pennyworth of sticking plaster from the grocer's repaired the damage;

and there the patch remains to this day. a triumph of "mind over matter." Here we managed to obtain five 12 × 10 views.

In the evening we fraternized with our friends the cobbler and the grocer, in order to get from them what information we could respecting the picturesque. They took us to see a fine old oak in the grounds of Captain Strathfield, and a curious old stone, called the Chiding Stone, whence the villiage has its name. The tradition is, that from this stone the priests or druids used to chide the people for their sins.

The grocer's house, of which we have a view, is a glorious old place. He kindly showed us his parlor, which is wainscotted with oak, black with age. He was rather a superior man, with a taste for art, and a subscriber to the *Art Union*, from which he had been fortunate enough to obtain a prize. From him we got some information respecting Brambletye House, which we determined to visit on the next day, especially as Mr. Ledger wished to return to town in the evening. Another inducement for us to visit Brambletye was its proximity to East Grinstead, from which station we availed ourselves of the telegraph to procure from Mr. Thomas more collodion.

Of the Chiding Stone we could not get a view without much difficulty. With the oak before referred to we were equally unfortunate, as the weather, when we reached it, was very unfavorable. But by the time we reached Brambleyte House a fresh breeze had sprung up, the rain clouds had passed, and the sun was shining. After having stabled our steed in an empty stall near the ruins, and found him some fodder, we went on an exploring expedition, and soon found, as at Hever, a dark room ready to our hands—an old cellar under one of the towers, with a doorway to it leading into the fields. Over this our yellow curtain was soon nailed, and we possessed as good an operating room as any one can desire. Having accidentally left our stone water-bottle at Chiddingstone, we borrowed a pail from the farmer and set to work. Our task here was enlivened by the presence of a couple of ladies, who took great interest in our proceedings, and persisted in appearing in all the views, which, by the way, they did their utmost to spoil by constantly moving. Here we succeeded in getting four views; the grass at the time, as you will see, being unfavorably long for the practice of photography. We now returned to East Grinstead, and visited Sackville College, founded by the Earl of Dorset in 1616, of which we all heard so much a short time since. We went to the station, and found that our collodion had arrived, and bidding adieu to Mr Ledger, who returned to London with a precious charge of twelve negatives, Mr. Wood and myself returned to the town, and borrowed from a chemist measures with which to iodize part of our collodion. The evening being fine we drove over to Edenbridge; for we intended to follow the valley of the Darenth up from Sevenoaks, and thought it advisable to lose no time.

On our road to Edenbridge we passed Gabriels, which we visited in the morning. Here we had again to use our tent, and this time no fault could be found with it.

Our road hence to Brasted, on the Thursday forenoon, was a terrible pull: the hills were such as we did not expect to find so near home; but the views which we had from time to time were truly magnificent. Often, whilst toiling up these steep lanes, did we stop the horse and throw ourselves down on the grass which bordered them, and enjoy the prospect. Truly loath were we to rise again; however, by dint of much self-denial (for the weather was exceedingly hot, and the heather exceedingly soft), we reached Brasted, where we took two views—one of the church, another of the entrance to the tower, through a curious arched door-way formed in the buttressses. This, I am told, is, with one exception, the only specimen of this kind extant in this county.

Sundridge Church was the next place we reached; but although we tried this form all pionts, not one was available to our purpose; it being, like most of the other churches, built on the highest ground. The approach to it was through a fine avenue of trees, with a litch gate at the end, and beyond was the church. The light, when we were there, was perfect, falling prettily upon the trees, shadows of which fell across the road with a glorious effect. With much regret we packed up again, and made our way to Otfortd, where the archbishops of Canterbury formerly had a palace, portions of which still remain. We tried one view; but the day was too far advanced, and although our plate was exposed four minutes, the result was anything but satisfactory.

At Sevenoaks we found the old mansion at Knowle closed, in consequence of the death of the Earl of Amherst; and as there is occupation there for a couple of days, we thought it advisable to leave it for a future visit. At the hotel (Sevenoaks) we met a gentleman, who like ourselves, was amusing himself with photography; and from him we learnt of Ightham Moat House, which, on his recommendation, we visited. Permission to photograph it was soon obtained, and also a room in a small cottage hard by. I was busily engaged in focussing our first view, and Mr. Wood, with a plough-boy, was taking the horse out of the dog-cart, when the family turned out to take stock of us, and to watch our proceedings. To us they were particularly kind, doing all that lay in their power to assist us, taking us to diffierent points whence views of their houses were to be obtained.

It is a very old house, built partly in the time of King John, with a court-yard in the centre; the whole surrounded by a moat. Of the chapel, the hall, and also of the entrance, Nash has given us views in his *Old English Mansions*. Hence we drove to Farmingham, and the next day (Saturday) we spent with some friends residing in the neighborhood. Thus ended our week's photographic tour among the hills of Kent.

Since our return, the dog-cart has been properly fitted up, and divided into two unequal portions, having entrances back and front. The back part, which is the largest, is devoted entirely to photography, and in this division are compartments for the different bottles; and a hole has been made through the bottom for the bath to be suspended in, thus rendering it much less liable to be upset. The front part contains a zinc tank, the water from which is conveyed to the photographic department by means of an India-rubber tube; and the space under the tank is intended for our carpet-bags &c. The tent has also undergone some modifications, which render it more easy of adjustment.

The ordnance maps of the whole of Kent, Surrey, and Sussex have been procured, and all the places of interest that can be found out by reading or otherwise, have been marked upon them with a red circle; and a book, with a small description of what we may expect to find at any one of these circles, has also been arranged with an index, so that, as we are travelling (say, for instance, from Seal towards Ightham), on the left side of the road we see one of our circles at a place marked on the map as Stonepitt. We refer to our book, and there find that Stonepitt is a very ancient mansion, in the Elizabethan style. This, as it lies about a mile from the road, we should undoubtedly pass, were it not for our maps.

We have all heard a great deal of the difficulties attendant on working wet collodion away from a regular operating room—and we had ourselves, on a former occasion, experienced many; so, of course, on this one we had prepared our minds to encounter innumerable obstacles. Some of these, I may say *many*, proved to be myths, and, for the remainder, a little ordinary forethought and ingenuity removed them. We have at present only been looking at what may be called the bright side of the subject. We have been describing the halcyon days of our photography. But there is another side to consider. Let us picture to ourselves a miserable pedestrain photographer. "He grunts and sweats under the weary load" of his apparatus, toiling along to the scene of action with a pack on his back. He arrives in a semi-animate condition, and has then to prepare and develope his plates in a shaky tent—highly recommended for steadiness and portability. The portability is obtained by the sacrifice of space, so down he squats upon his box of chemicals, and pours a film. The weather is warm; the ether volatile. H s head approaches very near the top—in some cases, is itself the apex of the structure. In a few minutes, therefore, with a pain in his neck and a cramp in his legs, he begins to experience the advantages of a portable tent. The chemical vapors rapidly accumulate round his doomed head, and long before he has fixed his first picture, the excess of exhalation, and the absence of ventilation, have given him a headache for life. I have worked in a tent myself, and therefore speak feelingly.

The bath, after his plate is sensitized, is usually placed under the table, in the open air; for portable tents are only roomy as long as you have nothing in them. Manifold are the dangers to which this nitrate bath is exposed. The ground by road sides is not usually level as a billiard table. If it escapes this danger of being upset, it has to receive dust, leaves, and, inquiring coleoptera within its depths. Presently, within the tent a bottle of hypo is upset, and some of it, finding its way through the cracks in the table, quietly and unobtrusively drip, drip, drips into the bath below. On noticing this, our photographer wakes to a sense of his situation, drops the picture he is fixing, springs up to save his bath, and down goes the tent and the bottles and all. And so he comes to grief.

Sometimes, again, rude Boreas (or rude boys) upset his tabernacle, while he is exposing his plate. Picture to yourselves the expression on his travel-stained toil-worn face, when, returning, he sees the wreck of all his hopes. He loses heart, curses open-air photography (especially with collodion), and is reduced to the miserable expedient of providing himself with divers dry plates or sheets of sensitive paper, at—per doz.; exposes them, despatches them by post for developement, at—per doz. ; has the results printed at—per doz.; and . . . . fancies he is taking photographs.

Seriously—though views, and very good ones, have been got in spite of the portable tents—I believe misfortunes such as I have described to be of no uncommon occurrence; but we want some contrivance that we are sure will answer, under the most unfavorable circumstances. As far as we are concerned, we point to our dog-cart, and maintain that there the secret is solved. Strong must be the hurricane that can blow *that* down. Ingenious the insect that can commit suicide in *our* bath. The hypo must perform and act contrary to the laws of gravitation to get into it. Therefore, I can confidently recommend any of our members who may venture upon a photographic tour this summer to follow our example.

I must trespass yet a few minutes longer on your patience, to point out, that with the wet collodion process we found much pleasure, and even advantage, in showing the negative to the inhabitants. They could then plainly see that our object was what we represented it to be, and we found a great alteration in their manner. All reserve vanished, and assistance was eagerly proffered. This advantage the waxed paper cannot afford. With paper, too, one must leave the field with half a dozen pieces of blank paper, uncertain whether the negatives are good; and their developement at night adds a hard *evening's* to a hard *day's* work. Whereas, the wet collodion operator spends his evening in searching for pictures for the morrow, and extracting from the aborigines the whereabouts of the picturesque.

Our improved arrangements we hope, next August, to put to the test of practical experience; and I confidently predict that the month which we then intend to devote to photography in a dog-cart, will not be the most miserable in our lives.

"THE PHOTOGRAPHER."

(*Manuscript Photographic Journal.*)—No. II.

NEW SERIES.

MR. J. T. TAYLOR'S PAPER.

"I have the pleasure of introducing among us two gentlemen, one being Mr. Archer, of Manchester, and the other the gentleman for whom was reserved the honor of striking the first fatal blow at the root of the dark-tent system, by his application of the hygrometic properties of honey to the collodionized plate, and secondly, of opening the door for the introduction of a novel, interesting, and now widely-extended branch of our art—the manufacture of micro-photographs. The first of these tiny little pictures I had seen, were some kindly presented me by the inventor himself, Mr. Shadbolt, and they interested me exceedingly. While in Edinburg a few days ago, I also saw an excellent collection by Mr. Bryson, Optician, there, who seems to be doing quite a trade in them. While visiting that gentleman's establishment, he showed me a novel and effective modification of the Bunsen gas burner, by means of which views in the lantern could be exhibited with great splendor. It would be desirable were he to publish a short account of it. I have been trying to introduce micro-photographs, but in the meantime have given it up until I get hold of a proper structureless collodion. I have completely succeeded with the converse of this operation, viz., producing *enlarged* pictures of microscopic subjects. How remarkably simple it is! This forms a highly instructive and pleasant application of the micro-camera. By the way, will Mr. Shadbolt (who is an authority in microscopy), or any one else, kindly suggest a suitable name for such magnified pictures? "Micro-photograph" won't do, because that name has been given to the reduced pictures; the name should be as short and concise as possible, and be as far removed as possible from the *photogalvanographic* style of nomenclature.

"To those of you who like vignette portraits I will communicate a simple way of producing a first-rate vignette printing-glass.

"Procure a piece of black paper with a dead surface, and from this cut an oval (or any shape you prefer). Paste this oval upon a sheet of white paper, and from the sheet thus prepared take a negative on a piece of nice flat glass—or paper if you prefer it—but observe in taking it that it be *considerably out of focus.* By these means you will have a vignette plate with the centre quite transparent, gradually merging into perfect opacity.

"I see Mr. Maugey, the celebrated lens maker, has introduced 'the expanding and contracting stop between the lenses of the portrait combination,' which I published in this journal a year ago. It will prove a great boon to photographers.

"I very much admire the manner in which Mr. Warren reasons on his modification of Dr. Norris's process for preserving collodion plates, and quite homologate his strictures on the relievo-engraving process.

"I enclose a picture, poor enough in itself, but interesting on account of its having been taken during the late eclipse of the sun. The figures represent the President, Vice-President, and Secretary (myself) of the Dumfries Photographic Society. You will see that we have an ordinary telescope fixed in the camera instead of the usual lens. We used the non-reversing eye-piece, and by a little care in adjusting the focus succeeded in getting fair pictures of his Solar Majesty, spots and all; but, alas, when he came to be eclipsed, he *was* eclipsed in reality, for thick murky clouds covered the whole sky. We must just hope for better luck another time."

MR. R. L. JONES'S PAPER.

"Were I in a South Sea island I should be tabooed; were I in India I should be a Pariah, but being in England I feel my position as degraded as if I were both. I, nothing but wax-paper, while all around me rejoice in the Brahminism of collodion. Before I was quite lost in the abyss of paper processes, it is true, one or two friends in the *Notes,* and one or two in the 'Photographer' condescended to notice me, to try if there remained one spark of true photographic fire, and to explain how baths might be used acidified and films kept fast to glass, but now all I can expect is, "why does the fellow bother us about waxed-paper, when nobody cares a grain of hypo about it?" But this is only when I have the blues.

"I feel myself a hero, a champion, a defender of the needy and defenceless; all others are feeble, faithless, lovers of novelty, fond of the trick of definition to the sacrifice of artistic beauty. They are the tea-board painters, (pretty bits for bellows and card-racks are their work,) while I am Michael Angelo on the one hand and Turner on the other.

"Come, I think that will do, and having placed myself where

I ought to stand, I will begin my lucubration at once, merely adding that if the readers feel afflicted with the above, let them thank their stars that they have not to pay an extra penny for the privilege.

"I have been trying the turpentine process, and my experience is rather that named in the last journal of the Photographic Society, page 230; the lights are not as dense and the process is no shorter. I have taken on the same day and same hour an ordinary waxed paper negative and a Sisson's, and I will send a print from each as an appendix to this, requesting the member whom they may reach, while he has the 'Photographer' in his possession, to add them to the other contributions. I buy the waxed-paper, iodized, from Knight, and to be sure of the turpentine I get it from Marion, iodized and albumenized. Albumen is a bad solution, and I have a difficulty in keeping the paper from being marbled. I fancy the definition rather better, but I must be consistent with my exordium and not insist too much on that. I enclose a print from a Knight's waxed paper negative. I never fail in getting something worth keeping, if not first-rate."

MR. G. C. WARREN'S PAPER.

"It is pleasing to see the 'Photographer' turn up once more. I began to think it had lost its way; although it has been long in coming it has picked up on its road a good pocketfull of material.

"I feel sure we shall all be proud to number amongst us Mr. Shadbolt, to whom many photographers are indebted. I fancy I remember reading in some account of the Dry Albumen process, now termed Fothergills, that several substances had been used in lieu of albumen; such as dextrine, gum, honey, &c. Now I cannot get a satisfactory negative with the albumen, the development is so very weak that the picture is good for nothing. I tried the honey process both with old and new collodion, washing the honey off the plate and setting aside to dry. The following day I exposed this dry plate and was gratified to find a most excellent negative, giving very fine half-tones and good density in the sky and high lights, the only drawback was that the film of collodion seemed very liable to move in a body off the plate. I must say I have succeeded well with the gelatine solution, as given in my last, and have also worked quickly with it, in comparison with the albumen preservative, but what appears to me rather singular is, that having obtained another sample of collodion (old) I could not get a picture under three times the exposure; the only difference appeared to be, that the first sample was *very old*, and had lost its property of forming a strong film. I mean such a film as you could lift from the glass. In my last sample, altho' a twelvemonth old, it had retained this quality, and I suspect this to be the cause of the diminished sensitiveness.

"Mr. Rimmer may perhaps be induced to try the washed honey. The results will be very clean, and any kind of collodion may be used. I should think that if the plates were coated with plain albumen first the film of collodion would stick tight enough, and avoid the bother and trouble of coating the plates in the usual manner. I think a quantity of albumen, after being beaten up to a froth and allowed to settle, might be poured into a bath and the plates carefully dipped one after the other into it and stood up to dry free from dust.

"The carbon print is, I think, very good for its age, in fact it is quite as good as the early photographic prints from calotype negatives, and I certainly think it worth knowing, and shall gladly forward my shilling to Mr. Sutton for the pamphlet, notwithstanding the criticism in the *London Journal*, which, by the bye, is rather a queer piece of criticism altogether

"In his statement about photography on wood, the critic, as 'one of the public,' says: 'But successful as it may appear it is not equal to some attempts we have seen,' and 'we do not know whether Coutencin's method meets this difficulty,' (of preventing the solution penetrating the wood, 'but a recent experiment which we had the pleasure of inspecting does so with great success.' I think it rather unfair to make a comparison and speak so highly of a process that has no representative in the exhibition without becoming acquainted with what Coutencin's method really does. I happen to know Mr Coutencin, and also his process, and can state that blocks prepared by him are put in the hands of the wood engravers and give great satisfaction, the solutions do not penetrate the block, and the artist has a white ground to work on in the same manner as an ordinary drawing on wood.

"The samples of collodionized paper are capital; but who enclosed them?* How were they done? Suppose each member when enclosing any pictures puts his initials to them.

"In this town there is an artist who knows little about photography, but has taken out a patent for 'Improvements in Photography,' a method of copying pictures of any size without the lensular defects, &c., &c., &c., *ad infinitum.*

"I have seen several of his productions, and can only say they are very soft in the half-tones, but the shodows and high lights hard and scanty. After all, he does not give a photographic copy of the picture except in one sense. His method, as most of you are aware, is to *paint a negative* on glass—not use a lens or camera at all !!!—and after that, print his negative on chloride paper; his softness is gained in a similar way, or, I may say, the same way as that by which many persons have obtained a very soft and strange-looking positive, viz., by printing the negative with the plain side of the glass or negative next the sensitive surface of the paper. I think he is on the wrong track, the better way would be to take an enlarged positive as enclosed, then touch it up; from this, take a negative, and then his positive prints.

"Mr. Jones must bless his stars that Sisson's Turpentine Waxed Paper process has appeared illustrated with two stereographs. It will bring many disciples, but I think a part of the secret is in cylindering the paper. I should also think that if the negative was cylindered after waxing it would be improved, and sharper impressions obtained.

"The difference produced in positives on paper is quite surprising.

"I have made a few experiments with the nitrate of uranium, but with poor success, the prints appear very weak, especially those developed with gold. Have any of you experimented in this line—if so, what sort of pictures have you obtained?"

MR. J. ARCHER'S PAPER.

"The 'Photographer' took me quite by surprise, and unprepared with any subject, as I almost began to think it would never come round.

"However, to make a start, I will confess to a fervent admiration for *wet collodion*, believing it to be, for all important artistic purposes, *the* process. It has, notwithstanding, its drawbacks, and these are by no means *light* ones, (I mean for landscapes.) I have for some time been trying to obviate the difficulty by means of a developing camera, but am sorry to say fruitlessly; the risk in coating and exciting prints, the extreme uncertainty of, and want of command over, the development, liability of the film in all stages to damage, and last, but not least, the nasty disgusting messes that frequently occur, will, I think, always be found impassable barriers to this system becoming general. A print of the camera, set up (a very poor one, the negative being fogged) will be found in the pocket. I am now turning Roger Fenton on a small scale, with *tent*, &c. Can any of the contributors give a suggestion as to the *best* form of tent to employ for working 9×7 plates? With regard to printing, I noticed a remark by Mr. Sutton, in the *Notes*, some little time since, to the effect that prints immersed in an acidulated water bath (hydrochloric acid I think) had, according to his experience, acquired a considerable degree of permanence. A short while ago I tried the experiment of immersing an ammonia-nitrate print, *without washing*, in a bath of hy-

*Mr. Sutton.

drochloric acid, two or three drops to the ounce; immediately on removing it from the hypo it instantly became *clear*, a little of the half-tone was dissolved, but it left *creamy* whites and shadows of an agreeable light-brownish *purple*. I have not yet applied any destructive test to ascertain its permanence.

"The carbon print is very interesting, and I think full of promise for so *youthful* a process. One good feature observable is the purity of the lights. It is to be hoped that Mr. Sutton's shilling plan will succeed in purchasing the process; the apparent want of self-tone, and depth of shadow would doubtless soon be obviated if photographers could bring their experimentive energy to bear upon the subject.

"Notwithstanding my avowed preferences for wet collodion, Mr. Rimmer's print of Lichfield Cathedral, taken from a honied plate, I must own speaks strongly in favor of a preservative process; the detail in the shadows is beautifully given. Would he kindly give his *modus operandi* in an early paper ?"

MR. GEO. SHADBOLT'S PAPER.

"In thanking you for your welcome, I must hasten to disclaim one of the honors that you have attributed to me. It is true that I had been long engaged in trying to do away wiih the dark tent system; but the *first* effective blow is due to Messrs. Spiller and Crookes, who brought out their nitrate of lime process, and in it threw out a suggestion which enabled me almost immediately to strike the second. The hint to which I allude was that of sensitizing the plate first, and then adding something to preserve it; whereas I had been striving to do both at one operation; but without any satisfactory result up to the time of the publication of their paper in the May number of the Philosophical Transactions.

"I shall follow the lead of writing a little gossip, principally in reply to what I already find before me in the 'Photographer.' The word 'micro-photogruph' originated I believe with myself, and is applied, I think, correctly to very *small photographs*, not to photographs of small *objects*, which would more correctly be 'photo-micrographs'; but probably a convenient word for this class of subjects as well as for *enlarged* copies generally would be 'mega-photograph,' or perhaps we might shorten it to 'megalograph,' or even 'megagraph.' If my brother contributors will express their opinions upon the claims of these various suggestions I may possibly be somewhat surprised when next the Journal comes round to me.

"Mr. Taylor is at a stand-still for want of a 'structureless' collodion; this is easily obviated; there are several in the market, amongst which I can at once mention Hardwich's and Thomas's, and several others, but there is really no difficulty in producing it if the pyroxyline be made with the mixed acids at high temperature and the alcohol and ether *nearly* free from water, the former being the most difficult to obtain strong enough for the purpose. I prefer also iodide of cadmium for the iodizing material, though this is merely a matter of convenience as regards keeping properties—not a necessity to success.

"I am sorry to say that I do not share the favorable anticipations of the *carbon* printing process, as expressed by Mr. Jas. Archer, for the reason that I have already given, viz., that all the proofs from genuine photographic negatives, not being mere copies, are almost entirely devoid of half-tone—the most fatal of all.

"Immediately after Mr. Pouncy exhibited his proofs at the Photographic Society, I published in the Journal already cited, the two suggestions following, viz., that they were produced by means of paper coated with the bitumen of Judea, as used by Niepce, the parts unacted upon by light being subsequently dissolved out, or by gelatine, bi-chromate of potash and coloring matter; as it appears, from *Photographic Notes*, turns out to be a part at least of the truth. Now the difficulty lies here, viz., that the action of the light, when sufficient, renders the gelatine *insoluble*, but when insufficient it is not *partially insoluble ;* but simply soluble *more slowly* than the rest, hence the amount of half-tone (if any) would be dependent principally upon the skill in washing, which would be a very delicate operation to free the lights from every trace of color without destruction of the middle tints.

"It is upon these grounds that I think unfavorably of the process, and though it goes very much against the grain with me to discourage any attempts at so laudable an end as the production of photographs in carbon, it would neither be justice to my brother operators or to the photographic art to encourage that which I really and truly think must end in failure. If Mr. Pouncy had succeeded in producing *satisfactory results*, and chose to demand pecuniary remuneration for making the process public, he would have every right to do so, and I see no reason why the public should object to pay for what they want and cannot get without payment; but if those results are, as I contend, very imperfect, I cannot see the policy of paying for that which is absolutely useless in its present state, and which if it be even possible to improve enough to make useful, eventually may, upon precisely the same grounds, have to be paid for again to the improver. No one would be more pleased than I should were the present mode of printing to become reasonably superseded."

MR. SUTTON'S PAPER.

"When the 'Photographer' comes round next, I will enclose some carbon prints from stereoscopic negatives which I have lately taken in France; but I have been so busy lately with finishing the Photographic Dictionary, that I am unable to enclose anything of interest in the present number.

"I mentioned in the last number of *Photographic Notes* that I had lately taken some negatives upon dry sensitive plates, which I received from Dr. Hill Norris about a year ago. I have now developed half-a-dozen of them, and the results are as good as any photographer could desire. The preservative which Dr. Norris employs is simply gelatine and alcohol, which is inert, and therefore much better than honey. I advise you all to purchase a dozen of Dr. Norris's stereoscopic plates and try them, for the process appears to me to be a complete solution of the problem of preserved collodion. The addition of honey as recommended in Mr. Shadbolt's paper, would I think ruin the process. However, next time you shall see some prints from dry plates which have been excited for nearly a year; and you will then be able to judge whether the process requires any modification. When a process works well in its simple form, it should surely be left alone. The tendency to modify and complicate is the great photographic sin of the day. I propose that a fine be levied upon any person who suggests in print a complication of any process which cannot be *proved* to be better than the original process in its simple form, and that the fine be handed over to the discoverer of the original process for his use and benefit. What say you? Shall we agree to this among ourselves ?

"With respect to Mr. Pouncy's process, Mr. Shadbolt's remarks are directed against an *imaginary* process, and not that of Mr. Pouncy. The *facts* are, that carbon printing *does* give half-tone and good detail. This I hope to be able to prove to you before long by specimens. But a good deal depends on the nature of the surface in Carbon printing, as well as in all other kinds of printing. Examine, for instance, the portraits of the worthy officers of the Dumfries Photographic Society, in the pocket of the present number; although printed upon albumenized paper, how coarse and rough they look by the side of the developed prints, by Mr. Jones, upon plain paper.

"Apropos of developed prints. I enclose you a couple printed by me exactly a year ago, one on plain, the other on albumenized paper; they were printed on the same day, and treated in exactly the same way, for I wished to see which would be the most permanent with only one or two rinsings under the pump for a couple of minutes. The print on plain paper is as good as ever, that on albumenized paper is fearfully faded. Must we then conclude that albumenized prints require more washing than plain prints, and are more liable to fade, either from their retaining the hypo more pertinaciously or from the albumen containing sulphur ? I am really inclined to think the use of albumen one of the causes of the fading of prints. Please also to look at the horrible curvature of the marginal lines in one of these prints, from a negative taken with a Ross view-lens of the ordinary construction. With an Orthoscopic lens these lines would have been absolutely straight.

"Now I have a proposition to make to you all. Suppose we were to resolve ourselves into a committee, and instead of writing r andom papers were to attempt to settle, by our joint experiments, some of the vexed questions in photography. Let us suppose, take some one subject, confine ourselves to that, and work it out; then take another. By comparing specimens, holding *post mortems* upon failures, and working on some definite system, a great deal of good might be done by a circulating specimen-comparing journal of this sort; for after all what is any man's *ipse dixit* worth *without the guarantee of a specimen* ?

"If you think well of this plan, I would propose to you for solution the following problem :

"*How much absolute alcohol S. G.* 794 *may be advantageously used in the manufacture of collodion ?*

"If we can agree that by adding more alcohol the process may be rendered more sensitive, the greasy streaks in the nitrate bath abolished, the film rendered more nearly structureless, and the developer caused to flow better, then a great improvement will be effected on the present mode of making collodion. For my part I believe the present proportions of ether and alcohol susceptible of considerable modifications for the better.

"Your opinions please on this subject. But remember the alcohol must be absolutely anhydrous, and distilled over quicklime or alkali. Alcohol containing water won't do. I believe you will be greatly surprised to find how much *absolute* alcohol may be added to the ether for dissolving any good sample of pyroxyline.

"I should be greatly obliged to Mr. Warren if he would furnish me with the particulars of Mr. Contencin's process.

ON THE WORKING OF NEW COLLODION.

To the Editor of the Photographic Notes.

DEAR SIR,—The letter in your August number, from Mr. J Barbrook, "Upon the worki ng of Collodion," is interesting no doubt to many of your readers who, taking more *interest* in the correspondence, than they do in those clever articles which adorn your *Notes*, are perpetually stumbling on minor points.

Your correspondent has not very clearly expressed himself ; I cannot conceive how any one can know too much to take good pictures ; instead of requiring some *practical dodge*, they rather want experience, or perhaps industry, to connect and arrange previous efforts and results, for while one is content to take things as they are and at second hand, so long will dodges be looked for, which at best is but appropriating in an unsatisfactory way the result of anothers industry and talent.

To return to the object of my letter on the working of new collodion, perhaps the following may be of service, it being *practical* ; the theory of the matter I do not touch on.

Pictures on new collodion are generally wanting in density, the film at this time being hard, and the layer of iodide thin, the *developer* must be modified to suit it, and herein consists a great matter, more appertaining to a proper developer than many dream of, and I think it will be found, that the harder the film (giving *thin* pictures) the weaker and LESS ACID ought the developer to be. An industrious and thinking photographer, will not expect different qualities of collodion to work equally well, with a given formula of development ; by modifying the ingredients any amount of density can always be obtained. I speak of good clean whites and clear blacks.

A chair in front of a *white background* is a good object for experiment, which should be taken over and over again, until a satisfactory result is obtained. If the operator's memory is defective, notes must be made for reference, the pictures being saved for examination, a good groundwork will be had towards obtaining a valuable *practical dodge*.

I have experimented in every way with collodion, and I advise, that the less it is meddled with the better. Should a sample be found unmanageable, a twelve month's keeping may bring it into use; the very best I ever used, was some that conquered me. Putting some Iodide of Potassium into it, I placed it aside for eight months; on trying it, it proved very sensitive, and almost too good for use, and it was with regret that I used it up.

The collodion I prefer is Fisher's. With myself it generally works well. I recommend keeping to one collodion, and that when a quantity gives unpropitious results, to consider that the fault lies with the operator and not with the maker; a moments consideration will be sufficient to recall to the mind, that after using a collodion for some time, the *bath*, exposure, and *developer*, have been working in harmony, and that a new collodion will require a different treatment.

Permit me to offer you my cordial thanks, for so ably discussing the theory of matters relating to photography. I cannot read a number of your *Notes* without deriving pleasure and much information.

Your obedient servant,

RICHARD BAIGENT, JUN.

WINCHESTER, August 24th, 1858.

THE ORTHOSCOPIC LENS.

To the Editor of the Photographic Notes.

DEAR SIR,—In the leading article of the last number of the "Liverpool and Manchester Journal" is mentioned several times the "Petzval lens" and the "Orthoscopic lens." For the purpose of preventing the public being mistaken by mixing up the various descriptions of those lenses at present brought into the market, permit me to state, that the lens alluded to in the above-mentioned article,—the same lens which gave "the evidence of the own eyesight,"—*has been, not one of Professor Petzval's,* by the simple reason, because none of this description and size have been issued by Professor Petzval. The first consignment of those smaller lenses I have only received a few days ago, and they possess a focus of 18.-ins. for pictures of $13 \times 10\frac{1}{2}$ ins.

It is perfectly true Mr. Shadbolt had two of Professor Petzval's lenses for examination, but they are of the larger size, focus 25-ins., size of pictures 16×12 or a circle of 20-ins. diameter. I suppose that Mr. Shadboldt has only examined the portrait combination with short-focus, and perhaps the capabilities of the three lenses together. But I do not think that he has examined at all the large pictures reproduced by the new combination with the larger focus.

I consider it my duty to make this statement, and I am obliged to add that I do this only for the sake of stating the true facts, without the least wish of beginning a new controversy.

PAUL PRETCH.

67, Great Portland Street, London,
August 21st. 1858.

ON CERTAIN MODIFICATIONS
Of the Positive Printing Process.

BY JAMES ALEXANDER FORREST.

In the following details of my modification in positive printing, the chief points I have aimed at, are pure whites and an economical use of the gold.

Take the whites of two eggs to one ounce of water, shake them well up, then add fifteen grains of salt for every ounce of solution; allow this to stand for one hour, then float the paper upon it in the usual manner, and hang it up to dry.

Sensitize upon a solution of forty grains of nitrate of silver to each ounce of water; after drying, the exposure in the pressure frame is to contiue until the detail is fully but not over printed, as is generally the custom, and on removal wash the proof in cold water, and afterwards immerse in a solution of salt and water, say a teaspoonful to six ounces. The object of this operation being the removal of the unaltered nitrate of silver from the print, or rather to effect its conversion into the chloride, the former being liable afterwards to affect the color of the finished picture if not neutralized.

After rinsing in cold water, lay the print upon a piece of glass face upwards. Have at hand two stock bottles, one of solution of chloride of gold three grains to the ounce of water, and the other a solution ot carbonate of soda, also three grains to the ounce.

Mix together half a drachm of each solution, which quantity will be found sufficient for a dozen prints 9 × 7. Pour it into a dish and apply it by means of a flat camels hair brush to the surface of the print. In the course of a minute or two the solution produces a desired tone; wash well, and fix in new hyposulphite of soda, the strength being three ounces to one pint of water. After immersion for about a quarter of an hour, take the greatest possible care to wash the prints in a running stream of water for at least four hours.

These instructions may appear tedious, but I am persuaded that permanency cannot be ensured with less labour. I have tried prints so treated in damp situations, and have never found them to give the slightest indication of failure.

PHOTOGRAPHIC CURIOSITIES.

The following letters, addresed to the editor of *The Times* newspaper, alludes to some hitherto unobserved phenomena of considerable interest:—

From The Times, July 14, 1858.

Sir:—As you did me the favor of inserting my letter on the photo-stereo of the exploding thirteen inch shell on Woolwich Common, in the *Times* of 29th of May last, perhaps the following account of a subsequent experiment made by me at the same *locale*, may not be uninteresting to your photographic readers.

On Monday, the 28th ult., at twenty minutes past eleven a. m., a thirteen inch shell was fired from the mortar battery by the 2nd company of the 1st battalion of Royal Artillery. The shell, weighing 200 lbs. was ten seconds in traversing the air, and fell within two yards of the flagstaff, distant from the battery six hundred yards.

The enclosed photo-stereo (No.1), taken as the shell emerged above the smoke, shows three-eights of an inch of the projectile's track, commencing at the distance of eighteen times the shell's diameter above the mortar, and 1 1-8 inch visual distance, above the head of the superintending officer in front. But though this is I believe, the first time a mortar shell has ever been photographed in its ascending flight, sufficiently intense to print from, it is not that "what next?" to which I wish to call particular attention, but the likeness of the human head which so distinctly dominates in the smoke. This phantom does not appeat to be the result of chance, for on repeating the experiment it is invariably reproduced at a certain phase in the smoke's expansion.

Further, the apparition is not, nor can it I believe, be seen by the human eye, excepting through the medium of photography, which, in its highest instantaniety, appears to eternize time, by giving at the photographer's will a series of pictures of things which have their birth, marked phases of existence, and extinction in a moment (from the 20th to the 20,000th part of a second,) much too fleeting to be noted by the naked human eye. In short, photography, as exemplified within the last fortnight at the Woolwich mortar battery, promises to do to epochs of time that which the microscope already does to small objects, and the telescope to distant ones.

I am, yours, &c.,

Vanbrugh House, Blackheath, THOMAS SKAIFE.
July 12, 1858.

From The Times, August 5th, 1858.

SIR,—In *The Times* of last Thursday is an account of the last firing of the 36-inch mortar on the Plumstead Marshes. Through the kind facilities afforded me by General Carter, president, and Colonel Pickering, secretary of the select committee (War Department,) I was enabled to take a photo-stereograph of the monster shell in the course of its flight, together with a phase of the mortar's explosion: a print from which (No. 1) I take the liberty of enclosing for your inspection, and which, you will perceive, is confirmatory of what I intimated in my last letter (see *Times,* 14th July), viz that epochs of time, inappreciable to our natural unaided organs of vision, could be made evident to our senses by a photographic camera as decidedly as the presence of animalculæ in blood or water is by a microscope.

It was, undoubtedly, ignorance of this newly-discovered principle in photography that induced a professional gentleman, well acquainted with the action of shot and shell, in the Crimea, on my pointing out to him the track of the projectile and its termination in the stereo, to exclaim, "But what stopped the ball?" What stopped the ball? This indeed was a poser. But, thank God! I mentally exclaimed, this is the nineteenth century instead of the seventeenth, or, as sure as fate, the "stopper" of the ball would soon have found his poor flesh quivering in the red-hot pincers of the witch-finder. The nineteenth century is the epoch of mesmerism, and mesmerists will perhaps attempt to account for the sudden stopping of the monster projectile in mid air to the passing before it of a piece of vulcanite (term applied to the substance by Mr. Goodyear, the patentee;) but be the mesmeric theory a bubble or not, it is undoubtedly a fact that by a peculiarly rapid motion given to two small thin pieces, each two inches square, of baked india rubber, by means of what I call a trigger movement, an optical illusion is produced on the transit of a projectile which may be likened to the stopping of a railway carriage by a brake.

The first application of this optical brake is perceived in the commencement of the shell's track on the side of the mortar. The shell then appears gradually to have decreased in speed, until it has gone the length of four of its diameters after the brake has been applied, when it appears finally to have stopped, and that for an interval sufficiently long to admit of its portrait being photographed accurately enough to give a tolerable idea of its size and shape; after which, it is assumed, the shell proceeded on its rapid course for one mile and a half further, arriving at its goal not one measurable iota of time less for its having lagged by the way to coquet with the photographer.

And thus I account for this seeming paradox. The whole operation of putting on the optical brake to the flying projectile stopping its course and photographing its portrait, according to data supplied by this stereo, appears to have been done in the fiftieth part of a second. The shell at this part of its course is supposed to be flying at the rate of five hundred feet per second (the diameter of the shell is believed to be about two feet and a half,) when the now applied brake gradually retards its flight, and finally succeeds in stopping the shell, after it has gone four diameters, or ten feet from first application of brake.

The commencement of the shell's track on the side of the mortar, it will be perceived, is misty and ill defined, whilst, on the contrary, the termination is sharp, and gives a tolerably clear idea of the sort of snail that has been leaving its trail behind.

This difference between the beginning and end of this photographed section of the projectile's parabola, is thus accounted for:—The vulcanite "spring shutters" admitted to the sensitized collodionized plate, through a pair of lenses, a view of the shell the instant it emerged from the mortar's smoke, by being made to revolve on their axes ninety degrees, at which point they have exposed the full aperture of the lenses, and at this point the hundredth part of a second has elapsed; meanwhile, the shell, flying at the rate of five hundred feet per second, has just interposed its trail on the collodionized plate the length of two of its diameters ($\frac{1}{8}$-inch,) and succeeds in trailing two others while the shutters are having their action reversed and returned to their original light-excluding position behind the lenses.

Now, as the first part of the shell's track (one-sixteenth of an inch wide) has been exposed to the full action of light from the commencement of the shutters' opening to their final closing, this part of it has, consequently, been undergoing a gradual effacement during the whole period of the fiftieth part of a second; while, on the contrary, the terminus of the track photographed at the final closing of the shutters must, in the shortness of its exposure to the action of light, bear a moving analogy to the rapidity of light itself—known to travel more than one million of times quicker than a cannon ball: and hence the ball's apparent stoppage in the air *malgre* the tremendous physical force argument seen in the act of urging it forward.

But what military man, however familiar he might be with the firing of projectiles, would believe, had he not witnessed the photographic fact, that that physical force argument, so sharply depicted in the stereo in question, was other than pure allegory instead of being, as it actually is, the *bona fide* stereoscopic portrait of a real natural cyclops, sprung into giant life by the igniting of eighty pounds of gunpowder in the most ponderous piece of artillery probably ever constructed by the hands of man.

No. 2 is merely added to show the thirty-six inch mortar size, and relative position at the time it was fired.—I am, yours, &c.,

Vanbrugh House, Blackheath, THOMAS SKAIFE.
3rd August, 1858.

COLOURING GLASS POSITIVES.

To the Editor of the Liverpool and Manchester Photographic Journal.

SIR,—Can you kindly, through the medium of your very valuable *Journal* (or otherwise, as it may suit you,) give me any information, as to colouring collodion pictures on glass, or inform me in what number or numbers of your *Journal* anything of the kind has appeared. I have applied to the party mentioned in the enclosed advertisement, cut from the *Journal*, and enclose you the reply, which the advertisement contains. I have tried the balsam preparation in every way that has suggested itself to my mind, and cannot get it to answer at all, not even as well as when the plate is simply varnished. Such disappointments as these occur to me as being calculated to discourage, rather than otherwise, the amateur; and I am sure you will coincide with me in thinking that unless some better method can be sent, and more detailed information can be afforded, the advertisement would be better kept out of so valuable a journal (in other respects) as your own; or at all events, I would that the advertisement should be worded in more truthful terms, and such attractive phrases as to the plates being scarcely distinguishable from "miniatures on ivory, &c. &c., should be omitted.

Trusting that you will kindly give me the required information, or inform me of any work on the subject of colouring, I am,
Sir, yours respectfully,

245 *Burlington-street,* RICHARD BROWN.
Liverpool, July, 8, 1858.

[See reply to "R. C. Gorens" in No. 14.—We cannot, of course, answer for the statements made in advertisements (indeed we do not *see* them any sooner than our readers,) nor can we exercise any control over what is a mere matter of commerce, except by rejecting altogether anything positively offensive.

We have seen some good results *said* to be produced by the method detailed in your enclosure. In No. 5, page 65, and No. 9, page 116, you will find what we have published on the subject.—ED.]

VIGNETTE MACHINES FOR GLASS POSITIVES.
SUGGESTED IMPROVEMENT.

To the Editor of the Liverpool and Manchester Photographic Journal.

SIR,—Can you, or any of your kind readers, inform me if the small machine for vignetting *glass positives* sold by Mr. Atkinson, of Liverpool, at 17s. 6d. and 28s., is of any real practical use, as I cannot hear of any one who have given them a trial.

An answer in your next will oblige.—Yours, &c.

LILLYWHITE.

[The instrument you mention is used by many, if not most, of the Liverpool photographers, and is perfectly effective. It was contrived originally by Mr. Mayall, of London, in whose studio we saw it many years ago, and consists of a circular disk of zinc or tinned iron, painted blue, having an opening in the centre with radiating points in the form of a star. This disk is supported by a light iron frame, and rests upon three rollers, to allow of a circular motion on its axis being communicated to it; and the disk also is adjustable in height, so as to be placed centrically with the head of the sitter, between whom and the lens it should be arranged about midway. During the exposure, the disk is kept in constant rotation, and consequently, being out of focus, is not itself delineated, but by partially obscuring the edges of the field of view, and this in regular gradation in proportion, as the part is more obliquely situated from the axis of the lens, the effect is to produce a very artistic shading of the figure that is extremely pleasing. We made a suggestion to one or two of our Liverpool brethren, which we think might be a convenience to them if carried out. It is this: It is necessary that when in action, the disk shall have a circular motion communicated to it, and this is usually done by means of a small wheel and band, and requires that the operator, or an assistant, should work the handle. It is, however, immaterial whether the motion is continuous in one direction or reciprocal; consequently, we believe that, by the addition of a short pendulum with a heavy "bob," the trouble of turning the handle might be dispensed with as, if set vibrating, it would continue moving much longer than necessary to take a portrait.—ED.]

TRANSFERRING THE COLLODION FILM.

To the Editor of the Liverpool and Manchester Photographic Journal.

SIR,—Knowing your liberality in answering all enquiries, I beg to trespass on your kindness.

If you or any of your numerous correspondents could give any information respecting the transfer of collodion positives from glass to paper, leather, cloth, &c. in your next number, it would be deemed a great favour.—I am, yours, &c.,

Birmingham, July 24, 1858. COLLODIO.

[The transference of the collodion film from glass to paper was firs effected and brought forward by Sir William Newton, at a meeting of the London Photographic Society, on 1st June, 1854, his method being to pour over the collodion film a varnish composed of one ounce of pure gum mastic dissolved in eight fluid ounces of alcohol, and two drachms of poppy oil added: the glass being then placed in a horizontal position, while a piece of thin paper, previously cut to a size slightly smaller than the glass, was saturated with the same varnish by the aid of a camel hair pencil, and at once placed carefully in contact with the collodion film so as to exclude every particle of air, and the whole allowed to become dry by evaporation of the spirit. When dry, the glass was placed paper side upwards in a dish of water, until the film began to separate from the glass, when it was gently and carefully drawn away. We see no reason why the same method should not be applied to leather, cloth, &c. A varnish formed of bleached shellac, dissolved in water by the aid of borax, assisted by heat, might also be useful for this purpose.—ED.]

COLOURING GLASS POSITIVES.

To the Editor of the Liverpool and Manchester Photographic Journal.

SIR,—At page 193 of your issue of the 1st instant, I find one of your correspondents requesting information on the colouring of glass positives. I once laboured under the same difficulty in not being able to get sufficient depth of colour, but can now manage to lay on any quantity I like. Mr. T. S. Glaister, an eminent artist in Sydney, Australia, kindly furnished me with the following recipe :—Colour your photograph as usual and then varnish with the ordinary chloroform and amber varnish, which dries hard almost immediately. Colour your picture a second time wherever it requires a greater depth of colour, and *fix* this second layer of colour with only the *vapour* from your varnish bottle, by holding the mouth of it (all but touching) close to the glass, going over the parts that have been recoloured. Care must be taken not to let any of the *liquid* run out, but only the *vapour*, which being heavier than the surrounding air, pours out of the bottle (quite visible on a warm day,) dissolves the varnish already on the picture, causing the colour which was resting *on* it to sink down *into* it, and thus become incorporated with it. If after this the colour is still not yet deep enough, repeat the dose by recolouring and revapouring any number of times you like. I consider a portrait may be very much improved by a little recolouring in certain parts in accordance with the above method.

I should feel much obliged if in your next you would kindly give the recipe for making such instantaneous collodion as that by which I see a portrait was taken at Woolwich the other day, of a shell in the act of bursting in the air, and stating also your opinion as to whether such preparation will keep well, as I have been informed it will lose its sensitive qualities in a few days. I suppose the said portrait was taken by the *wet* process.—I am, yours, &c.

M. J. Soares, Jun.

50, *Mark Lane*, *August* 3*rd*, 1858.

[By the wet process, certainly. We have made enquiry upon the other point, but as the operator explains his mode professionally only, we cannot assist you in the present instance.—Ed.]

THE FOTHERGILL DRY PROCESS.

To the Editor of the Liverpool and Manchester Photographic Journal.

Sir,—In my communication in your last *Journal*, "Practical details for working Mr. Fothergill's new dry process," I should have inserted in that part where I direct the albumenized plate to be placed in a dish containing so much water, &c., after "empty out the water and repeat the washing with a second quantity," *take out the plate, incline it a little, and pour* LIGHTLY *on at one* CORNER *or* ALONG THE END *sufficient water to flow all over the surface* ;" place on end on several thicknesses of blotting paper, &c. The water in the dish after the second washing, necessarily contains a little albuminate of silver, which is left, on the evaporation of the water, on the surface of the plate, and *might possibly* affect its keeping properties if not removed. The above obviates this, and does not at all injure sensitiveness.

I find I also stated, "place the plate in a dish containing, for stereoscopic size, two or three ounces of water," as dishes vary very much in size, and this quantity in some would not cover the plate. It would have been better had I directed as follows: —"Place the plate in a dish containing sufficient water to cover it to the depth of from a quarter to half an inch, according to size and depth of dish ;" wash well for about half a minute, &c. ; "take it out, incline a little, and pour on sufficient water," &c., as recommended in first part of this communication. The dish should be sufficiently large to allow of the water for second washing being poured in *without its falling on any part of the plate.*

From the universal interest this beautiful process is exciting, I feel that no apology is necessary for being thus minute, and occupying your valuable space ; for although it is as certain, easy, and simple as possible for any to be, when properly manipulated, it necessarily produces disappointment improperly done, either from misunderstanding or not following the directions given. I would also here remark that these take longer detailing than carrying out, and lessen rather than increase the time required for preparing the plates.

I have frequently the following inquiries made—"May the prepared albumen be used *more* than once ?" No. "Will it keep, or does it require to be prepared fresh each time ?" If kept in a bottle corked, it may be used several days after being prepared, as long as it continues clear and bright. I would recommend it alway to be filtered through sponge before using. If the proportion 10 oz. white of egg, 6 oz. of water, 80 minims strong liquor ammonia, make it too thick to filter easily, add 2 oz. more distilled water ; with eggs two or three days old, this is liable to be the case—such as are not fit for boiling should on no account be used. Of what use is the ammonia in prepared albumen ; it is not likely to injure the keeping properties and produce fogging ?" It *increases sensitiveness*, causes prepared albumen to keep fit for use until sometime after being made ; does not affect keeping properties—plates having been found unchanged a month and five weeks, the limit yet tried, after preparation ; and, as far as the writers knowledge extends, a foggy picture (except from diffused light or similar cause) has never occurred.—I am, yours, &c.,

Alfred Keene.

115, *Warwick Street*,
Leamington, *August* 9*th*, 1858.

PROOFS BY NITRATE OF URANIUM.

The following is from *Cosmos*, of 15th July :—

We have received from M. Godefroy, professor of physics at the Lyceum of Chateauroux, the following letter, which we hasten to publish :—

In trying to obtain positive proofs by M. Niepce's process, I have discovered a method of proceeding which shortens materially the time of exposure. This modification appears to me so simple, that I have no doubt of seeing it proposed by several persons at once. However, as I have not seen it indicated in the latter number of your publication, I take the liberty of pointing it out to you. I do not send any proofs, because it is so extremely easy for any one to obtain the results that I announce, that I do not fear any contradiction.

PREPARATION OF PAPER.

Float a sheet of paper upon a bath containing both nitrate of uranium and nitrate of silver. The sensibility increases in proportion with the amount of nitrate of uranium. A convenient formula is—

Water,	$3\frac{1}{2}$ ozs.
Nitrate of silver,	120 grains.
Nitrate of uranium	2 ozs.

The paper is to be allowed to remain for two or three minutes, and then dried. It may be exposed either in a camera or under a negative, and the impression is to be developed by immersion in the following bath, viz :—

Water,	1 oz.
Protosulphate of iron,	40 grains.
Tartaric acid,	20 "
Sulphuric acid,	5 minims.

The image is rapidly developed, and can be fixed by soaking in rain water.

RESULTS.

1st. *Exposure under a Negative.*—In a well-lighted room, with diffused light, at about a yard and a quarter from the window. No. 1. Five seconds exposure ; the image perfectly visible, and of a greyish black tone. No. 2. Ten seconds' exposure ; image very strong ; tint that of an engraving.

2nd. *With the light from clouds.*—Thirty seconds exposure ; the tint of the paper changed in the parts affected by light ; the image is visible in the camera ; on the iron bath an uniform tint is in general obtained.

3rd. *With sunshine.* The action is much more rapid ; at the end of a few seconds the tint changes, and various tones can be produced by variations of the process.

4th. *Before a small sized moderater lamp.* If the pressure frame touches the glass shade of the lamp, ten minutes' exposure will produce the tint No. 2 ; but if the frame be withdrawn to a distance of about twenty inches from the lamp, an hour's exposure will be required to produce the same effect.

EXPOSURE IN THE CAMERA.

I operate with a quarter plate apparatus of M. Ch. Chevalier's before old fashioned red roofs lit by the sun's rays. With three minutes' exposure the image has the tint No. 1, but by prolonging the exposure deeper and deeper tones are obtained.

In dull weather, with rain falling part of the time, in an exposure of one hour deep tones were obtained,

If I do not deceive myself, this paper is destined to supersede the ordinary dry papers, and to put dry collodion in jeopardy. I have repeated with my paper the following experiment of M. Niépce: I open a book, and leave it for three hours exposed to a strong light; I place in it a sheet of prepared paper, shut the book, and at the termination of three hours obtain by the iron bath a sharp negative of the impression. This experiment requires a very strong bath, but it never fails.

Should my weak attempts be interesting to you, I can give you, in another letter, the theory of my process. I have to visit Paris in the middle of August, and if you have the goodness to spare me a few moments, I can communicate to you a simple process for preserving the chemical intensity of the luminous rays---a process which I hope will be of great use to photographers.

ON THE WET COLLODION PROCESS.

[CONTINUED FROM PAGE 246]

By Mr. J. A. Judge.

In the winter, and in dull weather, the solution should be rather stronger—say one-and-a-half grain of pyrogallic to the ounce, the quantity of acetic remaining the same. It is well not to weigh the pyro in the operating room, as, being extremely light, it will, without great care is used, be blown about the room, and get into the solutions.

The fixing solution is merely a saturated solution of hyposulphite of soda. Cyanide of potasium, which is sometimes recommended for the purpose, although not requiring as much washing as the hypo, is very liable to attack the half-tones, and destroy the beauty of the negative,

VARNISH.

Spirit varnish, requiring a slight heat, will be found better than either amber or chloroform, or benzole varnish.

A beginner should never attempt to take portraits at first; he must practise upon objects of still life—a house or landscape opposite his window. When proficient, and he has become used to the management of his apparatus, then, and then only, should he try his hand at portraiture.

Before commencing to clean and coat his plate he should set up his camera and get the object to be taken as sharp as possible upon the ground glass; he will then only have to place the slide in the groove on bringing it from the dark room, otherwise the plate is liable to be left too long in the bath and to become filled with minute holes. In any case it is always well to focus roughly before commencing.

The plates can be cleaned with a solution of washing soda, if the water used be not too hard, but if it contain a large quantity of lime the glasses seem liable to become coated with it, and it is very difficult afterwards to obtain a clean surface. Liquid ammonia and tripoli are recommended, but although a nice polish can be obtained by their use, everything becomes covered with the particles of dust, which are very annoying. It is always better to clean the plates in a room adjoining the operating room as, however carefully the cloths may be kept, there is always a certain amount of dust and stuff flying about.

After rubbing the plates on both sides and edges with a strongish solution of cyanide of potassium or carbonate of soda, by means of a coarse piece of rag, well rinse under a stream of flowing water, continually rubbing the plate with the fingers, and dry off immediately with a clean cloth. Do not let the plate dry spontaneously, as you will rarely get a clean plate by that means. As you clean the plates place them face to face against the wall, or in a drawer; and as required for use finally rub them over with a mixture of spirit and ether, dust the surface with a piece of fine clean muslin, and coat immediately afterwards.

There are several ways of pouring on the Collodion; the best, I believe is to hold the plate in the left hand by the left-hand corner, and to pour the collodion first on the right-hand corner, allowing it to flow towards the left (avoiding to touch the thumb) and then down the plate, pouring off the superfluous liquid by the lower end. Whilst coating, the plate should be so held as to be able to look down the surface of it and perceive any floating particles of dust or film detached from the edge of the collodion bottle. Should any such exist, pour on a larger quantity of collodion so as to remove it bodily from the plate. Rest the plate on the neck of the bottle, and cant it gently from side to side until the lines which are at first formed run into each other, and the film presents an even, structureless surface. Do not press the plate too hard upon the edge of the bottle, neither give it too rapid a motion—by so doing, pieces of glass are rubbed off the edge of the plate, stick to the neck of the collodion bottle, and are carried on to the next plate that may be coated. The film must be allowed to set before being plunged into the bath, if put in too rapidly the film will peel off in flakes at the end last coated, and if kept out too long a time the film will detach itself from the plate, and allow the developing and fixing solutions to get under it, rendering it very dangerous to wash afterwards. The same effect takes place with an old bath. In cold weather the operator, if not on the alert, is liable to be led into error if, after coated plates that have been washed some hours and left in the operating room, he uses one that has been freshly washed in cold water, and has not remained sufficiently long in the operating room to have acquired a higher temperture. When the film has had the requisite time to set, plunge the plate at one movement into the bath. It should be taken out and examined after the lapse of about two minutes, and if it still presents a greasy appearance plunge and replunge it into the bath two or three times, and when the oiliness has disappeared it is ready for draining. The bath should be so placed with respect to the window as to allow the light to rake along the surface of the glass when removed from the bath. You are enabled to see whether any particles of dirt, &c., are adhering to the surface of the film, and if so, remove by re-dipping into the bath. It must not be allowed to remain too long a time in the bath, as a long immersion tends to render the plate insensitive, and to flatten the resulting picture. The negative also becomes filled with a number of minute holes, which are distinctly visible in the positive picture.

Now remove the plate from the dipper, and examine, by placing between you and the light, which is the best end of the plate: if for a landscape use this for the foreground, the blemishes, if any, being readily got rid of in the sky, by painting out or otherwise. In this case turn the blemished end downwards, and allow it to drain from that end for about two minutes, or until the liquid no longer drops from the corner of the plate; then place it in the dark slide, having previously put small pieces of clean blotting-paper in the corners of the frame to prevent stains from a return of the solution. In carrying the slide, keep it in the same relative position as it will occupy when in the camera, and if the glass-room in which you are operating is a very warm one leave the slide outside until wanted, if out of doors place it in the shade. Do not allow it to remain longer than five minutes before exposing, especially in hot weather, the film will otherwise become dry in patches, and the nitrate solution will attack the iodide of silver very energetically.

I omitted to mention that if the bath solution is allowed to remain in the bath for a few days, the top of it will become covered with floating particles of film, dust, reduced silver, &c., which will stick to the collodion on immersion; and give rise to blemishes in the negative. This film should be removed with a piece of clean blotting-paper, and the solution agitated with the dipper, until the whole disappears.

The following notes were also added by Mr, Judge:

It is advisable to place a sheet of blotting-paper behind the plates, and the spring of the dark frome should be electro-plated, as, in case it is requisite to re-dip the plate in the bath, the particles of reduced silver which would be apt to produce blemishes upon subsequent plates.

The slides should be kept clean and dry externally, so as not to soil the fingers, which should be washed before and after each operation. Do not use finger stalls as they are apt to produce stains on the plates.

After focussing, use a dark cloth to cover the lens instead of the cap, as it is more convenient and less liable to alter the focus by accident.

The proper management of the light is of the utmost importance, as well as the time of exposure, which is better to be over than under done.

Accustom yourself to count seconds, and do not look at the sitter, or move about in order to avoid attracting attention.

According to locality, the time of exposure is affected by the direction of the wind; for instance, at the west end of town a longer exposure is requisite with an easterly wind.

In moist weather it makes a material difference whether a picture of a given size be taken with a lens that requires to be a long or short distance from the sitter, as the intervening moisture retards the actinic action more at a long than at at a short distance, and the result is less brilliant than it would be with the shorter distance.

After the exposure, do not wave about the slide, and remove the plate with the same edge downwards, as when in the camera, to avoid any chance of the nitrate of silver solution that has drained off it running back and staining the plate, or carrying particles of dust, &c., with it.

In developing, pour on the solution towards the end to which the drainage has been carried; the high lights should appear first, but not too suddenly, then the half and intermediate tones.

Should the picture be under exposed, and it be impossible to get another, it may be saved by washing off the developing solution containing silver, and using plain pyrogallic solution, thus avoiding, in a great measure, too great intensity of light and depth of shadows.

If over exposed, it may be known by the whole of the picture appearing at a flash. Develop till the details are out, then use fresh pyrogallic solution, with some silver to blaken it.

In any case long development gives the *soundest* picture. Carried on till the high lights are almost opaque, and the hyposulphite of soda generally removes slight foggiuess.

In fixing it is not necessary to *wash* off the developing solution before pouring on the hyposulphite of soda, nor to reject the latter after use, as it does not then attack the half tones. Wash one-half of the plate at a time.

Should the collodion slip, the best way is to allow it to run a little over the edge of the plate and then clinch it, washing gently the other way, and should a piece break at the edges, it is better to remove at with the fingers than to allow it to mash off as it in that case frequently tears away a large piece.

Drain on a shelf with blotting paper, and do not remove it after once it is set down until dry. Keep the back of the plate upwards, as dust will stick to the film while wet. Spirit varnish is preferable to amber varnish, as the latthr softens in the sun.

ON THE ADVANTAGEOUS EMPLOYMENT

Of Stereoscopic Photographs for the Representation Scenery.

To the Editor of the Photographic Notes:

Mr. Editor.—The remarks which I take the liberty of offering to you bear upon nothing absolutely novel in practice. Yet I think it may be useful to urge them on the attention of persons who occupy themselves with the delightful and instructive science of stereoscopic photography. I have been led to this opinion by remarking that several photographers whom I have met in the field had no idea of the effect of distance between the two cameras, or of the relation which ought to be maintained between that distance on the one hand and the distance of the photographed objects on the other hand. I have seen a person using, for the stereoscopic photograph of a mountain at the distance of several miles, the same apparatus which he would employ for building or a statue at the distance of ten yards, It is true that, by taking care to have some near object as foreground a house, a rock, or a pine-tree, he succeeded in producing the impression of *distance* of the mountain, but nothing more: he produced no impression whatever of its *relief*: for all the effect of his stereoscope, the mountain might have been a flat wall duly painted, and its picture to the eye and to the mind would have been as good as that of the noble and deeply-relieved object before him. This is not the proper employ of a mighty principle like that of stereoscopy. If it had been applied as it ought,—that is to say, if the two pictures had been taken from two stations sufficiently seperated, he would have produced on the mind an image representing the projection of every salient point and the recess of every hollow, an image not so much visible as tangible, from which a moulder of ordinary experience could actually mould an accurate model of that face of the mountain which is in view at the two stations.

To illustrate my meaning, and to indicate the difficulties which are to be met, I will refer to two instances.

The first is, the series of pairs of views which accompany Professor C. P. Smyth's book on Teneriffe; a series which form a new epoch in the art of book-illustration, and for which we cannot be too grateful to Professor Smyth, the artist, and Mr. Lovell Reeve, the publisher. It appears (as far as I can judge) that these views were taken with a single camera, removed from one station to another, I know not at what distance, but probably seperated several feet. The effect in the vigour of the relief of objects moderately near, and in the seperation of distances, is admirable. It will be remarked that these views were taken under a cloudless sky, so that there is no material change of illumination between one view and the other. Still, it will be found that the position of a figure, or the place of a piece of cloth, has sometimes been changed; and the effect is thereby much injured.

The second is, the pair of views of the Full Moon, made by Mr. De la Rue (now sold I believe by Messrs. Smith, Beck, & Beck,) the effect of which I must pronounce to be unequalled. To form these, photographs of the Moon were taken in two positions, the distance between which (referring each to a radius of the moon produeed) was,—how much does the reader suppose?—nearly 24,000 miles. And by means of these, the moon is presented to us with a convex disc as protuberant and sherical as that of a terrestrial globe or a cricket ball. A new meaning is at once given to every oval spot and every fore-shortened steam of lava. It will be remarked that, when an observation of the moon is secured at the right period, as regards libration and solar illumination, we are certain that we are taking views of an object which is unclouded and invairiable.

It appears from this instance that, to exhibit to the mind the true relics of the body viewed, the seperation of the two cameras may be one-tenth of the body's average distance, and ought not to be much less. Generally, perhaps, we may say that the separation of the cameras may be from two to four furlongs.

A moment's consideration will show that we scarcely hope to succeed, even when the distances are much less than this, by transporting the camera. The change of solar illumination and the changes of shadows of the clouds, independently of the changes of living figures, &c., would injure the effect.

I see no prospect of success except by having two cameras worked in concert, strictly at the same instant (by signal,) under the direction of one person. With this arrangement, success would be certain. And the effect would be so *immeasurably* superior to that of all other stereoscopic views that, if it be undertaking by a professional person, I cannot doubt of its commercial success.

It is to be remarked that the value of such views is not limited to the lover of the picturesque. They possess a real scientific value. The geologist, or surveyor, or mountain-climber, sees at once the relief of the mountains with which he is concerned, even to the dip of strata, the possibility of constructing a new carriage road, or the practicability of making foot-path. The speculator on glaciers discovers at once peculiarities and relations of form which he could not obtain from any single view.

I may now indicate a few views, partly for their own merit, partly in illustration of my ideas as to the proper separation of cameras.

The north face of Mont Blanc is seen advantageously from the ridge of the Breven. The interval between the camera-stations should not be less than two forlongs. The south face is well seen from the path which leads from the Col du Pain de Sucre to the Col de Seigne; this is nearer, and the interval of cameras may be one furlong. For views within the glacier-hollows, the interval may be perhaps 100-ft. or less, according to the distance of the scenery towards which the face is turned. Those of the Mer de Glace and the Glacier des Boissons are very interesting; the first, as the special subject of Professor J. D. Forbes' illustrations; the second, as being the usual course of ascent to the summit of Mont Blanc.

The most interesting glacier in Switzerland is perhaps that which is most accessible, viz, the lower glacier of Grindlewold. Between the Eismeer, or upper plain of ice, and the bottom, this glacier presents five or six different appearances, all commanded laterally from a good path. The camera-stations ought perhaps to be 50-ft. apart. For illustrating the structure of the Eismeer itself, small separations would also suffice. But upon the Eismeer there are views of most stupendous surrounding scenery, for the due representation of which a separation of 300 or 400-ft would be barely sufficient.

The moraines on the lower glacier of the Aar (which, in consequence of the surveys by M. Agassiz and others, possess extraordinary interest) would be well commanded from stations near the châlet of M. Agassiz. The stations ought to be at least 100-feet apart. Magnificent views of the north branch of the glacier will be obtained on the surface of the ice; 200 ft. of separatien would be little enough.

For the north face of the Jungfrau, &c., an interval of several hundred feet would be required on the Wengern Alp.

I will not troble you with the details of the distance which I could recommend for such views as,—the Hollow of Loch Cornick; the Cliff Range of Loch-na-Gar; the radiating Ripgn of Grisepale Pike, the Depth of Borrowdale and the Embranchment of Langstreth; the deep Corries of Snowdon (for which, stations in Moel Shiabod would probably be very favorable); the twelve Pins and Mwlrhea, above Killery. An artist who has once fully seized the principle, and has tried it in one or two well-marked cases, will have little difficulty in deciding on an advantageous interval of cameras for any instance that may present itself.

The only apology, Mr. Editor, that I can offer for so long a letter on a subject which (as I have said) possesses no real novelty, is my belief that, by a genuine practical recognition of well-known principles, the science of Stereoscopic Photography may be placed on a footing far higher than it occupies at present.

I am, Mr. Editor,

Your very faithful Servant,

A. B. G.

August 20th, 1858.

FRENCH PHOTOGRAPHIC SOCIETY.

Ordinary Meeting, July 16th, 1858.

M. Regnault, President, put to the vote the nomination of the committee appointed to examine the proofs sent by competitors for the prize founded by M. le Duc de Luynes, for obtaining photographs in carbon. A list of names, which had previouly received the sanction of the latter gentlemen, was submitted to the Society, and approved. It is as follows:—

M. M. Regnault, of the Institute, President of the Society; Balard, of the Institute, President of the Committee of Administration; Paul Perier, Vice-President of do.; Mailand, Secretary of do.; Le Comte Agado, Member of do.; Bayard, do.; Edmond Becquerel, Professor of Physics at the Conservatoire des Arts et Métiers; Cousin, Engraver, Member of the Committee of Administration; Léon Foucault, of the Imperial Observatory, and Member of do.; Halot, of the Mint; Le Comte Leon de Labordef of the Institute, Member of the Committee of Administration; Peligot, of the Institute Professor at the Conservatoire des Arts et Métiers; Robert, Principal of the Paintees at the Imperial Manufactory of Sevres.

The President then announced that all the papers and proofs which had been forwarded to the Society in time, would be submitted to the above Committee.

A letter was then read from M. Mangey, optician, on the subject of the "pupil diaphragm," see *Notes*, No. 52, page 132.) It claimed for the writer the priority of the above invention in opposition to the claims of Mr. Govi, and M. Charles Chevalier.

[To us it appears that Mr. J. Traill Taylor, of Dumfries, was the first to publish the suggestion of the pupil diaphragm. See *Notes*, No 24, page 121.]

A letter was read from M. Gaume which stated that the modified process of Dr. Taupenot, in which iodized albumen is spread upon *plain* collodion, is due to the writer, and not to M. Bayard, as had been affirmed by M. Delahaye at the previous meeting, The latter gentleman admitted his mistake.

M. Jeanrenaud presented to the society a print from an albumenized-collodion negative of the Lake in the Bois de Boulongne.

M. Charles Negre presented to the Society a large plate engraved by Photography, representing a portal of the Cathedral at Chartres, and measnring 75 + 48 centimetres, (about 30 + 20 inches.) This plate is one of the specimens sent for the Luynes Prize.

M. l'Abbee Laborde sent a paper containing the account of a new sensitive substance to be used in Photographic engraving.

[An abstract of this paper will appear in the next number. Ed. P. N.]

M. Girard offered the following remarks with respect to some positive prints obtained by Mr. Pouncy, by a new process, and submitted by him for the Luynes prize.

"During the last four months certain English Photographic Journals, but more particularly that edited by Mr. Thomas Sutton, have been occupied with the discussion of a secret process discovered by Mr. Poucy, of Dorchester, by which prints are obtained in carbon.

"In one of the numbers of Mr. Sutton's Journal, he stated his belief that Mr. Pouncy's prints are really produced in carbon, and by means of a mixture of bi-chromate of potass, gelatine, and lamp black. Great interest has been taken in the process, and a subscription was opened for purchasing it. Almost at the same time, however, we receive the specification of a patent taken out in England by Mr. Charles Cowper, for a process invented by M. Testud de Beauregard; and which renders probable the surmises of Mr. Sutton with respect to Mr. Pouncy's process."

In this Specificetion we read as follows:

[See Mr. Dowper's Specification in *Notes* No. 54.

"Mr. Girard added that Mr. Pouncy had written to say that his process differs from the preceding in some important points, and is very superior to it; that he has not yet decided whether to complete his patent at the end of the three months which the English allows; and has sent two prints to the Society, for the Luynes prize.

"Further, M. Girard stated that it had appeared to him interesting to examine these prints, without waiting for the labours of the Committee, so as to leave no one in doubt on the subject. According to his experiments they are really carbon, and have resisted the prolonged action of concentrated nitric, and hydrochloric acids, aqua regia cyanide of potassium, cyanide of potassium with iodine, and alkaline sulphides. None of these energetic agents have affected them. It is only when the print has thoroughly imbibed the liquid that the black substance can be removed mechanically from it. M. Girard, in presenting Mr. Pouncy's prints to the Society expressed his regret that they were copies of engravings, from which one could not determine whether the middle tints could be produced by the process."

M. Lemercier thought that Mr. Pouncy's process offered a strong anology to that of M. Poitevin, published in the Bulletin in 1856.

[In a note to the above remarks in the Bulletin, an extract is made from *Photographic Notes*, of July 15, of that part of M. Poitevin's patent which relates to printing in pigments, and which has not been published by him in France.—Ed.]

M. Ballard said it was difficult to speak of Mr. Pouncy's process, since nothing was known for certain with respect to it; but in any case there was a great difference between incorporating lamp-black with the impressionable material and blackening a print already taken.

[With respect to M. Girard's tests. We can assure that gentleman, and the French Society, from our certain knowledge of Mr. Pouncy's process, as communicated to us by him, and demostrated by him in our presence, that the black material of his prints is really and truly carbon, that carbon being of course cemented to the paper by an organic substance, which may be dissolved out by a caustic alcali, (quick lime for instance,) while the carbon itself may, we believe, be acted on and oxydized by a hot mixture of nitric acid and turpentine. It might be worth while to try the comparative stability under distructive tests of engravings and Pouncy's prints; the carbon in the former being merely attached to the paper by organic matter and strong pressure, in the latter by a reduced impressionable *in*organic substance in addition to organic matter.—Ed. P. N.]

M. Garnier & Salmon deposited with the Society, for the Luynes prize, certain process for obtaining positives prints, both in carbon and sulphice of mercury. A great number of proofs by these processes accompanied their communication.

M. Girard read a letter in which M. Gaumé describes, a new method of printing and fixing positives. This was submitted for the Luynes prize.

M. Delahaye exhibited several prints he had obtained with nitrate of uranium, and described the process employed.

M. Humbert de Molard described some experiments made by him, with respect to the alleged permanence of uranium. "The uranium process is new, and should therefore be received with favor. We cannot yet say how far it may succeed; but I believe people are wrong in supposing it to be the *ne plus ultra* of Photography.

The print which I present to the Society was given me by M. de Brebisson. It has been pretented that prints by nitrate of uranium resist boiling cyanide of potassium. I submitted one part of this print to cold cyanide of potassium and in five minutes it was destroyed. I submitted the other part to idoized cyanide and it was destroyed instantly. I have tried successively hydrochloric acid, aqua regia, bromine water, chloride of iodine, and hypo-sulphite, and in a-quarter-of-an-hour nothing was left of the image. Ammonia is the only agent which does not affect it, on the contrary it improves it. In fact, I only require five minutes to destroy the image completely.

"Then tried nitrate of uranium in the camera. I worked with a large plate, and a quarter-plate German lens, and with four minutes exposure obtained the bad results which I show you. At present, at least, the uranium process is of no use for negatives; and as for the vaunted permanence of the prints, it is no such thing. Why do ordinary prints fade? On account of the alterability of the salts of silver. But nitrate of silver is used for developing a uranium print. The silver salt being the element of destructibility it matters not whether it be employed first or last.

"As for the novelty of the process, we may say that it contains nothing that is absolutely new having a strong analogy to the Chrysotype process of Sir John Herschel, published in 1842 and differing from it only in the nature of the salt, a white piece of paper being in the Chrysotype process impregnated with ammonia-citrate of iron, which gives it a golden tint; then developed with nitrate of silver, or choride of gold, and fixed with liquor-ammoniæ. My conclusion is that the permanence of the uranium prints is a chimera, and that the process is not new in principle, since that of Herschel leads to the same result. Further, if it is not the *ne plus ultra* of photography, we cannot say but that with time and experience it may not lead to good results. M. de Brebisson has obtained some excellent proofs. The process is so far good that it is an addition to photography.

"I beg of the Society not to lose sight of the ends which M. de Brebisson and I have had in view. M. de Brebisson endeavord to show that good prints might be obtained by the process, and he has succeeded. I have endeavored to show that the prints are not permanent, and I also have had the misfortune to succeed."

It appears to us that the prints experimented on by M. Humbert de Molard were developed with *nitrate of silver*. We have left a uranium print developed with *chloride of gold* for five minutes in boiling cyanide without any apparent injury to it. As for the novelty of the uranium process it was published by Mr. Burnett, in all its particulars, and a uranium print was exhibited by that gentleman at the Exhibition of the Photographic Society of Scotland, in January, 1857. How then, in the face of such evidence, can anyone presume to talk of the novelty of the uranium process, or to attach any credit to M. Niepce de St. Victor for the publication of it in November, 1857. The popular objections to the process when gold is used as a developer, are the cold inky tint, and the want of brilliancy, or rather of albumen. When silver is used as a developer, instead of gold the permanence of the prints is perhaps open to suspicion.—Ed. P. N.]

M. Devanne exhibited some uranium prints by M. de Brebisson, and read a letter from that gentleman describing his process.

M. l'Abbe Moigno thought that the Meeting would be as much struck as he was at the confident assertion of M. Humdert de Molard that the uranium process contained no novelty.

The President observed that Herschel had done nothing in photography properly so called. It was merely as a physicist and chemist that he had observed that certain compounds of bromine and iodine paoduced such and such results. Such appears to have been also the nature of the researches of M. Niepce de St. Victor. They were undertaken rather in a general than a particular point of view. In photography, as in everything else, we should neither condemn a new method too hastily, nor take it up with too much enthusiasum.

M. l'Abbe Moigno observed that in his opinion an entire Society was wrong in asserting that there was nothing new in a process which had scarcely been tried.

M. Bayard asserted that with ammonio-citrate of iron, and nitrate of silver or chloride of gold, he would engage to do all that had yet been done with nitrate of uranium.

CARBON-PRINTING PROCESS.

BY M. HENRI GARNIER, AND ALPHONSE SALMON, (OF CHARTRES.)

[*From the Bulletin of the French Photographic Society, for August*, 1858.]

The property which ammonia-citrate of iron possesses of being affected by light is no new discovery, but one which either preceded or closely followed that of the analogous property of bi-chromate of potass. It is true that the list of substances modified by light has since been singularly extended. For instance, bi-chromate of ammonia, chromic acid, nitrate of uranium, &c., have been mentioned, and we have added to the list chloride of copper and sulphide of copper, and we now add the inks of tannate and pyrogallate of iron, oxalate of iron, and alkaline sulphides. The nitrate of uranium is only worthy the attention of experimenters from its special action on the salts of silver, and not from its connexion with a new theory of the storing up of light, a theory which the examination of facts compels us to repudiate as incorrect.

But to return to the metallic salts which are sensitive to light; let us see in what way they are so affected by light as that they may be employed in practice.

The following is the *de primo visu* way in which light acts on these bodies.

1st,—The greater number of them are only affected by light when organic matter is present, such as a textile fabric, gelatine, gum, &c. The citrate of iron is, however, an exception to this rule, for light acts on it without the help of organic matter—for instance, when spread upon a metallic or glass plate, a lithographic stone, &c.

2nd,—These sensitive substances are very slowly affected by light when in a state of solution, so that they may be kept in that state without any particular precaution, and it only becomes necessary to screen them from light when they are on the point of becoming dry.

3rd,—When exposed to light the sensitive salt becomes gradually darker in color; this happens to bi-chromate of potass, bi-chromate of ammonia, chromic acid, nitrate of uranium, and tannate, pyro-gallate, citrate, and oxalate of iron. In the latter case the salt is at first darkened by light to a violent color, like the silver salts, but by continuing the action of light the darkened part becomes decolorized.

4th,—At the same time that parts of the salt are darkened by light, they become less soluble in water, and certain liquids have no longer the property of dissolving them. For instance, alcoholized water, and glycerine no longer dissolve citrate of iron.

As for the more profound chemical action which occurs from exposure to light, that is not what we intend to discuss, or take practical account of in this communication.

Preparation of the Paper.

First make a very strong solution of citrate of iron; next, take a sheet of highly-glazed paper; and lastly, a soft dry dabber of linen.

Dip the dabber in a solution of citrate, and pass it over the paper—at first quickly, then slowly, in order to equalize the coating of the metallic salt.

Dry the paper in the dark.

Exposure to Light.

The cliché to be printed must be *positive*, with the lights and shades true to nature. The time of exposure is from eight to ten minutes in sunshine, fifteen in strong diffused light, thirty minutes in a dull light.

Development of the Image.

When the paper is removed from the light there is a visible image upon it, but feeble and imperfect in the details. The blacks of the cliché preserve the color and original properties of the citrate, and of these unaltered parts use is about to be made.

Take some dry lamp-black and a tuft of cotton wool, and dip the cotton wool into the lamp-black; it is thus charged, so to speak. Instead of lamp-black, black lead may be employed in impalpable powder, or the powder of any metallic salt of zinc, iron, &c.; or any permanent colored powder; and by using black paper, a white powder may be employed.

[The idea of printing upon blackened paper with a white powder, appears to us a very valuable suggestion, and a process of this kind may possibly supersede carbon-printing for certain purposes.—Ed. P. N.]

The picture is then taken into a feeble light, and fastened by its corners to a table, or polished glass plate. The tuft of cotton wool charged with black is then passed lightly over the image. Nothing at first appears, but if during this operation you blow upon the paper the parts of the citrate that have not been affected by light moisten the lamp-black which sticks to them, and the details appear. By continuing this process of dabbing on the black and blowing, fresh details make their appearance, and the image eventually appears in all its parts.

Fixation of the Picture.

It only remains to fix the print. All that is necessary is to immerse it carefully in a dish of clean water, having no dust upon its surface, and thus to remove all the citrate of iron from the paper. It is then dried, mounted and varnished if need be, which terminates the process.

[We suggested a mode of printing in carbon by means of ammonia-citrate of iron and lamp-black, in No. 48 of this Journal, page 82.—Ed. P. N.]

ON THE URANIUM PRINTING PROCESS.

BY M. DE BREBISSON.

In the preparation of positive paper, I generally use a solution of 12 grammes of nitrate of uraninm to 100 grammes of distilled or rain water. (About 60 grains to the ounce.)

Although it has been recommended to use thick paper, I use the thin negative papers of Canson and Saxe, because they are more easily washed, and the salts of silver and uraninm removed.

I immersed the sheet of paper for five minutes in the uranium bath. Papers completely immersed give more vigorous proofs than those floated on one side only. In pinning up the papers to dry, the pin should be stuck through a corner, kept dry for the purpose.

Paper thus prepared is less sensitive than chloride paper. It requires a strong insolation under a very transparent negative. A negative slightly fogged, and which may give good prints upon chloride paper, which is not suitable for the uranium process, requires a clean *glass* negative. It is very difficult to obtain a good print by diffused light.

The best developing liquid is 3 or 4 grammes of nitrate of silver to 100 grammes of distilled water, (about 16 grains to the ounce). This bath will serve until it is quite exhausted of silver. I add at first a few drops of acetic acid, but when it has been used for a few proofs, the quantity of nitrate of uranium which becomes mixed with it, renders it very acid. I have developed one half of a print in a bath containing 2 per cent of nitrate of silver, and the other half in a bath containing 4 per cent. Both halves were equally intense, so that it is unnecessary to use a stronger nitrate bath.

By using an old developing bath, I have frequently obtained prints which do not require toning; but I generally tone the prints with chloride of gold, in much weaker solutions than those indicated in the journals. Thus, in order to make the prints pass from the red color, which the nitrate of uranium generally gives, it is sufficient to add to 200 grammes of water, contained in a dish, from 20 to 20 grammes of a solution of chloride of gold, strength 1 to 100. (To a pint of water add about 1 grain of cloride of gold). The tone of the print immersed in this weak solution, will not be long in changing, and in two or three minutes will acquire the proper intensity. If the action of the bath is too prolonged a disagreeable blue-black tint is produced.

It has been said, that in order to finish the print, it is now only necessary to wash it in several waters. I can affirm, however, that I have very rarely obtained a proof sufficiently fixed in this way to resist exposure to sunshine, which in general reddens it, particularly in the white parts. However feeble the nitrate bath may be, there always remains in the texture of the paper some nitrate of silver which no amount of washing will remove, and which is acted on by light.

I enclose a print which after having been thoroughly washed was exposed for some days to a strong light. All those parts of the paper which were not covered by the passe-partout in which it was exposed have been reddened by the light.

The principal advantage of the new process consisting in the non-employment of hypo-sulphite of soda, a salt so destructive to positive prints, I have tried various means for avoiding its use. The unreduced nitrate of silver in the paper must be rendered harmless. Ammonia renders the washing easier, but not complete. Salt and water in the first washing converts the free nitrate of silver into loose chloride, which is removed by the water, but some always remains in the pores of the paper ; and the print often assumes a marbled appearance, which should be avoided. I have tried other means from which I hoped to obtain good results, but the sun never failed to impress upon the whites of my prints the mark of his power.

What shall I say then ? In my distress, weary of war, I sought help from the enemy. After having toned the print to the required tint, I immersed it for two minutes in a bath of fresh hypo, strength 8 per cent. (about 40 grains to the ounce), and I then washed and soaked it in the usual way. I believe that by using a new and weak bath of hypo, and leaving the paper in it a short time, there are few dangers to be apprehended from the last operation.

The development of the image by chloride of gold alone, or by bi-chloride of mercury, has not given me satisfactory results; and I must say nearly as much of the iron bath proposed by M. Haudoy, of Lille. Whenever I have tried it according to the prescribed formula, I have obtained proofs either completely fogged or nearly invisible. By diminishing the proportions of the iron salt, the prints are still too grey. By adding to 200 grammes of water about 20 grammes of a saturated and acid solution of proto-sulphate of iron, I have toned the prints to a tolerably good bistre tint.

I have also tried Mr. Draper's mixture of nitrate of uranium and nitrate of silver. The prints after a long exposure to sunshine were incomplete in the details, and of a feeble red tint. I should not deem the matter worthy of mention had I not obtained two very curious effects of color. In one case a print when immersed in a weak developing bath of chloride of gold, became of an orange color; in another case a print immersed in a weak iron bath, assumed a fine rose color.

Now I hardly dare pronounce an opinion as to the permanence of uranium prints, for possibly my chemicals may not have been of irreproachable purity ; but, by way of example, I enclose a print upon the dark parts of which I have written the names of four different solutions which I employed as an ink, and the destructive effect of which may be perceived at a glance. The cyanide of potassium and iodine, suggested by M. Humbert de Molard, for removing stains from the hands, or linen, has so vigorous an action on uranium prints, that the characters traced upon the shadows, with a pen charged with this mixture, are immediately bleached, even before they are dry.

If I may be allowed to express an opinion on this new process, I should say that it offers great advantages from the simplicity of the preparation of the paper, the easy development of the image, and in economy from the weak solutions employed. But the development is sudden, and uncontrollable, which leads to frequent mistakes in the exposure ; and the image produced by light is such that you cannot tell exactly when the action ought to cease ; hence arises an uncertainty which makes success a matter of chance.

In the chloride process, the photographer can more nearly approach the artist. He can follow step by step the action of the light, being master of the powerful agent which he directs, and able to localize its action if need be The proof showing itself in all its details he can judge with certainty the course to be pursued ; and finally, by means of hypo-sulphite of soda, employed with care, and aided by chloride of gold, he may arrive at the most perfect result, either by prolonging the action of the fixing agent, or modifying it, and stopping at the proper point."

MR. HARRISON'S NEW LENS.

Washington, D. C.

Mr. Snelling—*Dear Sir*—The attention of your readers have been drawn with much interest to statements of a new and important improvement in View Lenses, as made by Petzval or Voigtlander ; which improvement I should like much to realize ; and when it shall have been declared which of the two has claim to the preference, it has been my intention to order one to be sent here.

In the mean time, allow me to bring to the notice of your readers a very much improved Lenses by our old friend Mr. Harrison, which in the absence of the Petzval, or Voiglander, I consider equal to either. This Lense I found in Mr. Walker's possession at the Treasury buildings who kindly lent me the same for trial. Without being requested by the maker Mr. Harrison, or by Mr. Walker. I send you the result of my first trial with an 18-in Focus Lense with patent Diaphram,* and also—another Print from a negative made with one of Harrison's old 24 in View Lenses, which I considered the best previous to his last, which I think you will decide with me has now greatly the advantage for Views or Coping, cutting clear and sharp over a Field greater than the Focal measurement of the lense, which is more than we can obtain with the lenses previously made by Mr. Harrison, which I consider was equal to any made in Europe.

I also inclose two prints one made with Silver, the other with Carbon after the directions found in your August number, as patented in England by Mr. Charles Cooper. After trying his receipe—and some few varieties this is the best result obtained.

As this method of Printing promises very much—I beg to suggest that a purse of $1,000 be made up by 200 subscribers to be paid to the person who shall send you the best specimen with a writen receit for producing the same. The award to be made by a committee appointed to test the same, according to the written receipt all of which receipt and communication shall be printed in the Journal—for this purpose I subscribe myself for $5.

No. 1. Print of Bridge, is from the New Lense.
" 2. With the old Lens 24-in.

The drawing was reduced about one third, the time of exposure was the same for each.

Neg. with Albumo-Collodion.

Respectfully, John Wood.

U. S. Capitol-Ex.

From the Liverpool and Manchester Photographic Journal.

ALBUMENIZED COLLODION PROCESS.

BY M. GATEL.

The following process for Albumenized Collodion has been well reported of by a committee of the French Photographic Society, as a modification of that introduced by M. Taupenot :

This process has nothing in common with Taupenot's but the albumenization of the collodion, and possesses the advantage of an impressionable film of perfect solidity during the development of the image and its fixation ; thus obviating the liability to blistering which so frequently appears by the ordinary methods.

Take of albumen.........................20 oz.
In one-third of this quantity of distilled water, that is.........................6 oz. 5 drms.
Dissolve iodide of ammonium...............192 grains.
Then add solution of tincture of iodine.......$3\frac{1}{2}$ drms.

Pour this iodized water, little by little, into the albumen, beating it with a wooden fork.

The tincture of iodine is of the strength of twelve grains of iodine in flakes to a fluid ounce of alcohol.

The albumen having been well frothed is allowed to stand for from 12 to 15 hours.

Take simple collodion.........................1 oz.
Add iodide of ammonium.........................$2\frac{1}{2}$ grains.
Iodide of cadmium.........................$2\frac{1}{2}$ "
Solution of proto-iodide of iron..............15 minims.
Allow it to settle.

The solution of proto-iodide of iron is thus made,
Iodine in flakes......................... 72 grains.
Iron filings.........................120 "

* The convenience of this arrangement need only to be seen to be appreciated.

Distilled water............................. 1 oz.
Heat it till it becomes discolored, filter and evaporate the liquid stirring it with a long nail until it acquires the consistence of syrup, then add two ounces alcohol and six drachms of acetic acid, and filter. This solution will keep good to the last.

When about to prepare the plates, decant the albumen and the collodion.

Clean the plates with tripoli, moistened with alcohol, ten parts, liq. ammonia one part.

Collodionize the plates in the ordinary way, sensitize in a bath of nitrate of silver forty grains to the ounce of water, and wash perfectly with the albumen solution, and allow it to dry for twelve or fifteen hours.

To sensitize the albumen make a bath of—

Distilled water....................	3 oz.	6 drms.	
Dissolve and add fused nitrate of silver.	2 "	4 "	
Acetic acid......................	1 "	3 "	
Alcohol......................	30 oz.		

Let it remain at least twelve hours, then filter.

The plates having been prepared as above directed, and being *very dry*, are to be plunged for from fifteen to twenty seconds into this alcoholic silver bath, then washed in a dish with alcohol, and lastly with distilled water. They are then to be allowed to dry, and not to be used for from five to six days after being excited, in order to obviate variation in the requisite exposure, which would not be constant if used before they were perfectly dry.

Plates thus prepared can be preserved for a very long time after excitation, and are extremely sensitive to the action of the light.

Devolope with pyrogallic and acetic acids, adding a few drops of a solution of nitrate of silver, ten grains to the ounce, when the image begins to appear.

If, in developing, any deposit forms on the surface, it may be removed by lightly rubbing with a piece of cotton without fear of injuring the film; then, after being copiously washed with water, the development may be continued until complete. Fix with hyposulphite of soda.

It will be at once observed that one of the principal novelties introduced, is the use of alcohol instead of water for the sensitizing bath for the albumen; and, although this adds somewhat to the expense, it is not of so much importance as the necessity for its use in the subsequent washing of the plate, which will, we fear, be a bar to its general adoption in this country, unless, indeed, it will be found practicable to substitute *methylated* spirit for the pure alcohol. We hope that some of our friends may be induced to give it a trial.

The following extract from the report of Messrs. Davanne, Bayard, and Fortier, upon the process may offer some inducement:

"By his process M. Gatel obtains a sensitive film less liable to blistering than that of M. Taupenot's. He has made no change in the preparation of the albumen with the exception of the addition of a small quantity of free iodine; the collodion is made in the ordinary manner, but to this is added a small quantity of proto-iodide of iron and of acetic acid.

"Although the influence of the proto-iodide of iron relative to the adherence of the sensitive coating has not been rigorously demonstrated, we know, nevertheless, that the proto-salts of iron seem to render the collodion film more tenacious, a fact of which it is sufficiently easy to satisfy ourselves; it is therefore possible that the proto-iodide of iron acts in a similar manner under the present circumstances.

"The most considerable variation, and the one that exercises the greatest influence on the solidity of the film consists in the employment of alcohol in place of water for the formation of the sensitizing bath of aceto-nitrate of silver. It is known that alcohol coagulates albumen with considerable energy; it is probable that, under the double action of nitrate of silver and alcohol, the albumen is subject to a coagulation more regular and more complete, and gives, in consequence, better results.

"We have thought that, after excitation in an alcoholized bath, it might be possible to dispense with the use of alcohol for washing, and that alcoholized water, or pure water alone, might be substituted, provided that the necessary precautions be adopted for covering the plate uniformly; but experiment has proved to us the efficacy of the alcoholic ablution.

"All the proofs that we have made, or seen produced, by this process have been *perfectly free from blisters;* and we therefore consider it a useful modification of that of M Taupenot; we therefore propose to accord thanks to M. Gatel for his communication, and to insert this report in the *Bulletin.*"

NOTES ON MR. BURNETT'S LETTER OF MARCH, 23.

We are requested by Mr. Burnett to insert the following notes in reference to his letter of the 23d March.

1*st Note.*—By a later and more careful perusal of M. Nièpce's paper, I was surprised to find that I was mistaken in supposing M. Nièpce to have been ignorant of the sensitiveness of ferric papers, which, on the contrary, I now find to be expressly alluded to in it, though strangely enough only to *contrast* them with the uranic papers. I must now suppose, either that M. Nièpce has made a fresh and independent discovery of the ferric as well as of the uranic papers, and has, from want of time, not yet hit on the fact of their de-oxidation, or else, that he has some good reason, not yet communicated to the public, for his ignoring of all chemical change on such papers before their development.

2*nd Note.*—It is possible that we may yet find sources of photographic and other actinisms, unaccompanied with either heat or light.

3*rd Note.*—Among others I have found *alkaline ammoniated* baths of chloride or oxide of gold answer well for toning of both ferric and uranic, and also ordinary silver prints, and I may as well mention that I have succeeded also in the same solutions as uranic and ferric chrysotype developers. Common nitrate of gold and other gold salts also deserve trial, though the discarding of chlorine is not so important here as it is in platinum baths, in consequence of the tremendous affinity between chlorine and the latter metal.

Owing to a slight peculiarity in Mr. Burnett's handwriting, together with an accident in the transmission of the proofs, several inaccuracies were allowed to appear in the letter above refered to: the following corrections will, however, render the whole intelligible.

Personal & Art Intelligence.

We have very little to say this month of a general nature interesting to our friends, but something in regard to personal affairs. We dislike the task, for task it is, and yet some points are so absurd that we have been obliged to laugh heartily over them. It is now nearly nine years since we established this Journal, and although it has been attacked from all quarters very frequently, our old and tried subscribers can testify to our having seldom taken notice of the attacks.

We commenced the publication of the Journal with the intention of making it—so far as our ability would permit—a first class, high-toned periodical, free from every species of favoritism; and so far as we are able to judge we have succeeded. Our connexion, however, with one of the leading houses in this city caused a dead set to be made against us by rival houses, and more particularly by a contemporary print, who, without a particle of truth on their side, gave circulation to various reports and falsehoods, which, we are sorry to say, have found many believers among men who have formed entirely erroneous opinions, from the mere hearsay of interested and unscrupulous persons. It may be remembered that among other things we were accused of sending our Journal to operators without orders, and requiring them to pay for them at the end of the year. This falsehood we considered so palpable at the time, that we gave it the free scope we had to others, considering it equally unworthy our attention. This has been recalled to our mind recently by statements made to us, to the effect that, although they had not ordered it, a certain journal has been regularly received at post offices to certain addresses. This operation is undoubtedly a renewal of the old attempts to run ahead and quash our monthly, as it has been done *among* our subscribers. But this is a small affair compared with what took place in Albany a short time since.

We are creditably informed, that when the resolutions sympathizing with Mr. Henry Meade for the death of his brother, were offered to the meeting of the Albany Photographic Society (or whatever it is called,) a terrible furor was created because the resolutions directed the proceedings to be published in the PHOTOGRAPHIC AND FINE ART JOURNAL. It seems the members were impressed with the belief that we should send in an enormous bill (perhaps as much as ten cents) for the privilege of having it in this Journal, and that in consequence each member would be called upon to subscribe his share (one cent), and thus oblige him to give extra attention and work four or five hours a day more in order to recover the enormous outlay falling to each individual, and as there was no calculating the vast number of years it might require to acquire the amount out of their profits, the boldness—perhaps the presumption—of the mover of the resolutions, fairly caused a shiver of horror to agitate the heart of every man present. What a ghastly-looking set of photos they must have been! We wish some clairvoyant had notified us of the state of intense feeling which at that moment agitated that august council; we should have been extremely pleased to have sent them sufficient assofœtida, or some other soporific to quiet their nerves. It seems the whole assembly were affected with the nightmare, but we sincerely pray they may all survive. It is delightful to comment upon the intelligence and manliness evinced by the tirades indulged, and the fears expressed by the assembled multitude; but the cream of the joke is, not one could give a reason for the faith that was in him, for we will venture to bet a tarnation big cookie that not one man in that vast assemblage spoke from personal experience; and we will bet another bigger cookie (or doughnut, if they like it better,) that they may take a calcium light and search throughout this republic, and they will not find one *anywhere* who can lay such a charge, as was made at that meeting, to us and prove it truth.

It does seem too ridiculous to require denial from us; however, we will give a life subscription to the Journal, or a full set of bound volumes, to any one who can swear before a notary that he is knowing (or has paid to us) of our ever having received one cent, or any amount of money, for anything that has appeared in our editorial columns, or in any portion of our Journal, except the advertisement columns.

Were it not that this incident proved another phase in the unprincipalled opposition to our Journal and the mean, underhand, systematic methods of attack, it would disgust us with the character of every photographer in Albany. As it is, we are really of opinion that the intelligence, manliness, credulity, and fairness as evinced by their proceedings at the meeting alluded to richly entitles each and every one of them to the thanks of a (dis) *criminating* public and to a —— leather medal. If there had been the *slightest shadow* of cause for raising such a hubub we could find some excuse; but as base as some men have proved themselves towards us, we do not think any member who attended that meeting ever received from the lips of a man he did not know to be unworthy of belief, the idea which his action proved to have taken possession of his mind. If such a one can be found, give us his name and we will prove him a *liar*, for there is no part of our editorial career which we have kept more unsullied than this; whatever errors we have committed have been those of judgment, and we defy the whole photographic community to truthfully charge us with humbugging them in any manner, by selling or offering for sale any photographic patent, spurious chemicals, adulterated varnishes, secret processes, or any other clap-trap by which they have been deceived or robbed of their money. In our publications, even, have we not given more for the price charged than any other publisher in the world? Compare our Journal with all the others, European as well as American—does not each number contain from five to eight times as much information as any number of any other periodical published; and if the subscriber choses at no higher price, as our non-illustrated edition is only TWO DOLLARS a year. So much for the *last* misrepresentations made in regard to us. We know that those who are personally acquainted with us will say that we treat the subject too warmly; but as there are evidently very many who lend a willing ear to every slander that is concocted by evil disposed persons it is a duty we owe to ourselves —when these slanderers present themselves in a manner so pointed, as these have done—to brand those who lend themselves to its dissemination as falsifyers.

F. B. BAILEY—The original cause was beyond our control, and as we have had many inquiries on the subject we will state them as briefly as possible. In one respect it is within the power of our subscribers to help us. *First*—The supply of photographic paper became exhausted. *Secondly*—The dealer who supplied us with paper for the letter press also got out and it was six weeks before we could get any more made of the right size and quality. *Thirdly*—We were placed in the same predicament for want of cover paper—and then came our annual trouble in photographic printing. For the accomplishment of this part of our work we had rented and fitted up an additional room in the same building with our office, and thinking all things were ready commenced the work, but after two weeks trial and the spoiling of two thousand prints we were obliged to give it up, for the time being, for want of water. To obviate this latter difficulty we made arrangements to illustrate with photolithographs until we succeed in producing perfect carbon-prints, and by a new process of photogalvanography of our own invention. All these causes combined to delay the August number, and our subscribers may form some idea of the great draw back we received in the photographic printing by the few illustrations they received in that number. Of course the extraordinary delay in issuing the August number would necessarily detain future issues, unless they could be overcome by extraordinary exertions. These exertions could only be met by the employment of greater force, and more money in every department, and so far as we have been able we have done so, but our efforts have been thwarted by our subscribers themselves, or rather a part of them. All must be aware that since we left Mr. Anthony, one year ago, our time has been devoted to the Journal, and consequently from the receipts of the Journal we are to look for the means of its support. Now, on the first of July last more than one-half of our subscribers had not paid their subscriptions for this year, and since that time we have received very little, except from new subscribers, and as we have to pay cash down for every particle of paper and work employed on the Journal, it must be evident to all that the mainspring for exerting the efforts to recover the ground lost by the other causes was wanting. We must therefore take this occasion to say to those of our subscribers who are still in arrears that the *sooner they pay up* the sooner they will enable us to resume the prompt position we sustained during the first half of the present year. We shall also improve this opportunity to say to *all* our subscribers that hereafter we shall *adhere strictly* to the *cash* principle, and send the Journal to none who do not pay in advance. As it would be unjust—and is unjust—to *favor any one* in this particular, our *best friends* must not take offence if they do not receive the *first number* (January, 1859,) of the next volume (Vol. XII.) before they send the money. Our present year's experience has taught us many things which will enable us to avoid during that to come the errors and perplexities which have beset us, and in vanquishing them to improve the Journal still more, and please our readers better. Among other things we can venture to promise our patrons that that excellent photographer and writer, M. A. Root, will assist us in the editorial conduct of our Journal, and also that many of the best writers in the country will contribute to its columns. We do not intend to confine ourselves to *original American* contributions, for that field, in its largest sense, is a narrow one; but we shall skim the cream, as heretofore, from the milk of every country.

Our friend Seely, after enjoying our remarks in the June number, regarding his publishing Mr. Draper's letter to a committee of the American Institute, replies in this wise :

"The article copied from our journal is the letter of Prof. Draper to the committee of the American Institute. We share that doubt about propriety ; but we plead not guilty to the injurious insinuation contained in the above. The letter was read at a public meeting, discussed, and permission given for wider publication, when we suggested that our journal was the most suitable medium for communication with the parties concerned. As a member of the committee we were opposed to the immediate publication.

"We confess to having forestalled cotemporaries, on many similar occasions, and we take pains to be in a position to do so. If this is only a trait of youth, we do not desire to grow old in publication business. We have changed no sentiment concerning enterprise since we commenced the first of the six volumes now published. Where is the unfairness in an ambition to be superior to our neighbors, and in honorable competition ? We say to Mr. Snelling, with emphasis, that we do not desire or intend that he shall publish a better journal than we, in regard to matters where there can be competition ; he shall not forestall us unless he drugs us and takes us asleep. Yet all the time, as in the past, we shall be proud to hail him as brother and friend."

Now we absolve brother Seely from intentional wrong doing in the matter ; but we must point out wherein he misinterprets us. We do not object to *fair* competition ; but we do not, nor can any one, consider it *fair*, to say the least, for an editor, of a scientific journal to permit himself to be placed upon a committee, and then take advantage of that position to *forestall* his contemporaries. We would suggest that it has heretofore been the custom—we know of no honorable exceptions—on all such occasions for an Institution to send such papers, by resolution—to all city periodicals interested in the particular subject—unless they happen to publish one of their own. As the "American Journal of Phopography" is not the official organ of the American Institute the injustice must be apparent, and we could, and can, only exonerate the editor on the score already mentioned. *Forestalling* and *enterprising* we consider words of diametrically opposite meaning ; the last is honorable ambition energetically carried out, the other is a mere trick of trade, and all who practice it, have received, in New York, the significant term "*Shyster*" and are looked upon with aversion by those in the same business. Now, we know Mr. Seely too well to impute to him an intentional course of action that would subject his being placed among such a class—but if he is ever placed in such a position again and takes the same undue advantage, we shall not, certainly regard him in the light we are most happy in being able to do now, and it shall not be our fault if we do not travel the road to honorable *competition* in mutual friendship and brotherhood. As to the matter of enterprise and labor necessary to produce the "American Journal of Photography," and the "Photographic and Fine Art Journal" with the *intrinsic value* of each we leave to the Photographic public to decide.

Sig Estevan Mestre Aulet of Havana has sent us a colored ambrotype and asks our opinion *first*, as to the picture, and *second* as to the propriety of patenting and introducing it into the United States. As to its beauty and excellence we can only speak of it in terms of praise, as it is executed as a skillful artist only could execute, and in our estimation only as an ambrotype should be finished, for they (the ambrotypes) are the only *photographs* that are *improved as photographs by coloring*. Our Cuban friend, however, is not so well posted in American photography as he should be. This same style of picture was patented in this country and introduced to the public three years ago by Mr. Bisbee of Columbus (now of Cleveland) Ohio. Sig. Aulet has also sent us two very fine negative portraits, positives from one of which we shall introduce to our subscribers in a future number.

Mr T. Farris has placed in the Fair of the American Institue five exquisite *Diaphoneotypes* illustrating the FIVE SENSES. These pictures have called forth marked and just encomiums from the public and one of our distinguished *Literati* has honored them with the following lines.

There the keen SIGHT that grasps the highest star,
  In playful mood seeks telescopic aid,
To draw some pleasing object from afar,
  Or pierce the dimness of the distant shade.

Now to her ear she holds the sea born shell,
  Still vocal with the murmur of the wave,
And HEARS its voice in solemn cadence tell
  The wondrous secrets of the Mermaid's cave.

The flower's sweet children of the smiling sun,
  All feelings please, but chiefly give delight
To that quick sense whose throbbing fibres run
  Midway betwixt the gates of Taste and Sight

To try the sense of TASTE, the maid displays
  The fatal fruit which tempted Eve of old ;
There's appetite apparent in the gaze
  The sister throws upon the globe of gold.

And FEELING finds a sharp electric thrill,
  When the warm hand upon the boreal ice
Unwitting falls. So shrink from every ill,
  And shun instinctive every touch of vice.

We take pleasure in calling attention to the letter of John Wood Esq., one of the engineers on the Capitol at Washington. The differences between the prints No. 1, and 2, are marked, showing a decided superiority in the Harrison lens referred to. The carbon print gives great promise of future excellence.

Three silver medals, two diplomas and fifteen dollars, were awarded to J. F. Ryder for the best Photographs of various styles, on exhibition at the State Fair at Sandusky, just closed.

We clip the following from a San Francisco paper.

Selleck's Potographic, Daguerreotype and Ambrotype Rooms.—The high stage of perfection to which the Daguerreotype art has been brought within the past few years, is justly looked upon as one of the most remarkable features of the age. In every part of Europe and America the most wonderful advancement has been made in it, and the splendid establishments in all the large cities where likenesses and views are taken by this process, have become the subject of universal admiration. San Francisco, keeping pace with her sister cities, now boasts some magnificent picture galleries of this class, among which is the new establishment of Mr. Silas Selleck, at No. 163 Clay street. A visit to the room of Mr. Selleck will well repay any lover of the art who desires to witness it in its highest state of perfection. His arrangements are of the most perfect description for taking every kind of a picture, from a life-size portrait by the solar camera process, down to the small daguerreotype for lockets, etc. His rooms are elegantly furnished, and the specimens of his work which are to be seen there are the best recommendations to his abilities as an artist. Mr. Selleck, in fitting up his establishment, has certainly shown a determination to be up with the spirit of the age, and we doubt if his rooms can be surpassed in point of completeness by any establishment in the United States, and are *certain* that his pictures cannot be.

Messrs. Palmer and Longking have patented a new and excellent plate shield having a glass tablet running entirely around the opening and so secured as to obviate the difficulty experienced with simple corners ; and also preventing contact between the glass plate and the wood.

Mr. E. Gordon has also patented a new shield. The improvement consists in having the corners made of a composition, which is not acted upon by the silver solution, and double, so as to take in the glass plate horizontally or vertically without turning the shield.

RESIDENCE OF JUDGE PARKER,

CRAGIE ST.

CAMBRIDGE.

Photo-Lithograph by Cutting & Turner

Patent of J. A. Cutting & L. H. Bradford.

From Photographic Notes.

PRINTING IN CARBON.

We would earnestly call the attention of our readers to the fact that a Subscription List is now open for the purchase of Mr Pouncy's Process of Printing in Carbon. We publish at page 241, the names of those gentlemen who have already come forward in this matter. As soon as the amount of promised subscriptions reaches £100, we shall call on subscribers to fulfil their promise by enclosing the amount subscribed to Mr. Pouncy, and the particulars of the process will then be published *in extenso* in this journal, in a communication from him. In this communication nothing will be kept secret; the entire results of his experiments during the last nine months will be made public. But £100 must first be guaranteed to him, because he has been out of pocket to at least that amount in the prosecution of his experiments. No one with a spark of liberal feeling could object to pay his share for the time and materials which an inventor has expended in perfecting a valuable discovery, and photographers can now, if they choose, obtain the particulars of a valuable process, with the unfettered use of it, on the above easy terms.

Mr. Pouncy's process of printing is now in a very perfect state. During the last few months he has made great improvements in it. The color of the prints may be modified in a variety of ways. The process is more sensitive than that in common use, and so simple that any one may succeed with it on the first attempt, and the materials are so inexpensive that for a few shillings some hundreds of large prints may be produced. These prints are as good in definition and half-tone as ordinary prints, and require no re-touching, but at the same time they are exceedingly well adapted for receiving color when that is thought desirable in portraiture. They have besides this advantage over both plain and albumenized prints, that they hold a sort of middle rank between the two; for the organic matter which attaches the carbon to the paper exists in precise proportion to the amount of reduction by light, so that it is only the darkest parts of the picture which exhibit a glaze, while the fainter portions remain dead. Thus atmospheric effect is not lost in landscapes, through a universal glaze being spread over the picture as in albumenized prints, while the deep shadows of *near* objects exhibit the richness and vigor due to the excess of organic matter which glazes them and preserves their transparency. In a word, Mr. Pouncy's process, when published, is calculated to effect a complete and immediate revolution in positive printing.

Now, will photographers combine and purchase this process, or is Mr. Pouncy to keep his secret, and work it out commercially in his own way?

We can assure our readers, that everything that has transpired with respect to Carbon Printing has been published in this journal during the present year, and of all the processes brought forward, none is, in our opinion, in a more advanced state than that which we ourselves discovered, and published in the Leader of No. 42, *except the process of Mr. Pouncy.* That gentleman, acting partly on the hints which we then threw out, and partly on the experience which he had himself gained in photo-lithography, Sella's process, &c., (which processes he had learned from articles published in this Journal,) after nine months of indefatigable labor, has brought Carbon Printing to the same perfection as any other branch of photography. This great success having been accomplished, it now remains for photographers to make up their minds whether they will pay a trifle for the knowledge of the process, or remain satisfied with their present imperfect methods of printing.

But these remarks will be read by hundreds of earnest and liberal-minded men, and we have but little doubt of the result. We have but little doubt that the subscription list, although scanty at present, will speedily swell to the required sum, and that many weeks will not elapse before Mr. Pouncy's process of printing imperishable proofs will be purchased, and given by Englishmen to the world. The photographic processes upon paper and collodion are pre-eminently English, and it would be an inglorious thing if the crowning process of all—viz: that by which direct photographs can be handed down, unalterable, from father to son, and from age to age—the discovery of an Englishman—should go unpurchased, and unpublished, while a foreigner may perhaps be on the eve of perfecting and patenting a similar thing. Surely English photograpers will now combine and respond to this our appeal for subscriptions, and enable us to report in our next number the good news that the subscription list is complete. But let no one be ungenerous enough to leave it to his neighbor to do that which he ought to do himself. Let *every one* contribute, be it ever so small a sum, and the thing will be done; but, we fear, not otherwise.

But whatever may be the result of this our second and last appeal, the world shall not remain ignorant of the names of those who act generously in this matter, and come forward in the cause of progress. The list of subscribers, be it perfect or imperfect, shall be published in this Journal; and that list, whatever the result may be, will then become a fact in the history photography.

From Photographic Notes.

NITRATE OF SILVER.

Among the valuable papers which have at different times been communicated by Mr. Hardwich to the Journal of the Photographic Society there is probably not one of greater practical importance than his last communication, published in No. 70 of that Journal, in which the effects of using impure nitrate of silver are pointed out. This salt is the most important chemical used by photographers, and it is now evident that on its chemical purity a great deal more depends than has generally been supposed. The experiments made by Mr. Hardwich were briefly as follows: First, a pure sample of nitrate of silver, made by dissolving pure silver in pure nitric acid, was made into a 30-grain bath, and slightly acidulated with acetic acid; next, two samples of commercial nitrate of silver, obtained from the largest manufacturers of that salt, were made into separate baths of equal strength, and acidified to the same extent as the first with acetic acid. These three baths were then tried one against the other, with the same collodion and developer. The result was that the bath made with pure nitrate of silver gave good negatives in 15 seconds, while the other baths gave negatives which exhibited many serious defects, and required a much longer exposure. The experiments are minutely described in the paper referred to, and were no doubt most carefully made. They lead to the conclusion that nothing but pure nitrate of silver should be used by photographers. With such evidence before him the practical photographer should now make up his mind to use no nitrate of silver except that which is manufactured by dissolving pure silver in pure nitric acid; and in order to obtain this pure article he must not object to pay a reasonable price for it—that is, at least five shillings per oz. We should be truly glad to see every photographic firm in the kingdom at once raise the price of nitrate of silver to five shillings, and sell none that is not of guaranteed purity, and manufactured in the first instance from pure silver, totally free from alloy. Or, at any rate, we should be glad to see two varieties kept by the trade, one for those customers who cannot afford to use a cheap and impure article, having neither the money nor time to throw away upon failures;—and, if necessary, another sort kept for those who *can* afford to use a bad article, who *have* money and time to throw away, and who consider failures an agreeable excitement rather than otherwise.

In every branch of photography pure nitrate of silver no doubt yields the best results, diminishes the chances of failure, and increases the sensitiveness of the excited film, or paper;

and in every branch of photography no doubt many of the failures which occur are to be attributed to the impure commercial nitrate of silver which has been so largely supplied to photographers. In the Negative Collodion Process the effects due to impure nitrate of silver are felt chiefly when a new bath is used. Where is the photographer who is not nervous about the qualities of a new bath, or who has not been dismayed by the extraordinary failures produced by new baths; and what is the proper remedy for this state of things? The addition, first of carbonate of soda, and then of acetic acid, generally succeeds in so far remedying the bath that it gives clean and dense pictures, but this is equivalent to adding acetate of silver; and does not a bath which has been so treated give somewhat coarse pictures? Then again, it is generally admitted that the iron developer gives far finer negatives than pyro-gallic acid, when it can be made to work; and why can it not *always* be made to work?—why can it be used with one bath and not with another? Why does a bath which gives good negatives with the iron developer to-day, give bad ones with the same collodion and developer to-morrow, rendering the developer muddy and covering the picture with stains? Is it not likely that these things are brought about by impurities in the nitrate of silver which have been overpowered or masked for a time by the addition of an acetate? And again, in the Positive Collodion Process, may not the almost bad tone of positives be due to a great extent to the almost universal employment of impure commercial nitrate of silver? And in the printing processes, what is more likely than that impure nitrate of silver may be the fertile cause of the many irregularities which occur in these processes? There is surely no greater mistake than to suppose that any old negative bath, or refuse nitrate of silver, will do for positive printing; on the contrary, we believe it to be quite as essential to use pure fresh nitrate of silver in printing as in any other operation, if brilliant, vigorous, and permanent prints are desired.

The photographer may depend upon it he cannot be too particular in the purity of his nitrate of silver; or, if he be a daguerreotypist, in the purity of the silver with which his plates are coated. To buy cheap nitrate of silver, or cheap daguerreotype plates, is certainly false economy, and we shall be glad to see a strong reaction set in in favor of pure silver; and then, when the demand has become imperative and universal, the supply will follow as a matter of course. It has surely been a great mistake of the trade to reduce the price of nitrate of silver. Instead of doing this, the price should have been maintained at 5s. per oz., and the rivalry have been to produce the purest article. Considering that nitrate of silver contains about two-thirds by weight of pure silver, we cannot imagine how a pure article can be supplied at the prices now cited by some of the leading firms. But the tact is the commercial article supplied at these low prices, is *not* fit for photographic purposes, and a totally different process should be employed in its manufacture. That process will be found to consist in first obtaining pure silver, then dissolving it in nitric acid. We know of no other means of obtaining pure silver than by throwing down the chloride from an impure solution of the nitrate by means of salt, and then reducing the chloride, by fusion with soda, to a melted mass of pure silver. This appears to be a necessary first step in the process of making photographic nitrate of silver. Should the nitrate thus made by dissolving the pure silver in nitric acid be found to contain a very slight excess of free nitric acid, it will perhaps be better to leave it alone than neutralize it by adding oxide of silver of questionable purity. With good collodion there is no objection to a *faint trace* of free nitric acid in the negative bath, and for positives excess of nitric acid is a decided advantage, nor is it at all objectionable in the printing processes. The quantity should, however, be reduced as much as possible by evaporating and re-crystallizing when extraordinary sensitiveness is required. A great clamor has been raised about the free nitric acid in nitrate of silver, but in our opinion the nitric acid is harmless in comparison with other impurities, which are either metallic or carbonaceous.

Our readers may depend upon it that pure nitrate of silver is a matter of great practical importance. The exact nature of the impurities in the salt now commonly sold is very obscure, but their effects are nevertheless very strongly marked, and since they are avoided by dissolving the pure metal in the acid the practical conclusion is that that plan should be generally adopted, and the present mode of manufacturing the salt from mixed metals given up.

From Photographic Notes.

ALCOHOLIC COLLODION.

We have been engaged lately in an interesting series of experiments in the manufacture of collodion, which have led to a curious and important result.

The usual formula for making collodion is

Ether, S. G. ·750	5 fluid drachms.
Alcohol, S. G. ·826	2 " "
Pyroxyline	2 to 4 grains.
Iodide of Potassium	3 to 4 "

(*See* Mr. Hardwich's Treatise, American Edition page 127.)

Hitherto the above formula appears to have been generally adopted, with but modification. Now, we propose to substitute for it the following:—

PLAIN COLLODION.

Ether, S. G. ·720	1 fluid drachm.
Alcohol, S. G. ·794	4 " "
Pyroxyline	4 grains.

IODIZING SOLUTION.

Alcohol, S. G. ·825	5 scruples.
Iodide of Potassium	To saturation.

By comparing the two formulæ, it will be seen that the latter indicates more than five times as much alcohol as ether, the former three times as much ether as alcohol. The difference therefore between the two formulæ is very considerable, and for the sake of distinction we propose to call the new collodion "Alcoholic Collodion."

The reader will observe, that in alcoholic collodion, the ether and alcohol of the plain collodion are in the absolute or anhydrous state, while the iodizing solution is the same as that which has been for some time in common use, and is added to the plain collodion in the usual proportion of 1 : 3. The difference is therefore in the plain collodion, and not in the iodizing solution. It will also be observed that alcoholic collodion contains more pyroxyline than the common sort.

We have now to describe the advantages of this kind of collodion.

1st,—Since it contains the minimum quantity of ether and the maximum quantity of alcohol, there is much less difficulty in coating the plate, particularly in hot weather, and several minutes may elapse before the immersion of the coated plate in the nitrate bath. This arises from the slow volatilization of alcohol in comparison with ether. It is not necessary, therefore, to hurry, or observe any particular precautions in coating the plate; and on removal from the nitrate bath the film exhibits a perfectly even sheet of iodide of silver, free from waves or irregular markings. The operation of coating the plate is so exceedingly easy and certain with this new collodion that any one may succeed on the first attempt. In short, the chief difficulty in the manipulation of the collodion process in hot weather or hot climates is now removed.

2nd,—No greasy streaks appear upon the film when removed from the nitrate bath. Ether repels water, alcohol has an attraction for it, therefore the film containing the maximum of alcohol is most easily wetted and penetrated by the chemicals. Streaks in the direction of the dipper, which are occasioned by the imperfect removal of the ether from the film when in the nitrate bath, when the collodion contains a large proportion of ether, do not occur with alcoholic collodion.

3rd,—The plate does not get dry so quickly between the exciting and developing, because the film is more thoroughly penetrated with water.

4th,—The plate is more sensitive than with common collodion.

5th,—The developer flows much more readily over the late, and never requires the addition of alcohol.

6th,—The film is not contractile, and adheres so tightly to the glass as to resist any amount of rude and careless washing, even when a portion of the plate only is coated with collodion.

7th,—The film is entirely structureless and as clear as glass. In density, detail, and half-tone, there is nothing to be desired.

Such are the advantages of this new collodion; and we have no doubt it will prove to be the best possible for the tourist. The only wonder is that it has never been thoroughly tried and recommended before.

In making alcoholic collodion the reader will observe that the alcohol must be absolutely anhydrous, and distilled with quick-lime, for if the alcohol contains *any* water, the negative will exhibit reticulation in the blacks. The pyroxyline should be made in the usual way. A mixture of one part absolute ether and four parts absolute alcohol will dissolve as much as forty grains to the ounce of good soluble pyroxyline. By adding pyroxyline to the collodion the density of the blacks is increased and the film rendered more "creamy," and adhesive to the glass. When the collodion contains only three grains of pyroxyline to the ounce the film is thin and tender, but by increasing the quantity to seven or eight grains, a magnificent tough and creamy film is produced.

Thinking it likely that some of our readers may be curious to give this new collodion a trial, we have made a few gallons of it which will be supplied as stated in an advertisement; but any one may make it for himself by following the formula stated in this article; there is no secret in the matter, and the *rationale* of the thing is self-evident. To us it appears that this collodion was the one thing wanted to render the collodion process complete, for in hot weather or in hot climates there was considerable difficulty in the manipulation. Mr. Frith relates that when in Egypt and Syria last year, the collodion was sometimes actually boiling when poured upon the plate.

So far as we can judge at present this collodion answers as well for positives as negatives; and we see no reason why it should not become generally adopted for all purposes.

If our readers will refer to any of the old Treatises on the Manufacture of Collodion, or if they will test the specific gravity the collodion commonly sold by the manufacturers, they will find that hitherto it has been the general custom to use less alcohol than ether in the mixture which forms the solvent of the pyroxyline, altho' it has been generally admitted that the addition of alcohol has the tendency to render the collodion more sensitive, and at the same time more easy to manipulate. But it seems to have somehow escaped the notice of experimenters to try the addition of alcohol in its *anhydrous* or *absolute* state, as distilled with quick lime, instead of that which is commonly called "absolute alcohol," but which in reality contains as much as 10 per cent. of water. In short it appears that experiments have been tried with alcohol S. G. ·820, that is with the strongest alcohol which can be produced by the simple distillation, instead of with the really anhydrous alcohol S.G. ·894 which can only be produced by distillation with quick lime; so that it has not been generally known that the latter kind of alcohol may be used in a large proportion as compared with the ether in the mixture which forms the solvent of pyroxyline, and we consider it a valuable discovery which we have made; that absolute alcohol may be extensively added to ether in the manufacture of collodion.

It appears from experiments made by us, and which seem to be quite conclusive, that the best collodion for general practical use, is that which is made by adding one part of absolute ether S.G. ·720 to four parts of absolute alcohol S.G. ·794, dissolving in this mixture from six to eight grains to the ounce of good photographic gun cotton,—and iodizing it with the usual iodizer, in the proportion of one part of iodizer to three of plain collodion. This is without doubt a much better formula for collodion than any that has been yet published, and we conceive that collodion thus made possesses advantages which will be certain ere long to bring it into general use. These advantages we will briefly state again under the following heads:

Facility of Manipulation.—When collodion contains the usual large quantity of ether it is not easy to coat a plate properly in hot weather; and it generally happens under *any* circumstances, that even when an operator has attained considerable skill in the process he fails in producing an even layer of iodide of silver, when the film is viewed by transmitted light on removal from the nitrate bath. It frequently happens, even in skilful hands, that the collodion which has run to the edge or corner of a plate flows back again, when the plate is tilted over the part which has become partially dry, so as to produce a cloud or wave. If anyone will examine critically the film on removal from the nitrate bath, he will in general find a wave existing near some edge or corner, which has been produced by the cause stated. But when there is much less ether in the film it does not dry so rapidly, and these irregular markings do not occur, because the collodion flows like oil over the plate, and may be passed backwards and forwards over the same place with impunity. A plate is therefore more easily coated with alcoholic than with common collodion, under any circumstances, but particularly in hot weather; and when coated it exhibits an even film. Again, the less ether the film contains the more easily it is wetted in the nitrate bath, and the more easily the developer flows over it; which are by no means unimportant advantages.

Sensitiveness.—It might be concluded *a priori* that alcoholic collodion, would be more sensitive than common collodion, and that we find to be the case; for if the same ingredients are mixed according to the old proportions,, and the same bath and developer used, a longer exposure is necessary. This experiment is conclusive on the head of sensitiveness.

Density and half-tone.—Alcoholic collodion contains more pyroxyline than the common sort, and therefore the film has more body. This modifies the effects of solarization from over-exposure, because when a larger quantity of material is acted on by light we may suppose that altho' the surface layer is solarized, still the part beneath it may be to some extent protected, so that density may be obtained in a thick film when it could not in a thin one; moreover, since the lights may be permitted to receive a longer exposure without injury, the details of the shadows may be better brought out. It has frequently been observed in the paper processes, that thick paper gives denser negatives and better half-tones than thin paper,—and this is equally true of thick collodion films.

Alcoholic collodion has therefore the good qualities of being very easily manipulated,—very senitive,—and giving good density and half-tone;—add to this that the film is so strong and adhensive to the glass as to bear an unusual degree of rough treatment in washing, and that it is perfectly structureless, and gives very clean and pure lights, and the reader will perceive that alcoholic collodion is a good and practically useful vehicle for general purposes, and that it offers great facilities to the tyro in the art, and great advantages over the collodion hitherto employed by photographers.

The good keeping qualities of alcoholic collodion are also worth pointing out. It is well-known that iodized collodion gradually deteriorates by keeping, until in time it becomes red, insensitive and useless. This effect is due chiefly to the ether contained in the collodion, and the more ether their is the more rapidly the change takes place. Now the first peculiarity that struck us in the alcoholic collodion was the paleness of tint produced on adding the iodizer, and the comparative slowness with which the tint changes to a deeper yellow; for even after several weeks the iodized collodion, (altho' iodized with iodide of potassium,) does not pass beyond a straw-yellow color, nor is its original sensitiveness much impaired.

It will be observed by an advertisement on the wrapper that we are about to manufacture this collodion for sale, with the assistance of a gentleman whose acquaintance we have recently made, and who, by profession, has been an Inspector of Distilleries, and who is also a practical photographer. We are building an additional laboratory and cellars for the purpose; and as in the course of time experiments may reveal new facts we shall have no secrets from our readers, but publish everything connected with this subject; at the same time that we shall be glad to learn the nature of the results obtained by others, and to compare notes with them. The dry processes will also form a subject for experiments, and also the collodionized paper process, and the various methods of transferring; and we have no doubt these practical operations in which we are about to engage will from time to time furnish the materials for interesting articles in this Journal.

PHOTOGRAPHIC ITEMS FROM FOREIGN JOURNALS.

ALBUMANIZED PAPER.

The following is a method proposed by M. l'Abbé Laborde for preparing albumenized paper which will not discolor the nitrate bath:—

"I employ a method which by uniformly coagulating the albumen imprisons and retains the soluble organic substance, so that you may sensitize a great number of albumenized papers without discoloring the nitrate bath. Proceed thus: Fill with water a metallic vessel large enough to float the albumenized papers in, and heat the water to the boiling point; then take an albumenized paper previously dried, and lay it with its back upon the hot water, taking care not to wet the surface of the albumen. In about half-a-minute remove it, hang it up to dry, and replace it by another.

"When a hot iron is used to coagulate the albumen it is not easy to equalize the operation, for if the iron is too hot the albumen is discolored, if not sufficiently hot the albumen is not coagulated, and if of a proper temperature the iron may not be applied uniformly to every part of the paper. A paper properly prepared should withstand the following test without losing any of its lustre, viz., immerse it in water for a quarter-of-an-hour, or sponge it with water; then dry it. If it has been ironed it generally exhibits after this test imperfect coagulation.

"The same process may be used for varnishing prints upon plain paper. When the print is finished and quite dry, it is to be albumenized in the usual way, (not salted, of course,) dried, and floated with its back upon boiling water.

"I thought the process might be rendered more expeditious by floating the papers without previously drying the albumen, but the heat produces in the albumen a host of little air bubbles. The albumenized paper should be perfectly dry, and put under pressure before the operation, for it is difficult to float it when it is curled up and out of shape."

M. Laborde also observes that sensitive albumenized papers should not remain suspended to long in the air, but be put away as soon as they are dry, otherwise they are liable to become discolored. He finds that by keeping them between plate glasses they preserve their whiteness for any length of time.

GUTTA PERCHA PAPER.

The following is a method of preparing paper with gutta percha, for purposes of printing, proposed by M. Gaumè, and communicated by him at the last meeting of the French Photographic Society:

"Dissolve gutta-percha in benzole; let the precipitate settle, and decant the clear liquid. In this state it is very clear but colored; and after evaporating the benzole it forms a finely granulated substance which melts at 212°, and then forms a colorless varnish. Put this into a porcelain dish, immerse the sheets of paper one at a time, and hang them up to dry. When dry they are rather more transparent than before immersion, but exhibit the same glaze as before, only within the pores may be observed an infinity of little white grains of gutta percha which melt before a hot fire, and combine so as to form an internal varnish or species of sizing, which renders the paper impervious to liquids and comparable to a sheet of glass. It may then be albumenized and printed upon in the ordinary way; the final washings, however, do not require so much trouble as is usually bestowed upon them. The prints are as permanent as those upon glass. Negatives may be taken by M. Blanquart-Evrard's process upon iodized albumen applied to these papers. This method of sizing with gutta-percha is very cheap and simple."

PHOTOGRAPHIC ENGRAVING.

The new substance for photographic engraving, discovered by M. l'Abbé Laborde, and alluded to by him at the last Meeting of the French Photographic Society, is simply boiled linseed oil containing litharge. This mixture, it appears, is sensitive to light, and is said to be more suitable for photographic purposes than bitumen of Judæ. It has long been known that drying oils are oxydized and resinified by exposure to air and light. The first indications of a process consist in diluting the mixture of boiled oil and litharge with ether, spreading it upon a glass plate, and when dry exposing it under a negative. After about five minutes exposure a picture may be developed by the breath, and after a much longer exposure by passing lightly over the plate a dabber charged with lamp-black in powder, which adheres to the parts where light has *not* acted, and slips away from those which have been hardened by light.

Another process consists in applying the mixtureof oil, litharge, and ether, to a metal plate,—exposing the plate to sunshine for about half-an hour,—then washing it with ether, which removes the compound from the parts which have not been rendered insoluble by light,—and lastly, etching the plate with an acid. Of the various substances upon which the oil may be spread that appears to be the best which is the least oxydizable, and they may be stated in the following order of merit, viz., glass, silver, copper, iron, zinc.

SULPHIDE OF MERCURY PRINTING PROCESS.

The Sulphide of Mercury Printing Process of Messrs. Salmon and Garnier, consists in applying to paper a solution of sulphur, either in chloroform or sulphide of carbon, exposing it under a negative to sunshine for about a minute, and developing the image either with a dabber of cotton charged with lamp-black, or by exposing the print to the vapor of mercury. In the former lamp-black, in the latter mercury, adhered to those parts only which have been affected by light. The print is then to be immediately varnished with gum or albumen. The sulphide of mercury forms a dark brown substance in the shadows, which is so far permanent that it resists the action of alcohol, ammonia, and sulphuri, cnitric, and hydro-chloric acids of ordinary strength; also the action of cyanides, organic acids, and alkaline sulphides; this sulphide of mercury not being the same as that treated of by Messrs. Pelouze and Fremy, and which does not resist all the above-mentioned destructive agents.

URANIUM PRINTING PROCESS.

We have received from a correspondent some Uranium prints upon *albumenized* paper, which are so good as to raise the process considerably in our estimation. In detail and vigour they are quite equal to silver prints, but the color of the shadows is perhaps somewhat too red, and lies between a burnt sienna and Vandyke brown; the whites are entirely free from yellowness and as pure as the paper itself. These prints we are assured have not been fixed in hypo, and that is all we are told with respect to them. Should any of our readers be experimenting in this direction we would suggest to them the following mode of proceeding:—

Albumenize a sheet of paper in the usual way, omitting the salt. Hang it up to dry. Float the back of it upon boiling water, as recommended by M. Laborde, for the purpose of coagulating the albumen. Dry it again, and put it by for use when required. When you wish to print float it upon or immerse it in a strong solution of nitrate of uranium, and dry it in the dark. Expose it in the pressure frame for about the same time as an ordinary print, and develop the picture by immersing it in a 20-grain bath of nitrate of silver, which may be used a great number of times This brings out the picture in all its details, and as it will appear when finished. Then wash it well in cold water, and lastly in boiling water, and immerse it in a very weak bath of bromide of potassium in order to decompose any free nitrate of silver that may remain combined with the lignine of the paper and convert it into insensitive bromide of silver, the yellow tint of which would not be perceived. Then wash again to remove the bromide; and the print is finished. The bromide fixing bath may be used a great number of times, and it would not redden the print so much as ammonia, which after all is not a fixing agent, for the ammoniacal oxide and chloride of silver are sensitive to light.

GRADUATED BACKGROUND.

A professional photographer in Jersey advertises in the present number a simple method of producing a graduated background, which he has described to us, and which we think better than anything that has yet been proposed. In fact, the plan is so simple and efficient that every photographic portrait room should be provided with this piece of apparatus, the description of which, illustrated with a woodcut, may be obtained by enclosing thirty postage stamps to the inventor.

And this leads us to another subject. Time was, in the early days of photography, when new processes and ingenious inventions were freely given to the public, and it was thought sufficient reward to obtain a favorable notice of them in the Photographic Journal; but now photographers seem to have become mercenary, and prefer postage stamps to the honor of contributing to the common stock of knowledge. We would propose the following plan for consideration. Let us suppose that a correspondent communicates to this or any other *Journal* the account of anything new and valuable which he has discovered in photography. The Editor might then, after its insertion, call the attention of his subscribers to the matter, and endeavor amongst them to raise a subscription and present the inventor with either a silver or gold medal, bearing on one side his name and on the other an inscription to the following effect:—

"Presented by the Editor of and Subscribers to —— Journal, in acknowledgement of a valuable improvement in Photography freely communicated to that Journal, and published in No.—18.

RECIPE FOR A WHITE VARNISH, BY EDWARD THOMAS HOBSON.

Methylated Spirit........................	1 ounce.
Gum Thus............................	10 grains.
Gum Sandrac........................	15 "

Dissolve, and filter through sponge.

PHOTOGRAPHY FOR PORTRAITS.

There is an amusing article in the last number of the "Art Journal," (No. XLV., for September,) headed "Photography for Portraits," written by Mr. Ronald Campbell. We copy the following analysis of it:—

"The object of this essay is to show that the *body* of Photography is incompetent to maintain its existence in antagonism with the *soul* of Art: that no mechanical process can long supersede the living agency of man's mind: that there could have been no jealous anticipation of the discovery of Photography in Sir Joshua Reynold's hypothetical allusion to the "*littleness* and *meanness* of "a view of nature represented with all the truth of the camera obscura,"—Photography not having been even dreamt of till more than half-a-century after his death; besides, that the samera reflects nature in all her rainbow hues, instead of the colorless stains which Photography produces: that as well might the heart-strings of Paganini's violin be emulated by the revolving cylinders of a patent music box, or the ephemeral wax figures in a barber's window vie with the sculptures of Michael Angelo, as Photography's pretensions, in arbitrating for itself the noble rank of *equality* with the *arts*, be able to maintain it in possession of the usurpation which it now assumes; for it is nothing—and never can be anything—more than "a servant of servants:" and, lastly, that all the extraordinary expertness and parade of literal detail which delight the common people, are just the very objects which the educated painter studies to conceal; "for," says Reynolds, "if the excellence of a painter consisted only in this kind of imitation, painting must lose its rank, and be no longer considered as a liberal art, and sister to poetry, this imitation being merely mechanical, in which the slowest intellect is always sure to succeed best, for the painter of genius cannot stoop to drudgery, in which the understanding has no part: and what pretence has the art to claim kindred with poverty, but its power over the imagination? To this power the painter of genius directs his aim; in this sense he studies nature, and often arrives at his end, even by being unnatural, in the confined sense of the word........To mingle the Dutch with the Italian school is to join contrarieties which cannot subsist together, and which destroy the efficacy of each other. The Italian attends only to the invariable, the great, and general ideas which are fixed and inherent in universal nature; the Dutch, on the contrary, to literal detail, as I may say, of nature modified by accident. The attention to these petty peculiarities is the very cause of this naturalness so much admired in the Dutch pictures, which, if we suppose to be a beauty, is certainly of a lower order, that ought to give place to the beauty of a superior kind, *since one cannot be obtained but by departing from the other*."—R. C.

The writer of the above essay, advocates portrait painting, and disparages photographic portraiture. His line of argument is, that photography can neither idealize, nor tell the truth,—while the artist can do both. Altho' we agree with him in thinking that photographic portraits are sometimes very unsatisfactory, yet we cannot admit the principle that a portrait should be an idealised representation of the sitter. In our opinion, idealization should be strictly confined to works of imagination, while a portrait should represent a person as he actually appears, and not as he might have appeared had his career and occupations been more exalted. The portraitist, be he artist or photographer, has merely to study light and shade, and the circumstances which determine a pleasing expression. It matters not then whether the camera or the paint-brush do the copying work, provided it be done correctly. The sitter is a fact, his history is a fact, and the effects of his career, thoughts, and feelings upon the material features of his countenance, are facts; these facts should be rendered correctly, or the portrait can be at the best but a pleasing falsehood. Artists talk a great deal of nonsense about the ideal. We admire the ideal greatly, in its proper place, but certainly not in portraiture. We have seen photographic portraits in which the finest portraits by Titian, Rembrandt, and Reynolds have been equalled in artistic qualities, and surpassed in truthfulness; and that being the case we disagree entirely with Mr. Ronald Campbell in many of his remarks. But these photographic successes appear to bear about the same ratio to photographic portraits generally as the works of the great masters in art bear to those of inferior artists; and artists of the latter class have to be told plainly that they have nothing to brag of over photographers of the same grade. The majority of the works which cover the walls of exhibitions of paintings certainly leave much to be desired, and exhibit faults which the more extended study of photography among artists might correct.

PATENT LAWS.

To the Editor of Photographic Notes.

Sir—It is a saying that what is everybody's business is nobody's, and in personating the latter individual for the sake of making a few remarks upon the subject above-named, I am inclined to persuade myself that there is a respectable body of opticians who must consider, and justly so, that little or much, the patent of Mr. Grubb's is an infringement of rights and liberties that we enjoy, as a matter of course, in an equal degree. But the matter requires elucidation (I suppose since the patent is settled and it is hinted is to be upheld,) from one acquainted with its practical bearing upon the work of an optician, before a correct estimate can be formed by the public of the deprivation that we lay under during the continuance of this patent.

I can solemnly assure Mr. Grubb that the lens is not new, and that its merits have been variously known to myself for a moderate angle of its picture, and to others, Mr. Slater for instance, to the full angle of its picture; and furthermore, that I never knew before that any optician was bound to publish the curves of his lenses in order to sustain the privilege of making them. This remark applies to the note appended to Mr. Slater's letter. Permit me most respectfully to suggest to Mr. Grubb, how was it that while he pursued the investigations which led to his adoption of this lens that he should think no one else had made it? But we must explain the subject a little. An optician's tools are the "grinding dishes," as our honored and distinguished continental neighbor, Prof. Petzval, has denominated them; it is by a pair of compasses we describe circles upon paper; so with our optical tools we can make our lenses spherical. Should we not think it rather hard if we were not allowed to describe certain circles on paper? But what is this patent that we are not to grind a piece of crown glass, convex on one side, and flat, or nearly so, on the other, and cement to it a concavo-convex flint, and thus achromatize it? This is certainly a vexatious determination. How came it about that we may not have the free use of our tools, glass, skill, science, and so forth? Why, simply because Mr. Grubb, after he had discovered that it was a useful lens, considers it impossible that any one else should have made it before, so what does he do? He asks Her Majesty's Minister, alias the Patent official, to give him the sole right of making this lens. The minister (or functionary) says, "I suppose its all right: we don't usually bother our heads about optical matters, Mr. Grubb; we perceive we are dealing with a gentleman who will rectify it another time if anything is amiss." "Excellent," responds our friend at Dublin, and pays over the fee, (this latter circumstance I regret deeply.)

On one hot morning in June, about the 21st of the month, the postman brings the Photographic Journal, and we speedily discover what has occurred. What's to be done? Two important lenses that have been made from time immemorial in our workshops form the subject of a patent when put in juxtaposition and sold as a camera lens. Now meniscus lenses are already largely used for various purposes, condensers and astronomical fields, (see Griffin's Optics, Art. 163,) calotype lenses, and various other purposes; and its fellow the concavo-convex lens is solely used for the black flints of our photographic combinations in the shops of London, Paris, and Germany. It is the form assumed by Herschel for the flint lens in the telescopic object glass, whose exact radii have been published to the world, a work of great skill, without even a patent being thought of. Very well. Here are two lenses that are constantly being made that we are prohibited from converting together into an achromatic compound, and selling. Does it require a councillor to discover some degree of nonsense in this? Nothing more need be said, though I will not lose this opportunity to bear witness to the interest with which I perused his communication to the London Journal, and he will permit me to sum up by saying that there are reasons existing that the form, number, and dispositions of lenses should never become the subject of a patent. I trust Mr. Grubb will support that proposition. Honor is of more precious worth than pearls, *nay gold*, and this I am certain our respected friend Mr. Grubb is about to show us.

God save the Queen, crown her senate with honor, her officers with humanity, at home and abroad, her people with obedience, equity, and respect for good things. Excuse me for saying so much, but I have done.

James T. Goddard.

Whitton, near Hounslow, Sept. 6th, 1858.

These remarks are as applicable on this side of the Atlantic to many photographic apparatus and improvements.—Ed. P. and F. A. Journal.

We recommend our readers to get "The Photographic Text Book." It is a capital twenty-five cent manual of the various processes.

CHORLTON PHOTOGRAPHIC ASSOCIATION.

At the monthly meeting of the Chorlton Photographic Society, held at the Chorlton Town Hall, August 11th, 1858, the Vice-President in the chair,

A discussion relative to the testing of light for photographic purposes was carried on, and it was thought desirable for as many members as possible to make experiments on the subject, and report the results at the next meeting.

An instrument was exhibited by the secretary for comparing the intensity of a shadow produced in any given light, with a scale graduated by various shades of Indian ink, so that, with a shadow equal in intensity to the *darkest* shade of the scale, a minimum of exposure would be required to produce a given effect, the time, of course, increasing in regular (?) gradation as the intensity of the shadow decreases.

A discussion on the effects produced by the state of the winds as regards exposure was also carried on, and it was considered that S. W. was the best wind for photographic purposes, and east about the worst.

The Chairman thought that electricity had much to do with the matter.

Mr. Rogerson said he had, twelve months ago, exposed a plate connected with a galvanic battery in the camera, and could notice nothing more than the ordinary effect produced.

A wire levelling stand, made on the principle of the tripod at a cost of sixpence, was exhibited.

A substitute of easy application was suggested by the Chairman, by floating upon water a piece of buoyant wood of dimensions a trifle smaller than the plate to be developed, and sufficiently thick to project above the fluid.

Thanks were then voted to the chairman and the meeting adjourned.

From Photographic Notes.

ON A MODE OF PROCURING STEREOSCOPIC PAINTINGS, OR Pictorial Works of Imagination.

According to a promise given in No. 57, we shall endeavor in the present article to describe a method of producing stereoscopic paintings, or pictorial works of imagination, of any sizes to be viewed by means of a pair of reflectors. The process is exceedingly simple, and does not necessarily require any knowledge of the rules of perspective on the part of the draughtsman who makes the outline of the second picture from the original one; although the second Picture is in fact a perspective view of the objects as they would appear if taken from a different station to the first.

Take any pair of small mounted pictures intended to be viewed in a lenticular stereoscope. Call the nearest object in view, no matter in what part of the picture it occurs, A, and the most distant object Z; and call the principal intermediate objects in the picture by the other letters of the alphabet, beginning with B and proceeding towards Z, according to the order in which the objects recede from the spectator.

Now, measure the distance between Z in the right, and Z in the left picture, with a pair of compasses, and prick off upon a strip of card the distance ZZ. Next, measure the distance between the two A's, and prick that off upon the same strip of card, putting one leg of the compasss into the same hole as before. You will find the distance between the two A's shorter than that between the two Z's. Suppose we call the difference between these two lengths the "differential" of A. Proceed in the same way with the two B's, C's, D's, &c., and call the respective difference between these lengths and the length ZZ the "differentials" of B, C, D, &c. You will then find that the differential of B greater than that of C,—and so on.

Before proceeding further, let this result be carefully understood, and fixed in the mind. It may be briefly stated thus. If we take a pair of compasses and open the legs until one point is on A in one picture, and the other point on A in the other picture, and then proceed to span the distances between the two B's, the two C's, &c., (no matter in what part of the picture the B's and C's occur), we shall find the legs of the compasses must be opened wider and wider, as we proceed from the nearest object in the view to that which is most distant. And it appears that the reason why stereoscopic effect is produced by looking at a picture taken from the right station, by the right eye, and from the left station, by the left eye, is because the optic axes after passing through two K's, suppose, on being directed through two M's, or H's, are made to pass through the extremities of a line which is either longer or shorter than before; and therefore the point of intersection of the optic axes, (that is the point where the object M or H is supposed to be), is either caused to recede further from, or approach nearer to the spectator than that in which the K's were united; which consequently conveys the idea of relief.

There are two other points which will be discovered by carefully examining mounted stereoscopic pictures. One is that the two A's, the two B's &c., are always respectively upon the same horizontal line. The other is, that no object which does not appear in *both* pictures can be seen stereoscopically; for any object which only appears in one picture is seen as a transparent phantom in the stereoscope.

Now we come to the application of the principles, and that is so simple, that the reader has probably already anticipated what we are about to say.

A has the greatest differential, B the next, C the next, and so on; and there is a certain law which connects the differential of an objet with its distance from the spectator. But that law is complicated, and need not be rigorously observed in practice. The principal thing to be remembered is, that if an object M be half way between A and Z, its differential must be *more* than half that of A; and this principle must be observed throughout.

Now, let us suppose that an artist has painted a picture, and wishes to paint a second which when viewed in conjunction with the first in a pair of reflectors, shall produce stereoscopic illusion. An easel capable of holding both the original picture and the blank canvas upon which the copy is to be made is provided. The painting and the blank canvas are placed upon it, side by side;—and upon a shelf which supports both, the end of a T square travels, the blade or straight edge of which is always vertical.

The position of the most distant object, Z, on the blank canvas is then decided on, and accurately marked on its horizontal line by means of a pencil mark made upon the T square, when placed opposite Z in the original painting. The horizontal distance ZZ is then carefully measured, and marked upon a thin wooden straight edge.

The next thing is to determine the position of the point A upon the blank canvas. The artist must consider how much relief he wishes to give to it, and take his differential accordingly. This done the position of A is marked on its true horizontal line by means of the T square and straight edge, as before. With respect to the intermediate objects, the artist must then consider how far they are situated from A, between A and Z, and take their respective differentials accordingly. Having in this way determined the principal points in the outline of the second picture, that outline may be completed, and the color applied exactly as in the first.

If the blank canvas is placed on the right hand side of the painting, the second picture is that which would be seen from a station to the right of the first; and *vice-versa.*

The finished pictures are to be viewed by a pair of reflectors in a way which is too well known and understood to require description in this place. If the paintings are small they may be hung from the opposite sides of a window, or if very large, upon the opposite walls of a gallery, and lighted by a skylight, the reflectors being mounted upon a stand placed midway between them.

We have now described the means of producing a great novelty in Art, viz., that of adding stereoscopic illusion to pictorial works of immagination. But in bringing this matter forward and showing how easily it may be done, we wish to be understood that we offer no opinion as to the artistic merits of this application of the principles of Stereoscopy in what is called High Art. We are not among those who admire mere mechanical excellencies in art, and if the poetry of a fine painting were likely to be disturbed, or its intellectuality destroyed by imparting an appearance of greater material solidity to the objects represented, we should certainly object strongly to the adoption of the method described in such a case. Nevertheless there will remain to the artist a large class of subjects in which Stereoscopic illusion would certainly be a great gain; and we think it likely that a Stereoscopic Pictorial Journal like the "Illustrated London News," might be very advantageously illustrated on these principles. In fact, there are many important applications of reflecting stereoscope which remain yet to be worked out, and that instrument has yet to be popularized. We are certain that any one with talent and capital, and who is conversant with art matters, might carry out the ideas suggested in the present article, with considerable profit. To every class of artists, from the historical or landscape painter, down to the engraver, chromo-lithographer, or mere drawing-master, the application of Stereoscopy in the way we have suggested, offers a novelty which may in a variety of ways be successfully carried out, and which would no doubt greatly please the public.—Ed.

(From Cosmos.)

ALBUMENIZED PAPER NOT DISCOLORING THE SILVER EXCITING BATH.

BY M. L'ABBE LABORDE.

Formerly, the practice of coagulating, by means of a hot iron, the albumen on the surface of prepared paper was advised; latterly, however, this operation has been omitted, in consequence of the fact having been observed that the submission of the film to the action of nitrate of silver in the sensitizing part of the process was sufficient to render it perfectly insoluble. However, the albumen in becoming coagulated under the influence of the nitrate of silver, allows of *the solution in the latter* of an organic matter which decomposes it gradually, and finishes by rendering it unserviceable. It becomes, therefore, necessary either to make a fresh silver bath or to decolorise by the use of animal charcoal or kaolin.

I employ a means which in coagulating regularly the albumen encloses and retains in it the organic soluble substance, so that it is possible to sensitize a large number of sheets of albumenized paper without sensibly coloring the bath of nitrate of silver. The following will explain it:—

A metallic vessel, sufficiently large to contain conveniently a sheet of the paper employed, is filled with water, the latter being heated almost to the boiling point, then a sheet of paper previously albumenized, and *very dry*, is floated upon the water, *albumen side upwards*, taking care not to let the upper surface become moistened. After remaining about half a minute the sheet is to be removed and hung up to dry, and can be replaced by another on the water.

When a hot iron is employed to coagulate the albumen, it is not easy to regulate the operation; if the iron be too hot the albumen becomes yellowish; if it be not hot enough the coagulation is not effected; and even if the temperature be correct the operation may still fail from not applying it equally all over.

A paper well prepared ought to bear the following proof without losing any of its gloss, viz.: plunge it in water for a quarter of an hour, or rub it well on the surface with a moistened sponge, then dry it. Paper prepared with a hot iron does not always resist this test, after being dried it presents here and there parts that are dull or less glossy, which indicate an irregular coagulation.

The same process can be employed for varnishing positive proofs upon plain paper; after it has been finished and dried perfectly it may be floated upon a clean surface of unsalted albumen, dried, and then treated as albumenized paper.

I endeavored to render the operation more expeditious by floating the paper upon hot water while the albumen was flowing and still moist; but the heat gave rise to the formation in the film of albumen of an immense number of small gaseous bubblets, which did not disappear on drying.

The paper ought to be perfectly dry, and put under a press before the operation, for it is extremely difficult to float it upon hot water when it is curled up.

From Photographic Notes.

NOTES ON CARBON PRINTING.

The following communication from M. Gabriel de Rumine appears on the first page of the last number of the bulletin of the French Photographic Society:

"I have produced direct positives by following the method described by Mr. Sutton in the *Photographic Notes*, published at Jersey. I coat a sheet of paper with a saturated solution of bi-chromate of potass and gelatine, and then cover the surface with a light coating of plumbago. Thus prepared I expose the paper for a quarter-of-an-hour to sunshine, under a negative. I then place the impressed paper in boiling water. The parts acted on by light remain fixed and insoluble, while the parts which have been shaded are easily removed by rubbing with a tuft of cotton wool. The prints thus obtained resemble those which were exhibited by Mr. Pouncy, in London, and printed by a secret process. I think this process susceptible of great improvement, and it is desirable that photographers should direct their experiments towards it, as it would enable us to dispense with the use of the silver salts, and costly substances in printing, and yield prints likely to be as permanent as those in printing ink. I shall pursue my experiments in this direction and make the results known to the society."

The printing processes with bi-chromate of potass are beginning to attract much attention abroad, and we have no doubt that before long the silver salts will be superseded for printing purposes by less costly and more permanent substances. We are frequently in communication with Mr. Pouncy, and he tells us that he does not intend to publish his process until after the prize offered by the Duc de Luynes has been awarded to the successful competitor. In the meantime he is not idle, but gradually improving his process. The following extract from his last letter will no doubt be read with interest:—

"I received yours of August 31st, yesterday. You say, you cannot get depth by the trials you have made. I have printed pictures since I saw you with as much depth as an ordinary engraving." [Then follows an account of a good modification of his process, which if all the world knew instead of ourselves only, we should be better pleased]. "I do not pretend to assert that I can obtain all I wish in a picture at all times, but this I do assert, that I have pictures that contain all half-tone, detail and depth; therefore if the process will give it in one case, it will in another, the same conditions being present. If we do not obtain it, it is, I honestly believe, through imperfect manipulation, which we cannot expect to understand all at once. I would ask Mr. Shadbolt, are not my carbon prints far better than the first productions of Talbot? Is not CARBON-PRINTING as much a new invention? Again, we know many persons would not look favorably upon photographs of any kind for years, until their vision had been educated, as it were. Hence arise many objections to photography, even now. Apply the same remarks to carbon pictures, and it becomes a matter of taste, and as we cannot account for taste, such objections are not worth notice. When Mr. Shadbolt has failed to produce prints by my process it will be time enough to raise his objection. The clay of which we mortals are composed is far more susceptible in some than in others of receiving false impressions; but there are none so blind as those who *will* not see; a man must be blind indeed not to see through Mr. Shadbot," &c., &c.

Carbon printing is now beginning to attract considerable attention on the Continent, but of the various processes which we have published in this Journal, from time to time, there is none so simple in the manipulation as Mr. Pouncy's, and we believe his to be the best.

We insert the following extract from the *Athenæum:*

"A successful attempt has at last been made to obtain what has long been a desideratum in lithography, namely, the means of transferring a chalk drawing from paper to stone, so as to yield any required number of impressions. Mr. Paul Gauci, whose name, and that of his father, have long been honorably known in connexion with drawing on stone, has discovered and holds the secret of this desirable process. From the practical means afforded us of testing the operation, it seems highly satisfactory, but the number of impressions which such transfers will give, in comparison with drawings on stone, has yet to be seen. It has long been known that writings and drawings in ink, executed in plain black lines, made on prepared paper, can be transferred most perfectly on to a stone surface, and be multipled *ad infinitum*, but all attempts to completely transfer shaded chalk drawings have hitherto failed. By Mr. P. Gauci's process, however, any one can sketch or draw in chalk upon his pleasantly smooth or, if requisite, roughed paper, and have numerous impressions in printing-ink, or, what is more captivating to amateurs, in *blak lead*, so printed as really to have the effect of an ordinary lead-pencil drawing. Some studies from Nature, and of trees especially, drawn by Mr. Gauci himself, which have been printed in this process, are absolutely deceptive. For drawing-masters at schools we are of opinion that this new discovery will be of infinite value."

Might it not be possible to transfer a carbon print to stone, and multiply impressions by means of the lithographic press? Or might not a carbon print which would take ink be made directly upon stone by a method better than that of M. Poitevin? Nothing is so much wanted now as the means of multiplying, in printer's ink, and by means of the printing press, really satisfactory untouched photographs.

PHOTOGRAPHY IN BIRMINGHAM.

The following article from the *Birmingham Journal* is very interesting as evidently pointing to new methods of manipulation, which we hope to see published hereafter.

"Owing probably to the character of Birmingham manufacturers, no town possesses a greater number of really good photographers than this. Several important improvements in apparatus and chemical *materiel* have originated here—professionals and amateurs meet periodically for the discussion of principles and practice—and no better exhibition of what English and foreign operators can do has been held in the provinces than that which the Local Society got up at the Hen and Chickens last Autumn. Until the other day, however, we were not aware that we had amongst us an amateur capable of producing pictures quite equal to those wonderful transcripts of sea and sky which have made the name of LeGray well-known wherever photography is practised. The gentleman to whom we allude is Mr. Charles Breese, of Stanton Place, Icknield Street, West, a member of the Birmingham Photographic Society. Having accidently had the opportunity of inspecting some specimens of his skill, we regard their production by a townsman as redounding to our credit as an Art-loving community, and, therefore, though unpublished, a legitimate subject for public notice. The pictures we have seen include landscapes, sea views, street scenes, &c., which seem to have been selected in order to show how Mr. Breese can triumph over the difficulties that ordinarily beset photographers. They have been taken by the collodion process on glass, and being double, to serve as stereoscopic slides, the practical photographer will understand how' if only equal to LeGray's pictures in power and truth, they may yet possess qualities evincing even a higher range of manipulatory skill. This is especially noticeable in regard to those of the series before us which more directly provoke a comparison.

"Perhaps the most remarkable picture executed by Mr. Breese is a view of the sea off Llandudno, close to the Great Orme's Head. A quiet summer breeze is playing over the surface, here rippling the long swell which rolls shoreward, there scarcely disturbing the quiet an sunny bit which shows that a sand-bank is beneath, while farther out the waves are of that short broken-up character usually observed in what sailors call "a chopping sea." Looking at the pictures, one might imagine that he was gazing on the sea itself. But for the disenchanting rattle of of a four-feeder printing machine a few yards from us, we should be wondering how it was that the hoarse murmur of the waves as they swept up the bay was not making itself heard. Breaker, rolling wave, and ripple, have all been seized, as it were, "commanded to stand still" until old Sol, artist and portrait-painter in general, had secured their likeness Nothing has been lost. The glossy surface of the water—the play of light on the waves as they rise and fall—ships ten and twenty miles off—all have been transferred to Mr. Breese's "canvas," so as to make it almost nature's self. Equally wonderful is a view taken from the pier in Kingstown Harbor. "Landscape, storm clearing off," is a common enough subject in our exhibitions, artists sometimes waiting till the finishing touch is given before deciding by what name the darling of their brush should be christened. No room for doubt in this case. It was worth the drenching Mr. Breese endured in the cause of science and art, to have secured so glorious a transcript of the beauties of cloudland. Overhead all is blackness, and you can almost see the huge raindrops as they patter amongst the rigging of the ships beneath the town, or break up the smoothness of the wavelets as they course in from the open bay. But away in the distance, over the green hill of Howth, the sun is struggling to break through ; the curtain of the hurricane is being lifted, and magnificent contrasts of light and shade are seen. There is nothing lumpy or harsh in the whole view ; all the tones are soft and round, and true to nature. Bank upon bank of clouds, in well-defined but eccentric series, occupy many miles of back-ground down to the edge of the horizon, and within the picture are hill-side pastures, rocky surfaces, villas, the streets of Kingstown, the sea, and a dozen ships. The peculiar texture and form of each object are beautifully rendered. Another view, taken at Kingston, having her Majesty's ship *Ajax* for the principal object, is also a noble picture. With a bright but nicely chequered sky in the background, every rope and spar stands out clear and distinct ; and the sea and town are as effectively caught as in the one just referred to.

"It is obvious that to have successfully depicted rising wave, ever-changing light, and shifting cloud, Mr. Breese must have taken his picture by an instantaneous process. Another of the series, representing Powerscourt Waterfall, in the county of Wicklow, shows this still more strongly. In all the photographs of this kind which we have previously seen, the descending water has usually assumed the appearance of an enormous whitey-blue table-cloth, hung for drying purposes over the face of a very indefinite cliff. This was owing to the length of time which the process usually occupied. The cascade was allowed to photograph itself over and over again. Instead of a dashing steam, breaking on a hundred points, and surrounded by clouds of spray painted in all the hues of the rainbow, it became infinitely less picturesque than would have been a photograph of Kitty of Coleraine's milk pitcher at the moment of the catastrophe celebrated in Irish song. But with Mr. Breese's camera and hood in its neighbourhood, Powerscourt Waterfall assumes a very different aspect. Its leapings and dashings, its gradations of volume, its very spray, are all painted in a way we could scarcely have believed possible ; while the tree standing out grandly in the foreground, with the slaty rocks on either side, are given with such solidity and minuteness as to prove that the subtlety of the instantaneous process used by the operator does not involve a sacrifice of power.

"Having thus cursorily glanced at a few of the long series of landscapes which Mr. Breese has taken, we turn to one or two of local interest. It would have been a pity had we not possessed some worthy record of the most stirring day Birmingham is likely to see during the present century, but the sketches furnished by the illustrated newspapers on the occasion of the Queen's visits to the town were either caricatures or characterless. However, as far as photographers generally were concerned, the 15th of June was so intensely bright, the rays of the sun so scorching powerful, that the most expert and careful professionals failed in nearly every case to produce a satisfactory result. Though from thirty to forty gentlemen were stationed with their cameras at various point of the royal progress, we had not seen one tolerably good picture until two taken by Mr. Breese were shown us. They represent respectively the arrival and departure of her Majesty from the Town Hall. The views were taken from the offices of the Birmingham Canal Company, at the top of Paradise Street, and of course include all the features of the sea of life which ebbed and flowed so strongly on the eventful day betwixt that point and Christ Church. Pictures more full of animation it is impossible to conceive. The arrival scene shows the crowd literally on the tiptoe of expectation, several groups near the artist being caught in the most picturesque and amusing attitudes. While some are content to clasp the pillar of the great lamp, others, in the forgetfulness of their loyalty, have their arms round the waist of wife or sweetheart, unaware that a gentleman behind was handing them down to immortality in that loving fashion. The dense crowd, the thronged windows, the decorations of private and public buildings, the line of Hussars, the carriage of Her Majesty, the Christ Church platforms, the very hour at which the Queen arrived — all are as distinctly and individually visible as if they had been painted by Horace Vernet, life size, for a national picture, though the plate is not more than an inch-and-a-half in diameter. The "departure" is equally remarkable for its amusing fidelity. The crowd is beginning to separate ; bare-headed Councillors are running about in search of their carriages; but rapid as their movements are, they are not quick enough to prevent Mr. Breese's wonder-working camera seizing their lifted leg, and showing it suspended in mid-air. One gentleman is caught in the very interesting operation of applying his handkerchief to his nose. We question if street scenes at all equal to these have ever been produced in England or elsewhere, whether regarded as works of art or of photographic science and we think it a pity they have not been published.

"We are much mistaken if there is not involved in the process by which these pictures are taken another advance towards that perfection which will no doubt, ere the century closes, find the sun no longer a mere etcher of blacks and greys, but painting a portrait and limning a landscape with the gayest colors which the chemist's laboratory affords. We believe that one or other of the chemicals used by the gentleman of whom we have been speaking is of a more senitive nature than is commonly used, but probably dexterity of manipulation, and skill in the treatment of the plates, has much to do with the production of these pictures. One fact we happen to know. They are so instantaneously taken that the merest flash of light upon the camera is amply sufficient for the completion of the process. The ordinary movement of the hand not being quick enough, Mr. Breese is contriving and apparatus to ensure the greatest possible celerity."

RECIPE FOR IODIZING SOLUTION.

The potassium iodizing solution is made by dissolving about 14-grs. of iodide of potassium in one ounce of alcohol, S. G. ·825. The salt dissolves with difficulty in the alcohol, and must be previously powdered in a mortar. If absolute alcohol, S. G. ·794 can be procured, it is a good plan to dissolve the 14-grs. of iodide in 45 minims of water, and then add absolute alcohol to make up the ounce. Iodide of potassium is freely soluble in less than its own weight of water, but difficultly soluble in alcohol.

BIRMINGHAM PHOTOGRAPHIC SOCIETY.

WINTER SESSION, 1858.

The Vice-President, W. Howell, Esq., in the Chair.

The members of the above society held their first meeting of the present session at Odd Fellows Hall, August 31st, 1858.

After the usual business, a paper was read by Mr. H. Branthwaite, F. S. A., upon

THE CHEMISTRY OF PHOTOGRAPHY.

Mr. Chairman, Ladies and Gentlemen :

The past half of the nineteenth century has been prolific with discoveries the most useful, interesting and fascinating. Human minds have given birth to ideas, vast, and for a time so transcendently above the thoughts of the masses, that they have been voted as impossibilities. Intellect has been developed to such an extent that but for the fact of our having grown up amidst the results, they would have appeared but as the imagination of some madman's disordered fancy, and time would fail me to enumerate all the discoveries and improvements which have been made, tending morally and socially to elevate man. The last and greatest of these triumphs has but just been issued victorious from its almost overwhelming difficulties, and is now thrilling the whole world with wonder and admiration, whilst with the rapidity of lightning the glorious news is flashed across the broad Atlantic, that, "England and America are united, glory to God in the highest, peace on earth, good will towards men !"

Amongst all these inventions, that which called into existence the society before which I have to-night the honor of appearing, claims a prominent part, whether as Sparling says, "It be used as an assistant to the artist, or a means of sending home from far off scenes of war and bloodshed the portrait of a friend, or perhaps the spot on which he died or conquered, for what can equal its truthfulness ?—what can surpass its beauty ? The art has been made subservient to the purposes of the artist, the naturalist, and the mechanic, and even to the antiquary who

Bending o'er some mossy tomb
Where valor sleeps,

may be enabled to preserve a lasting memorial by this science."

So much having already been written upon what is really known of the "Chemistry of Photography," renders the preparing of a paper upon the subject a matter of some difficulty, when we consider that notwithstanding its achievements and rapid progress, we have to confess that it is still encumbered with the long clothes of infancy, and although we are perfectly aware that such and such manipulations and processes will yield such and such results, yet why this is so, or what is the nature of the chemical action, upon the substances employed in the production of the photographic image, is not yet understood and may fairly be classed amongst those mysterious chemical changes constantly going on, and for which we are totally at a loss to account. Every photographer has found in his practice, be it amateur or professional, that disappointments and difficulties are ever besetting his path, and as yet he has no certain course to pursue in order to discover the source of these annoyances and avoid them in the future ; our certainties are based upon the results of experiments, tried in order to obtain good pictures, and I must confess myself, as far as I have been able to judge, some of the best photographs I have seen have been produced by mere rule of three practice, by individuals who neither had nor pretended to have any knowledge of chemistry.

It has long been known that chemical changes, both of combination and decomposition, but particularly the latter, could be effected by the action of the sun's rays. This effect at one time was attributedto its luminous rays, but it is now proved beyond donbt, that these changes are produced by an imponderable yielding neither light nor heat—to which the term actinism, or chemica power, has been applied. The point at which the greates amount of chemical action is exerted, is at the verge of the violet part of the prismatic spectrum, as seen in the diagram, A representing the actinic rays arriving at their maximum power, first beyond the violet, decreasing in intensity till it reaches its minimum at the yellow. From thence it is again augmented till it reaches an apparent maximum at C, the red. The luminous rays it will be seen are wholly confined within the spectrum, commencing only at the point where the actinic have arrived at their maximum, and reaching their greatest intensity at B, the yellow. The calorific or heatgiving rays likewise take their rise at or near the violet, and arrive at their maximum at D, extending far beyond the luminous spectrum. By thus analysing the sunbeam it is found to possess three elements, which although closely associated with each other, yet have properties diametrically opposite, the actinic or chemical power arriving at its full strength at the weakest points of the luminous A, calorific. It will be well to notice here the reason for admitting yellow light only during the manipulations in photography. The actinic rays A having ceased to exist, when the luminous, B, have arrived at their maximum.

It has also been proved that more of the actinism is present at certain hours of the day and particular months of the year. During the day we have it most between the hours of 8 and 12. In the year it is found to reach its maximum intensity in the Spring months, becoming less in Summer and Autumn, when the luminous and calorific preponderate. In proof of this, various experiments have been tried by Hunt in the course of the germination of seeds. Having found that germination went on more rapidly under blue glass, representing actinism, he was led to have a cucumber frame glazed with blue. The result of this was, that although the seeds germinated fast enough, the plant was diminutive and yielded nothing, having all run to stalk void of chlorophy, (or the green coloring matter to be found on all plants) ; by this experiment, which, although it failed to produce cucumbers, yet it proved to him the fact, that germination depended upon the actinic power of the sun's rays, and convinced him that something more was required for the production of leaf ; his next experiment, therefore, was to follow the course of the spectrum, and try the effect of yellow glass, by which means he concentrated the luminous rays : his plants grew rapidly and most luxuriantly, but they yielded no fruit. One course only was now open to him, and being determined to work out his experiment, he had recourse to the calorific represented by the red, having a frame constructed of that color, and found by this that the fructifying principle was so augmented as to produce more and finer fruit than under any other condition. From these experiments he deduced that actinism produced germination, the luminous developed the plant, the calorific the fruit. This analysis of the sunbeam may have appeared somewhat irrelevent to the subject, but I hope to prove by it, that it is to the actinism, and the actinism alone, that we have to look for the chemical changes effected in the production of the photograph. The germination of a seed is purely a chemical change, depending upon the actinic rays, and cannot be effected by either the luminous or calorific. The same may be said of the photograph : its production depends entirely upon actinism, and the same results would not be, if we could shut out the actinic and use merely the luminous and calorific. Almost all other chemical changes may be traced to well-known laws of chemical affinity, but in the germination of a seed and the photographic process, the force which we call actinism interferes as it were with the regular laws of chemistry, causing pheunomena which we are able to view without having the knowledge to unfold.

In speaking of the chemical agents used in photography, I must at the outset give it as my firm conviction that most of the failures of the photographer may be traced to the impurity of the chemicals used. In many instances this arises from carelessness of preparation, but in many more I am afraid from the dishonesty of the trader, who in his love of gain sacrifices the interests of customers, in which of course he is supported by parties who unhesitatingly say sacrifice success to cheapness.

The salts of silver are the most acted upon by the actinic rays The nitrate is the most permanent of these salts and may be kept either in crystals or dissolved in distilled water, even in the diffused light of the day, not being susceptible to the decomposing influence of the chemical rays till it has come in contact with some organic matter. Its permanence is attributed to the nature of the acid, which, with the oxide of silver, enter into combination, the effect of which is neutralised on its being brought into contact with organic matter. In the collodion process of course, that organic matter is the collodion which retains the iodide of silver and forms the sensitive surface.

From the important part nitrate of silver holds in our manipulations, being the ground-work of the chemical action of the actinic rays, it must be evident that its purity to the photographer is a matter of vital importance—the manner of its preparation is so well-known as not to need any description. I should strongly recommend every photographer to submit his nitrate to thorough testing before used ; sometimes we find a quantity of free nitric acid, which of course the test-paper will readily detect, and may be easily thrown off, by placing the crystals in a porcelain or glass vessel and holding it over boiling water till the silver is heated to a few degrees. As nitrate of silver is often adulterated with nitrate of potash, from its similarity and ready fusibility, I should next proceed to test for this, which may be done by making a solution of say five grains in half-an-ounce of water ; in this, saturate a piece of bibulous paper, and if nitrate of potash be present, even to the extent of 5 grains in 500, it will be readily detected by the paper burning in a similar manner to a fusee, which neither ordinary paper nor that soaked in a pure solution of nitrate will do. A further test may be used as follows : to a solution of chloride of sodium, 6 grains to the ounce, add a solution of nitrate of silver, 17 grains to the ounce ; the whole of the chloride in the chloride of sodium will be precipitated if the nitrate be pure, but if, on the addition of more nitrate solution, a further precipitate takes place, it is a clear proof that some adulteration of most likely either copper or nitrate of potash is present, both of which are alike objectionable in photography. It is sometimes a matter of importance to be able to determine the strength of the nitrate bath after it has been in use for some time, and I regret that Professor Medlock, with whom I have been in correspondence on the subject, was compelled to visit Switzerland before he had supplied me with his apparatus for easily determining this. It is done by means of a cubic centimetre measure and a standard solution of chloride of sodium of such a strength as that 10 cubic centimetres should precipitate 3 grains of nitrate. This would be an easy way of ascertaining the strength, and as soon as I am in possession of full particulars, I shall have pleasure in communicating them to the society. The plan I at present adopt is as follows : Dissolve 6 grains of chloride of sodium *Rue* in 34 fluid drachms of distilled water ; this I call standard solution, No. 1. I then take one drachm of the bottle to be tested and add to it 1 ounce of distilled water, which we will call solution No. 2. I then add drop by drop of No. 1 to No. 2 as long as a precipitate is given. Every drachm of No. 1 used represents half-a-grain of nitrate of silver in No. 2. Therefore all that is necessary is to multiply by 8 and the product will give the number of half-grains in an ounce.

Before leaving this part of the subject I may just state that I have been informed by a photographer of some fifteen years standing, who gives it as the result of many experiments, that for every ounce of collodion that passes through the bath, the solution is robbed of five grains of nitrate of silver Great care should always be taken to keep the nitrate bath from the light, for although pure nitrate of silver solved in distilled water as I before stated is not affected by exposure, yet, after it is brought into use, each plate that is dipped leaves behind it some portion of organic matter, which, in conjunction with the oxygen, causes decomposition. This may be illustrated by exposing to the sun two bottles containing solution of nitrate of silver, into one of which some organic matter has been put.

Iodide of potassium is the next article of importance to the photographer, and one which it is difficult to obtain pure. This arises either from use of an impure carbonate of potash in its preparation, or of carbonate being added to too great an excess ; if the first be the cause we shall have the impurity consist of sulphate of potash or chloride of potassium , if the latter, we have an excess of carbonate. This is easily detected by the addition of lime water, which will cause a precipitate.

In the nitrate of silver and the iodide of potassium we have the two elements forming the iodide coating ready for exposure in the camera, when the actinic rays reduce the silver, which is deposited in minute particles upon the organic matter (collodion). Their capability of doing this is shewn by the following experiment :—Suspend a piece of charcoal in a solution of nitrate of silver of any strength and expose in the sun-light, when the metallic silver will be deposited in beautiful crystals, and this will continue until the whole of the silver is reduced.

The next subject is the developing of the latent image, and no point in photography appears to have been more contested. After reading considerably on the subject, my own opinion is that the developing process is but an extension of the reduction of the salts already commenced during exposure in the camera, in which the actinism has partly disengaged the oxygen which the developing agent completes.

The only two developers I shall notice, are the proto-sulphate of iron and pyro-gallic acid. The former of these, from its low price, is not likely to be adulterated, but it often happens that owing to carelessness in its manufacture and preservation it contains sesqui-oxide of iron, known by the angles of the crystals becoming yellow or brown ; if they are clear, green, and translucent, we may safely consider it pure. Pyro-gallic acid is produced by submitting gallic acid to a temperature of 430° Faht., and its use for photographic purposes is in a great measure injured if the temperature has been too high, as it causes the acid when mixed ready for developing, to decompose more rapidly ; freedom from color will show that it has been carefully prepared; its impurity generally consists of tannic acid, which may be readily detected by a solution of isinglass, causing a precipitate.

Having now developed the image, it becomes necessary to remove the iodide of silver which has not been acted upon. This is done by what is erroneously termed fixing agents ; for it must be apparent that the image itself *is permanent*, but that part which has not undergone the process of reduction, is still sensitive, and if not well and thoroughly washed away, will in its turn decompose and affect the whole picture. And here we have a great proof of the necessity of free use of water, both after the developing and clearing away of the unaltered iodide ; but if the washing be complete, I see no reason why the photograph ought not to remain forever unchanged either by time or light. The cyanide of potassium is the best clearing agent we can employ, when the iodide of silver is the sensitized surface, as this salt rapidly dissolves in a solution of cyanide ; but in cases of positive paper proofs where we have the chlorides of silver, hypo-sulphite of soda is the best solvent. From the price of these two articles they are not likely to be adulterated, it is therefore unnecessary to enter into any details of tests.

Unforeseen circumstances in business have prevented me giving that time and attention to the getting up of this paper that I should have wished, and that I consider the importance of the subject demands. In conclusion, I can only repeat that the Art of Photography is still in its infancy—that great and glorious discoveries have yet to be made. Let not, therefore, disappointments and difficulties deter us from that amount of perseverance which is necessary to overcome them ; if none of these difficulties existed it would be fatal to the swell of triumph which will attend complete success. Let us then

> " Despair of nothing we would attain,
> Unwearied diligence our point will gain."

Mr. Osborn—By way of commencing the discussion, I would just remark that my experience slightly differs from that of Mr. Branthwaite (unless I have misunderstood him), for I have frequently found a bath considerably improved by an exposure to sunshine ; it seems to clean it.

Mr. Branthwaite—If much organic matter were present you would find the silver would be reduced very considerably.

Mr. Osborn—In allusion to the impurities of nitrate of silver, I had a bath which gave me very bad pictures, or I should say no pictures at all: the plates decomposed all over; on testing the nitrate of silver, nitrate of potash was found. A second bath was made and went on very well for a few days, but gradually began to give the same results. Being considerably annoyed and puzzled, I was led to make some enquiries respecting the locality of my operating room (as I was in a strange place), and I found that a quantity of chloride of lime had been thrown down a drain close by, and the vapor of the chlorine had converted the film into chloride of silver. On removing to another room all annoyance ceased.

Mr. Harris—I cannot conceive it possible for nitrate of silver to be adulterated with nitrate of potash without being at once detected, as the crystals are so widely different. I should have thought the merest tyro would have seen the impurity.

Mr. Howell—You must recollect that there are a great many photographers who are not at all acquainted with chemistry.

Mr. Harris—The crystals of nitrate of silver are flat, while those of nitrate of potash are like needles.

Mr. Howell—Would it not be likely that the needle-like crystals would be broken down into dust and so lose their character, and therefore pass undetected by inexperienced persons.

Mr Morris—I have great pleasure in moving a vote of thanks to Mr. Branthwaite for his valuable paper. I would observe that I differ from him on the subject of the impurity of cyanide of potassium: some samples I have seen only contain 2 ozs. of cyanide to the lb. Hypo-sulphite of soda is also often adulterated, but not so much.

Mr. Ball—I beg leave to second the vote of thanks, and have felt highly interested by the paper and the experiments, but must endorse Mr. Morris's opinion respecting the cyanide of potassium. I have seen some sold to photographers not worth 2d. per lb. Extreme whiteness is not a test of purity, rather the reverse; in fact, the purest sample I have met with is of a dirty brown color.

The Chairman—In presenting a vote of thanks to Mr. Branthwaite for his interesting paper, &c., I feel very forcibly that it is one of a class of papers we much want, eminently practical, scientifically treated, and generally useful. I hope we shall have many such.

The members of this Society mustered in great strength on Tuesday, September 28th, and the result was a very interesting meeting.

After the minutes had been read and passed, the Chairman called upon Mr. Percival Jenns (a non-member, who had kindly offered to read a paper and exhibit several interesting experiments,) to read the following paper:—

THE CAMERA OF NATURE.

In tracing the analogy between the human eye and the camera, it is not my intention to fathom the ocean of time, and dive into the mysteries of the science of optics, as known to the Chaldeans and Egyptians, or to penetrate into the vague hypotheses of Pythagoras, Aristotle, Euclid, or Archimedes, or any others of the primæval schools of philosophy; far easier would it be to become the encomiast of so august a science, than to trace its history, or to follow its progress from the first bursting forth of the embryo germ, to the full development of the perfect plant and ripening fruit. I shall therefore confine myself wholly to those laws of the science which have been deduced from satisfactory experiments by our best authorities in modern times. Consequently, out of the multitude of hypotheses that have from time to time been fabricated for the purpose of unfolding the nature of light, I shall only take notice of two, viz: the atomic and undulatory. But as the atomic will not explicate the latent cause of many of the beautiful phenomena of light; which phenomena may easily (in most cases) be explained by the undulatory, I propose not to dwell upon it more than to take notice that it comes next in importance to that of the undulatory.

Now, by the undulatory theory, we are led to suppose that all space (that is to say as far as we have any notion of,) is filled with an imponderable fluid capable of receiving vibrations from a luminous body.

Thus, by the decomposition of coal gas by combustion, we can trace the union of the oxygen of the atmosphere with the hydrogen, and afterwards the carbon of the gas. But we cannot trace any corpuscles of any description, that are evolved to produce light according to the atomic theory. On the contrary, if we weigh the equivalents of carbon and hydrogen contained in the carbonic acid and water, produced, we shall find them exactly of the same weight as before they were disintegrated from the gas. We are, therefore, led to suppose that the light has been produced, not by the disengagement of any particles, either of matter or of the latent sun's rays, but by an undulation created during the decomposition in that imponderable fluid that has been called ether.

We shall therefore consider white light, not as being made up of three colors; but that all colors are produced by the difference of velocity of the undulation. In the same manner that the numberless multitude of sounds are only the result of the difference of the undulation of the atmosphere.

The eye is the camera constructed by Omniscience, and is so formed as to be made susceptible of the most delicate of these undulations. It is somewhat analogous to the tympanum of the ear, which has the power of receiving the most gentle vibrations of the atmosphere. Inasmuch as the one gives us the sensation of light, and the other sound.

We shall do well to consider minutely the construction of this marvellous little camera, for undoubtedly the nearer we bring our artificial ones to it, the nearer will they approach perfection.

On glancing at the diaphram, we shall observe at once, that there is great similarity between them. The sclerotic membrane forms the case of the camera; the choroid being covered with a black pigment, represents its dark lining. The cornea is a transparent substance, composed of a number of thin foils, for the purpose of giving it strength; and covers the front of the eye, and protects it from external injury. The retina is an expansion of the optic nerve, and is analogous to the sensitive plate in our cameras, for it receives the whole of the picture, and by the agency of the optic nerve it is transmitted to the brain. The lens, which in the natural camera is called the crystalline lens, we shall consider more fully when we have taken a casual glance at the two primary laws of optics, viz: refraction and reflection.

By refraction we have to consider the bending of the rays of light when passing from one medium into another of a different density. Thus, when a beam of light passes from a rare medium into one of greater density, it becomes bent towards a perpendicular drawn from its surface; and when passing from a dense into that of greater rarity, the reverse takes place, and it is consequently bent away from the perpendicular. We must here take notice that if the rays fall perpendicularly they suffer no refraction. For example, when the rays of the sun are in a line with the horizon, they become refracted upon entering the atmosphere, and give us the idea of his being higher in the heavens and larger than his apparent size; but when in the zenith they fall in a direct line, and consequently suffer no refraction, and present to us his true position and apparent dimensions. Whereas, when we view the bottom of a stream at an angle from its surface, we are deceived in its depth, it appearing much more shallow than it really is, because the rays of light, having been reflected from the bottom, have to pass from a dense medium into one of greater rarity; consequently, by their being bent upwards, we have the impression of the water being of less depth. How marvellous, when we contemplate, that upon this one simple law depends the whole of the beauty of our refracting optical instruments! Thus, by forming a dense medium in the shape of two spheres cutting each other, and of such a substance as glass, we produce the magnifying lens, without which our cameras, telescopes, microscopes, and even the camera of nature, could have no existence.

[The action of a convex-lens in bringing rays to a focus was here explained.]

It will now be seen how the double convex-lens of our camera of nature has the power of collecting the rays of light that are reflected from surrounding objects, and bringing them to a focus upon the retina, and thus impressing it with the miniature picture of the scene towards which it is directed ; in the same manner that the lens in our photographic camera transmits the rays and impresses them upon the prepared plate. We might here take notice of one perfection in the natural camera that we can never hope to be able to imitate in the artificial ; that is, the circular form of the retina upon which the picture falls.

To regulate the amount of light that enters the natural camera is a very beautiful contrivance, known by the appellation of the iris, and is so constructed as to be able to open and shut according to the amount of light present. Here we have the representation of the diaphrams used in the photographic camera, but being vastly superior to it, in being self-acting ; for all photographers know that it is one of the most difficult things they have to contend with to get exactly the requisite amount of light upon their prepared plate. How beautiful then is Nature in all her laws ! and what vast amounts of wisdom we may gain by observing and studying her most trivial phenomena.

Having thus superficially glanced at the law of refraction, let us incline our attention for a few moments to that of reflection. Firstly, we shall observe that the sun's rays, upon being reflected upon a smooth surface, follow the same rules as those of the ponderable elements, that is, that their angles of incidence are equal to their angles of reflection. Secondly, that all things are seen by reflection, for the light must first fall upon the object and become reflected within the field of our vision before we can be made sensible of its existence. Upon the former depends the power of all our beautiful reflecting optical instruments, whether it be the telescope, microscope, or looking-glass ; and upon the latter, our sight of all-existing things save self-luminous bodies. In speaking of the colors produced by reflection, I might here notice a phenomenon that has always made me strongly in favor of the undulatory theory. If we take a piece of slate that has been perfectly hardened and polished, and heat one end of it in a flame, we shall observe, as it rises in temperature, the whole of the prismatic colors formed upon its surface ; but not in the order of the spectrum, the yellow appearing first, then the red, and lastly the blue. Now, it is well-known that steel tempered at yellow, is the most hard, and at blue the most flexible. It is therefore manifest that the heat has only separated the atoms of the metal at different distances from each other, the blue the most, and the yellow the least. Moreover, it is clear that the molecules of which the steel is built up, must have become sufficiently separated to allow of their free motion, before it could be rendered flexible. If, therefore, its atoms *have* removed slightly from each other, they must have left small spaces between each, capable of altering or retarding the undulation of light that falls upon them ; now, as the yellow are nearest together, it is natural for us to suppose that they would produce upon the undulation the least change, and so it is, for we find that they reflect that which we call the luminous ray ; whereas the blue, which are the farthest apart, would physically produce the greatest change, and consequently we find them reflecting that color which nearest approaches to black. We are, therefore, led to suppose that the colors of all objects are nothing more than the result of their different surfaces, and the power they possess of reflecting in a more or less perfect degree the undulation that falls upon them. What can be more grand, and what more beautiful, than the contemplation of so wonderful a contrivance, to present to our view the multitude of colors in all their richness that adorn our finest landscapes ? And whether we look at the tints of the morning sky, the blush of the opening rose, the shades of the mighty forest, or the brilliancy of the mineral crystal, we cannot but be struck with wonder and admiration at the beauty of that law, which furnishes such a multiplicity of exquisite phenomena for the gratification of our intellectual pleasure.

Having considered (altho' in a very superficial manner) the two primary laws that govern the science, and the mode by which we are made sensible of the external world through their instrumentality, let us give our attention for a few moments to the great source from whence we derive our light. We are told in Genesis that in the beginning (that is as far as the creation of this planet is concerned) the Divine command went forth, "Let there be light, and there was light ;" or, according to the modern exposition, "Let light appear ;" for it will be manifest that either of these will signify the same thing, as it is evident that it has relation only to the new-born world, as it had recently come forth from its mother nature, and permitted for the first time to behold the light of the great monarch of the solar system. Now, upon inquiring into the nature of this light, which we have every reason to suppose has possessed the same properties ever since the Cosmogony, we shall find that whether it be produced by atoms or undulations, it is closely associated with two other principals, which, although vastly different in their physical properties, cannot be wholly separated from it, viz : caloric and actinism. However, it yet remains to be proved whether this heat and chemical radiant power does not result from a different manifestation of the self-same principle. However, be this as it may ; we know that the combined efforts of these three properties of the sun's rays, enabled the seed in the new-born world to burst from its latent embryo and cover the earth with "grass and herb, yielding seed, and the fruit-tree, yielding fruit after his kind, whose seed is in itself ;" so that when man was created and furnished with a double "camera of nature," he might be able to view with stereoscopic beauty, the many wonders of that planet, over which, for a time, he has to have dominion. In conclusion, though I may not this evening have broached anything but what all present are familiar with, still I trust that what has been said may serve the purpose of refreshing our memories and making us bear more in mind the marvellous construction of that prototype of which our photographic camera may be considered the type ; and doubtless the nearer our artificial ones approach that of Nature's, the nearer will they approach perfection. Moreover, what science is there that is at all times more worthy of our perusal and study, than that of optics ? For if we reflect that it grasps at the two infinities and brings them as it were nearer to our comprehensions, (the infinitely large on the one hand and the infinitely small on the other,) we must feel that there cannot be a more soul-ennobling study, or one that can give us a more clear insight into the profundities of creation. For if we soar with the telescope into the far distant heavens and contemplate the myriads of worlds revolving in the most perfect order ; or view with the microscope a single drop of water, containing thousands of living creatures, all perfect in their organization, the weakest mind must expand with gratitude to the Great Omnipotent who has shown such power and glory for the instruction and happiness of His creatures, and be ready to exclaim with the Psalmist, "Great and marvellous are Thy works, Lord God Almighty !"

In the course of the reading of the paper Mr. Jenns exhibited a beautiful preparation of the eye of an ox, and explained its structure and the analogy between it and the ordinary camera. He also exhibited the experiments of producing color, by the mixture of colorless liquids, the effect being to change the geometrical form of the atoms, and so render the body reflective of different colors.

The thanks of the meeting having been given to Mr. Jenns for his able paper, Mr. Osborn rose to introduce to the meeting Herr Pretsch, who had kindly come down from London for the purpose of explaining to them the Petzval Lens, and also to show the pictures produced by it. He would also explain some portions of the photo-galvanographic process. (Cheers.)

THE PETZVAL LENS.

Herr Paul Pretsch exhibited two specimens of the Petzval Lens, with a large number of photographs, taken with the instrument. The photographs consisted of portraits and large views, by Rejlander, Llewellyn, Horatio Ross, and other well-known artists; they speak very highly of the capabilities of these lenses for landscape purposes. Most of the pictures were of large size, well-defined, sharp to the edges of the picture, and the lines perfectly straight. The distortion usually complained of in landscape lenses seems to be totally got rid of, and the resulting pictures were (even with the full aperture,) very straight in the lines. The distances, too, are well preserved and faithfully rendered; there is a total absence of the blurring at the corners so often painfully apparent.

The Photo-galvanographs consisted of several unpublished specimens of the process—the greater number quite untouched; and, (with all due deference to the inventor), there was far more artistic beauty in the untouched specimens than in the doctored ones; for instance, the Bed of the Garravalt, by Roger Fenton, (the master of landscape photography,) would lose a great deal of its grandeur by the addition of any touches of the graver.

Our readers will be already familiar with the description of the Petzval Lens, from the correspondence in the journals on the subject. It will suffice, then, to give but a few of Mr. Pretsch's remarks, the whole of which were highly interesting and instructive.

Mr. Pretsch observed, in reverting to the early lenses, that Daguerre had used the lens of a telescope, reversed, and although slow in its action, this form of lens gave very good pictures. After some little time, Professor Petzval, of Vienna, introduced the well-known portrait combination, and about a year since the Professor completed the calculations, which have resulted in the form of lens just introduced.

The radius of the ordinary portrait lens is in a curvature of 16-ins., while in the Petzval combination it is only 8-inches, thus giving a flatter and brighter picture. The new lens then possesses superior and peculiar properties, and we claim for it three capabilities, viz: 1. Perfect sharpness of delineation to the edge of the picture. 2. Correctness of perspective. 3. Proper effect of distance.

If the operator has proper time and distance of station to choose from, and can select his own point of view, then, with a small diaphram, it is not to be denied that the ordinary view-lens will produce very good pictures; but these requirements are not always to be met with. [The large lens exhibited had a focal length (for views) of 26-ins., and a combined focus of $8\frac{1}{2}$-ins., the portrait combination taking pictures $8\frac{1}{2}\times6\frac{1}{2}$. The smaller lens, for views only, had a focus of 18 ins., and covered a plate $13\frac{1}{2}\times11$. The full combination consists of three pairs of lenses only, two pairs of which are required to be used at once.] Mr. Pretsch observed that it was necessary, in some cases, to have a camera constructed for the purpose, with a swinging back, so as to adjust for near and distant objects, also for foreground and sky; for copying maps, and other surfaces of that kind, the article should be slightly curved, as in the case of arrangement of groups.

PHOTO-GALVANOGRAPHY.

Mr. Pretsch then proceeded to explain the details of his Photo-galvanographic process. He stated that by its means any picture that could be rendered transparent could be copied, and that by the powers of re-production the supply of proofs was unlimited. He alluded to the advantages and permanency of printer's ink over the photographs, not only in the command of the tone produced, but in the durability. The problem of engraving by light had occupied the attention of scientific men ever since the discovery of photography, and various means had been tried, such as etching, to engraving, partly by light and partly by hand; but his process, when brought to perfection, would be independent of all extraneous help; it would be a purely natural process; the picture would be drawn by light and engraved by electricity. As regards the touching up of some of the plates, that was at present unavoidable, but he hoped it would not be necessary in a very short time.

In alluding to Mr. Fox Talbot's new process, Mr. Pretsch said, that a gelatine preparation similar to his own was used but for the purpose of regulating the permeability when etching upon the steel. By the new processes just patented the copper plates might be made as hard and as durable as steel. (Applause.)

[The engravings and photographs exhibited by Mr. Pretsch were the theme of general admiration to a crowded audience.]

Mr. Rejlander, in moving a vote of thanks to Mr. Pretsch for his very interesting communication, said, that he had tried the Petzval lens, but was not quite used to it at present; its action, in one or two cases, had been so rapid, as to produce overdone pictures in less than one second. He should, however, continue his experiments, and would communicate them to the society.

Mr. Osborn then read a paper, communicated by Mr. Sutton, of Jersey, entitled, "Suggestions for some Improvements in the Camera, and Mounting of Lenses." (*See page* 306.)

A vote of thanks was given to Mr. Sutton for his paper, and also for the present of his dictionary to the Society's Library.

Mr. Osborn, in acknowledging for Mr. Sutton the vote of thanks, said, that the society was greatly indebted to the gentlemen who had given them papers that evening, and who, at the cost of considerable time, labor, and expense, had favored them with such information. He was glad to see such a numerous attendance, and while the council would spare no trouble to render the meetings interesting, he hoped the attendance of the members would continually increase. He regretted that there was no time left for the discussion of the papers they had heard, but he would propose that the after part of the next meeting should be devoted to that purpose.

It was then announced that the next exhibition of the society would be opened at Aston Hall, on the 1st of March, 1859, so that the members would have plenty of time to prepare specimens. The managers of Aston Hall had granted them the use of a room as a permanent exhibition.

From Photographic Notes.

RECOLLECTIONS AND JOTTINGS OF A PHOTOGRAPHIC TOUR, Undertaken during the Years 1856-7. *

BY J. W. G. GUTCH, M.R.C.S.L.

Judging from the multitude of artists that one meets wherever one wanders in the Lake District of Cumberland and Westmoreland, I should think that more umbrellas, palettes, portable easels, and all the usual artist's paraphernalia, are consumed there, than in any similar given area that is to be met with in any other part of our Island; but notwithstanding all this evident attraction, I am not quite sure that it is pre-eminently the country for the *Photographer*. I was able, quietly and leisurely, to wander through all this favored district, and with camera in hand, and therefore I speak not unadvisedly. That the Tourist meets with many a striking and eligible bit of scenery in each day's perambulation, and well calculated for the photographer, I will not deny, but I think 'tis better fitted for the brush and the painter; the distances are too great, the pictures too large, and the aerial perspective, which gives such a charm to the Lake scenery, unattainable in photography, at least to that extent which will do justice to the unrivalled scenes that have met one's eye. I will quote as examples the Waterhead end of Windermere, with all that glorious grouping of distant mountains, bright, sunny, and with ever-varying aerial effects, unattainable but with the aid of color, for to color is the principal charm and beauty owing. The same may be said of the Borrowdale end of Derwentwater. I several times tried this in the camera and gave it up as hopeless; still, many isolated spots are eminently beautiful as photographs. Furness Abbey alone is worth many and many a mile's journey, and will amply repay any one for the pilgrimage. I spent three days here, and worked hard too, for the beautiful parts of this most picturesque ruin are endless. I would specially signalize the east window, a good view of which is attainable from the rising ground op-

* Continued from page 231, vol. xi. no. viii.

posite to the Druid's temple, near Keswick, from its perfectness and antiquity, and the panorama of Hill's Island makes an admirable picture. Bonness, Ferry Side, Uray Castle, Coniston, the Baider Stone, and Honister Crag, all make good subjects The Falls, concerning which so much is said, did not at all equal what has been written concerning them : a scarcity of water too—a sad want—which is often to be met with in the summer months. Several times I have seen Lodin fall, with scarce anything more than a thread of water leaving the wide chasm, with the marks only of where, in the winter months, the rush of water has worn its way into the crumbling rock. To those who possess the means of taking instantaneous pictures, many of these, as for example Scale Force, Lodore Fall, Rydal Fall, &c., may prove acceptable ; but as they are generally produced with the water looking like a solid, still, and heavy mass, and losing all its lovely and ever-varying effects from movement, which, except it be caught instantaneuosly, it is utterly impossible photographically to display. The small stereoscopic pictures perhaps convey the best idea of these Falls, and from them (many of them being done with a patent lens and instantaneously) a much more truthful and pleasing effect is obtained.

The homes of Coleridge, Wodsworth, and Southy, are to my mind unpicturesque enough. I took these as a matter of course, but not often, on looking at them, wonder that they were content with such abodes. I can only suppose the natural scenery that everywhere met their eye compensated them for the unpicturesqueness of their habitations. What, I would ask, can be more hideous than Southey's House at Keswick ? for, shut in on every side as it is with trees, can the views, obtainable with difficulty, be said to compensate one? nor is his tomb, on which £1500 was spent, better. This, as is well-known, is in Cresthwaite Church, Keswick,—a full length recumbent figure, tasteless, and little worth what it cost to erect. Three months' pleasant wondering will soon slip away in this fairy land ; they should be in mid summer, for as the days shorten and the shadows lengthen, and with the masses of foliage, one misses all the deliciously bright and sunny effects that here so peculiarly throw a charm over the landscape. I accomplished fifty views of various parts of the Lake District, and was quite satisfied with my exploration. A week's revel amongst the treasures of the Art Exhibition at Manchester formed a most agreeable *entr'acte* to the Summer's drama, and the camera remained closely shut up and unused, for verily, had one's time not been wholly engrossed in the Art Treasures Exhibition, there is nothing in Manchester that could by any possibility tempt one to perpetrate Photography. At the expiration of the week I was not sorry to bid adieu to the smoke and cotton palaces and find myself at the most quaint and picturesque town, Chester ; for September and October still remaind unappropriated, two months of the year, which (now that the seasons are not what our forefathers used to call them), oftentimes afford the tourist the finest and brighest days, and specially favorable to the phographer, waiting, as they do, the excessive glare of July and August. At Chester one may linger with no small benefit ; the street architecture, for an English town, being antique and highly picturesque. The Cathedral and St. John's Church and attached Chapel all being very beautiful and affording capital work for the camera; the views around too are very satisfactory; Llandudno, a new watering place of only seven year's growth, was the next place visited, being situated three miles from the Conway station. With Conway Castle I must own to a feeling of disappointment. It is more picturesque from a distance, the interior presenting but few points of interest. On the road to Llandudno, is Glodeath, the seat of Lord Rostyn, which is very pretty and photographic, if I may be permitted to use the phrase. Llandudno abounds with nice bits; the Great Orme's Head and Little Orme's Head forming the boundaries of the beautiful bay on which the town is built. The fine old and rugged limestone cliffs present plenty of points of great interest. The town too is very picturesquely placed. A month soon slipped away at this pleasant bathing-place, and October still remaining, was decided that Bangor should be the next resting-place, and final one for this year. Here are many points of well-known interest, and all easily accomplished. The Slate Quarries of Penrhyn, Penrhyn Castle, the Menai Straits and Tubular Bridge, Beaumaris, and Carnarvon, all within easy reach, and presenting most excellent studies for the photographer. But time and tide wait for no man, and the temperature and shortening of the days warned us that our photographic pursuits were drawing to a close, and accordingly, after taking most of the salient points, the camera was finally shut up for 1857, after a most fruitful, healthful and instructive tour, with the acquisition of 180 negatives. The meeting with many old friends, and becoming acquainted with several new ones,—the acquisition of health, and the improvement of mind and body,—who need regret, nay, who cannot but feel grateful, to be permitted such enjoyment?—and sordid and miserable indeed must he be who would not profit by such a tour, enhanced, thanks to photography, a hundred-fold.

Thus, then, let me conclude the Jottings for 1857, in the hopes, that if permitted, I may, in 1858, report fresh progress and fresh experience, for any usefulness that I may be at any time able to impart to any of my fellow laborers in the field is ever a fresh and rich source of gratification to me. Go on and prosper, persevere, and though difficulties beset your path, in the end the accomplishment is all the more gratifying.

THE STEREOSCOPE.

A new article has been introduced into the commerce of art. The Stereoscope, although an invention no longer new, is yet now for the first time brought to New York in manufature, and the exquisite representations of nature and art which have been made by it for a few years past in Paris, London and Philadelphia, are just beginning to find among us appreciation and customers. Those who have seen the marvelous fidelity with which it repeats to us the triumphs of man and the wonderworks of God, the weird trick by which Niagara and the Pyramids are brought before us in all the sublimity of reality, will hardly be able to understand why an art so generally diffused in London that already there are circulating libraries of Stereoscopes, has hitherto found so little encouragement in this country. Yet we are informed by Mr. Beckel, one of the largest importers, that he kept his first invoices for a long time, and was obliged to sell them then far below cost, and in fact that the whole amount sold in this country so far, does not amount to much more than $50,000 at retail, or about half that sum at wholesale.

But now that we have a New York Stereoscopic Company, and the Paris and London-made pictures are becoming so well known that single persons, among them the Preacher of Brooklyn, buy them by the hundred dollars' worth, we should be very unlike ourselves did not New York soon assume the same position with regard to the rest of mankind in the manufacture of the Stereoscope, that she now occupies in that part of the Daguerreotype and Photograph.

Wheatstone long ago invented the Stereoscope—two pictures of the same object, taken from the different points of the two eyes and then united by prism-spectacles so as to give to the combined picture that solid appearance which we see in all nature, but in no single picture. The first Stereoscope pictures made for sale were of statues; they were double daguerreotypes on silver plates, and were far inferior to the transparent pictures on glass which have since supplanted them. Dubosq Soleil commenced the manufacture of Stereoscope pictures of landscapes on glass. He sold them for three dollars apiece, but has been unable to maintain his fame against some of the artists who have since entered the field.

At the head of these stands Ferrier, who has made a fortune of $200,000 since 1854 from the sales of his pictures. His Stereoscope pictures on glass are in such demand that he has recently informed his customers that he can fill no more orders for Stereoscope pictures on paper. His catalogue comprises an immense number of views in Europe, Asia and Africa. He has 150 of Paris; and many of the Provinces of France; considerable number of the Pyrenees, Belgium and the Black Forrest; 30 each of the Rhine and England; 200 of Italy and 250 of Switzerland; 40 of Athens; 100 of Constantinople; and lately he has added to these 100 of Egypt, from Cairo to the Cataracts, from negatives taken by Firth.

MM. Clousard and Soulier, who took the medal at the Exposition Universelle for their maiden attempts in Stereoscopy, have accumulated a large stock of pictures; 122 of Paris; 250 of Germany; 150 of Spain and Algiers. During the Summer they have been taking new pictures in Saxon Switzerland; last year they added to their stock from the Tyrol. To illustrate the care they bestow on their Stereoscope pictures, Mr. Bekel, in whose employ they are, tells us that Mr. Clousard spent three weeks together on the Tyrol without being able to take a single picture, waiting for extraordinary clearness in the atmosphere.

Among other makers in Paris is M. Croupier, who has taken some good views of Russian scenery principally in St. Petersburg, Moscow and Warsaw.

The London Stereoscopic Co., makes more than half the Stereoscope pictures that are made in London. A single section of its establishment has facilities for turning off 1,000 every day. Mr. Williams, one of its principal artists, we met the other day at High Bridge taking views of that noble structure and its beautiful surroundings. He has been through the country during the past Summer. He spent the Summer of 1847 in Ireland. The English groups are widely renowned; groups illustrating any striking thing, from a play at cards to the impediments thrown in the way of lovers by a too extensive crinoline. These groups, it is well to see, are giving place, in estimation of the public, to scenery, for the representation of which the Stereoscope has no equal.

Mr. Langenheim of Phil., has patented an improvement on the early French Stereoscope pictures on glass. It consists of a plate of ground glass behind the picture which renders the ground glass in the instrument for holding the picture unnecessary, and so, by dispensing with one glass, secures a better picture. The French makers use the invention, and say that it was used in France before he patented it. Mr. Langenheim has a number of views taken in this country: 14 Summer views and 4 Winter views of Niagara; 4 of Quebec; 5 of the White Mountains; 18 of the Hudson; 5 of the Catskill Mountains; 9 of New York; 7 of Philadelphia; 9 of Baltimore, 7 of Washington; 8 of Boston; 6 about the Pottsville Coal Region, and 4 of Genesee Falls. He colors his views, the French say, because they are not so clear as theirs. However that may be, they are very fine.

A Stereoscopic Company has just gone into operation in this city. It has complete sets of scenery for groups, and hopes to find a considerable demand for family groups, which are taken finely. A group of 50 persons can be taken, but 10 or 12 are more convenient. A family of negroes are now sitting for groups to illustrate Uncle Tom's Cabin. At the salesrooms are a good assortment of views where many pleasant hours can be spent in looking over them. Here one may see Sunnyside, with Washington Irving sitting in his porch; Longfellow's residence, with the poet standing in the doorway; Agassiz' house, with the unbought naturalist sitting on his steps; most of the views enumerated above; all sorts of domestic scenes, such as a series representing a courtship and marriage, and married life, from girlhood round to blooming girlhood again; sports and plays; everything. One cares no longer to go to Moscow, for here is the Kremlin and the great bell with the crack in it, and we can see it just as well on Broadway or at home.

And more complete assortments may be found elsewhere. A John street house, in conjunction with an associate house in Paris, employs MM. Clousard and Soulier exclusively, and, besides, have on hand all valuable productions of other artists. We were shown the best means of examining Stereoscope pictures the invention of an American, Mr. Becker. It is an elegant piece of rosewood furniture—holds 25 views, arranged so that by turning a knob they are successively brought into the range of vision, and costs $25. Several hundreds of these have been sold in this country and in Europe. Here we also saw microscopic Photographs—the Lord's prayer in a pin-head space, and several of Landseer's and Winterhalter's pictures of the same dimensions. These, when placed under a microscope magnifying 250 diameters, were expanded into course print and fine pictures.

An ordinary hand instrument for examining views costs about $3 at retail; landscapes on paper from $6 to $9 per dozen; landscapes on glass from $15 to $30; English groups from $3 to $10.

Stereoscopes will probably soon take the place of engravings in most parlors.

BRITISH ASSOCIATION.

ACTINO-CHEMISTRY.

Extract from Sir John Herchel's speech at the meeting of the British Association at Leeds.

"If the phenomena of chemistry are ever destined to be reduced under the dominion of mathematical analysis, it will, no doubt, be by a very circuitous and intricate route, and in which at present we see no glimpse of light. We should, therefore, be all the more carefully on the watch in making the most of those classes of facts which seem to place us, not indeed within view of daylight, but at what seems an opening that may possibly lead to it. Such are those in which the agency of light is concerned in modifying or subverting the ordinary affinities of material elements, those to which the name of the actino-chemistry has been affixed. Hitherto the more attractive applications of photography have had too much the effect of distracting the attention from the purely chemical question which it raises; but the more we consider them in the abstract, the more strongly they force themselves on our notice: and I look forward to their occupying a much larger space in the domain of chemical inquiry than is the case at present. That light consists in the undulations of an ethereal medium, or at all events agrees better in the characters of its phenomena with such undulations, than with any other kind of motion which it has yet been possible to imagine, is a proposition on which I suppose the minds of physicists are pretty well made up. The recent researches of Professor Thomson and Mr. Joule moreover have gone a great way towards bringing into vogue, if not yet fully under acceptation, the doctrine of a more or less analogous conception of heat. When we consider how the marked influence which the different calorific states of bodies have on their affinities—the change of crystalline form effected in some by a change in temperature—the allotropic states taken on by some on exposure to heat—or the heat given out by others on their restoration from the allotropic to the ordinary form (for though I am aware that Mr. Gore considers his electro-deposited antimony to be a compound, I cannot help fancying that, at all events, the state in which the antimony exists in it is an allotropic one), when, I say, we consider these facts in which heat is concerned, and compare them with the facts of photography, and with the ozonization of oxygen by the chemical rays of the electric spark, and with the striking alterations in the chemical habitudes of bodies pointed out by Draper, Hunt, and Becquerel; and when again we find these carried so far that, as in the experiments of Bunsen and Roscoe, we find the amount of chemical action measuring the quality of light absorbed—it seems hardly possible not to indulge a hope that the pursuit of these strange phenomena may by degrees conduct us to a mechanical theory of chemical action itself. Even should this hope remain unrealized, the field itself is too wide to remain unexplored, and to say nothing of discovery, the use of photography merely as a chemical test may prove very valuable, as I have myself quite recently experienced, in the evidence it has afforded me of the characters of arsenic, but differing from it in others, and strikingly contrasted with it in its powerful photographic qualities, which are of singular intensity, surpassing iodine, and almost equaling bromine."

ON THE "DRY COLLODION PROCESSES," BY W. SYKES WARD, ESQ.

He observed that some apology was due from him for occupying the time of the section with this subject, as he had already introduced it at Cheltenham, and again last year at Dublin; but in the dry process he thought there was more scope for investigation than in any other department of photography, and he mentioned the continued researches and experiments of both French and English photographers on the subject; a result of which being that they had a vast number of different processes published—so many, indeed, that they were likely to create confusion. There was, however, an advantage in their variety, as most of them were capable of modification and interchangeability, so that an operator might adapt each to his own particular requirements. It had been objected to the use of many of the methods proposed that they required so much manipulation; but, in his opinion, the great thing to be aimed at was a superior result, and certainly he was no true artist who objected to one or two more operations, provided a successful result were attained. Many of the operations were for the purpose more of correcting errors or removing stains than necessary parts of the process. He then detailed a variety of the dry processes, referring in terms of high eulogy to that proposed by Mr. Maxwell Lyte, in which a film of meta-gelatine is used. This process, he thought, had not obtained the notice of which it was well worthy. It had been urged that the dry process had mostly failed in the production of views of the foliage of trees and of water in motion, but in this respect Mr. Lyte's process was singularly successful. He might state, in conclusion, that none of the dry collodion processes that had come under his notice were so sensitive as they were represented to be, although that was a matter of minor importance as it regarded small pictures, especially such as were used for the stereoscope; yet it was of much consequence in larger pictures.

MR. R. J. FOWLER ON A "PROCESS FOR THE ESTIMATION OF ACTINISM."

He said that in drawing the attention of the section to the estimation of the actinic force of the solar radiations his object was rather to add what he presumed were new facts to the science of actinometry than to present a perfect and complete process in every respect. In the 9th volume of *Gmelin's Handbook of Chemistry* he found it stated that "Oxalate of ammonia, mixed with aqueous proto-chloride of mercury, is decomposed under the influence of light, yielding sal-ammoniac, calomel, and carbonic acid;" it also stated that "the mixture of the two solutions remains clear in the dark; in daylight it becomes turbid in six minutes, and in the course of an hour deposits calomel, which in sunshine quickly falls down in soft flakes, surrounded with bubbles of carbonic acid. The filtrate no longer contains mercury, but chloride of ammonia and undecomposed oxalate of ammonia." On seeing this he was at once struck with the idea that there might be the elements of a process for actinometry, and whether this was the fact, he left them to judge from the experiments he had tried on the subject. He found it true that the solutions might be kept unchanged for an indefinite period in the dark; that the calomel began to precipitate in from 15 to 20 minutes in full sunshine; and also that the precipitate ceased immediately the vessel containing the solution was removed from solar influence, thus showing that the action is not continued in darkness, even when the change has been partially effected, and that the action of the actinism is not in this case catalytic. He had also exposed three tubes containing the mixed solutions to pretty uniform light, No. 1 for ten minutes; No. 2 twenty minutes; No. 3 forty minutes; the results being that No. 2 contained twice the bulk of precipitate of No. 1, and No. 4 twice the bulk of No. 2. When the solutions were exposed several hours the vessel containing them was found to be completely filled with a magma of the precipitated calomel. From these experiments it appears conclusive that the mixture of solutions of oxalate of ammonia and proto-chloride of mercury is very sensitive to light, and as this action of light is not catalytic, the precipitate obtained may be considered as produced by solar influence alone; and lastly, that a definite amount of actinic force; thus proving that there are elements of certainty and uniformity in the behavior of the mixed solutions when exposed to solar influence, from which a certain method for estimating the actinic force may be formed If extreme delicacy were required in the estimations, the precipitate might be collected, dried and weighed; but, where this was unnecessary, graduated tubes might be used for exposing the mixed solutions, and from which, after standing a certain time in the dark, the amount could at once be racked off. Mr. Fowler stated that in his experiments he had used a nearly saturated solution of the two salts, but this was by no means necessary, as he found that, if a drop of the solution of proto-chloride of mercury, containing one 1-1500th part of a grain of that salt were added to 300 grains of the solution of oxalate of ammonia, and exposed to the light, the calomel would still be precipated. The reaction in fact being so delicate that it might be used as a confirmatory test for the presence of proto-chloride of mercury. He stated in conclusion that it would be interesting to know how the absorbed actinism of M. Niepce de St. Victor would affect the solutions. He had made some experiments in that direction, but not with sufficient success to warrant any positive assertions.

At the close of Mr. Fowler's paper, no immediate remarks being made on the subject, Mr. MERCER, F. R. S, exhibited several specimens of Chromatic Photographs, some being on calico, or a similar fabric, produced by previously soaking the material employed in a solution of per-oxalate of iron; the effects produced were both singular and novel, and the method promises to lead to photographic color-printing; it is at least a step in that direction. As the photographs were being handed round for examination, Mr. Mercer gave a few brief explanations of the circumstances that led to their production.

MR. W. LYNDON SMITH ON THE "CHOICE OF SUBJECT IN PHOTOGRAPHY, AND THE ADAPTATION OF DIFFERENT PROCESSES."

He said it was the grand reproach thrown against photography that it was a merely mechanical operation, and that its votaries need not necessarily possess taste, imagination, or even a knowledge of the rudimentary elements of pictorial art. A writer in the last number of the *Art Journal* states that his object is to show that no mechanical process can long supersede the living agency of man's mind, and that photography is and never can be anything more than a servant of servants; and the writer proceeds in a long and tedious exposition to prove by arguments, neither novel nor ingenious, the utter inadequacy of photography to maintain the position in which its admirers would place it. Now these remarks, he was aware, would not make the slightest impression on genuine disciples of the art, but he introduced them because adverse criticisms were in some measure merited by the ill choice of subjects the majority of photographers, both professional and amateur, had made, the former generally styling themselves photographic "artists," but with what impropriety their specimens too often showed. However, within the last two years there had been very great improvement. The *art* in the first days of photography was totally lost sight of in the excitement produced by the marvels of the *science*, and it is but lately that the camera has been transferred from the hands of the chemist, (who has taught us indispensable knowledge, and to whom we could not be sufficiently grateful,) to the hands of the artist, who now demonstrates daily the beauty and truth of its representations. The most common subjects represented have been architectural views, and the French photographers have arrived at a great amount of perfection in this department, yet, in even the best of their pictures, there is often a want of taste in the point of view selected. They are too often taken from an elevation, to prevent the inclination upwards of the camera, which causes the upright lines to converge, and consequently there is a loss of magnitude, and the beauties of perspective are diminished. Again, they are generally full front instead of in perspective, which latter position is always more picturesque. But it is in landscape that the glorious fidelity of the camera, when its direction is controlled by the true artist, is most evident. None but he can experience the delight of catching the most transient effects of ever-changing nature. It is in this direction that the glorious future of artistic photography lays, and the true lover of nature will delight more in a specimen of this class than in scores of hasty sketches, even by clever men, or in the gaudy and meretricious coloring of the pre-Raphaelite, vainly attempting to delineate, by the hand, that which the sun himself paints for us in the photograph. Photographers are generally too frightened of getting the sun in the camera, as they say, to take their views with its back to their best friend, and thus they lose all the cross shadows which give a stereoscopic effect to a picture, and, in fact, get hardly any shadow at all; as with the sun in the position mentioned, the shadows are all behind the different objects composing the view. He had invariably found that the most pleasing pictures were taken with the sun shining right on the front of the camera, and in this case the precaution must be taken to shield the lens from the direct rays of the sun by the hand or otherwise. Water in motion is rarely reproduced with success, except in instantaneous views, and for the present that must be left to the painter, who, by the aid of white paint and hard brushes, can give us any amount of cataract. The painter himself even condescends to use the camera for the depiction of foliage and herbage, and photographic studies of foreground are most generally admired for the extreme delicacy with which the veinings and markings of the tenderest herb or flower are delineated; still it must not be forgotten that foregrounds are most lovely when adjuncts to an extended view The study of composition is as necessary to the photographer as to the painter, and every student of the art may derive much benefit from the study of J. D. Harding's "Principles and Practice of Art," which, containing much from which many will dissent, conveys to an inquirer much useful and practical information. With reference to the latter portion of his subject, Mr. Smith mentioned that calotype paper was, in his opinion, suitable for giving bold effects, though open to objection on account of its want of clear definition and its granular surface. The wax paper was more homogeneous, but both methods are now generally exploded. Albumen on glass gave exquisite definition, and was most successfully used for taking engravings and paintings, on account of the clearness of lines and the absence of dirtiness in the white parts, a fault to which collodion is liable. In his opinion the albumen on glass process could not be improved upon by any of the modern processes to which Mr. Ward had alluded. Undoubtedly the collodion process was the best, notwithstanding the inconvenience attending its use. The collodio-albumen process, so much advocated at present, appeared to him extremely unsatisfactory, though the confidence of its supporters was unbounded; and as to the dry collodion process, by it no unsatisfactory effects have yet been produced, though every effort had been made by its advocates. He concluded, by hoping that the remarks he had made might excite discussion, that so any fallacy might be confuted, and any truth confirmed.

The Rev. W. V. Harcourt, who had taken the chair in the absence of the President, deprecated any lengthened discussion on account of the time.

Mr. W. S. Ward said the thanks of the section were due to Mr. Mercer for his experiments, and in reference to the last paper remarked that he could not agree altogether with its author as to artistic difficulties. A tyro in the art would do anything, but a photographic artist could only become one by repeated trials. He did not consider it to be right to change photography from a science to an art; and genuine artistic effects were produced through photography being under the dominion of the chemist and physicist. To secure the full effect of foliage and of water much exposure was absolutely necessary. The great practical difficulty was to hit the right point between under and over exposure, as the effect of light was more powerful at first than afterwards. He might say that the less a photographer was satisfied with what he had accomplished the more likely was he to succeed better in future.

Mr. Smith said that he believed the simpler the manipulation and materials the better. He thought the dry process a complete failure. Photographers might be divided into two sections; the scientific, who sought out and experimented upon complicated processes; and the artistic, whose great object was to produce the best effects.

Dr. Odling observed that some instruments had been used by Bunsen and others to determine the actinic force, but they were entirely out of the reach of the ordinary practitioner. He trusted Mr. Fowler would proceed with his researches, and inquired if the decomposition of the solution referred to had proceeded *pari passu* with the length of exposure?

SUGGESTIONS FOR IMPROVEMENTS
In the Camera, and Mounting of Lenses.

BY THOMAS SUTTON.

[*Written for the Sept. Meeting of the Birmingham Photographic Society.*]

Mr. Chairman and Gentlemen:

When I received for insertion in the Journal of your Society, the report of your last meeting, it was accompanied by a letter from your Secretary inviting me to contribute a paper for your next Meeting. I can assure you I felt much flattered by the request, and it has been an agreeable task to me to comply with it.

Mr. Osborne proposed that I should take for my subject "The Photographic Camera, and Mounting of Lenses," and lay before you certain suggestions which have occured to me for the improvement of the instrument by means of which photographic pictures are taken. The subject is important, and I feel the more pleasure in submitting my remarks to your notice, because I am sure that an audience in such a town as Birmingham must be likely to contain many ingenious practical men who will percive at a glance the merits of any real improvement in apparatus which may be pointed out.

But first let me observe that my object in proposing certain modifications in the present form of the photographic lenses, is, that we may improve our means of obtaining a good picture and not that the instrument may be rendered more portable or more convenient, or prettier to look at, or cheaper to buy. I feel sure that I am expressing the opinions of every one present, when I say that since photographic pictures have now reached a high point of excellence in the hands of skilful operators, no one should rest satisfied with only tolerable results obtained with comparatively little trouble or cost, if it can be shown that by any improvement in his apparatus, and by bestowing a little more trouble and thought upon the matter, better results can be obtained. I mean that we must now look more to the end, and less to the mere *convenience* or *economy* of the means employed; and if with a rather less portable, and perhaps more costly instrument, better pictures can be got, then we must rather congratulate ourselves that a little extra trouble and money can be well laid out, than grumble because the camera and lens are a little heavier and cost a trifle more than they did before. In fact, I feel sure that there is not one among you, who does not agree with me that it would be better, if need be, to carry the apparatus to the field in a waggon, drawn by a team of horses, and return with good negatives, than to walk there comfortably with the whole of the apparatus in one's coat pocket, and return with indifferent pictures; for surely labor is a pleasure when it ends in success,—amusement a toil when it ends in profitless results.

In a word then, I will endeavor to direct your attention to some defects which I observe in the ordinary construction of cameras and lenses, and will suggest how I think they may be remedied, without caring to consider whether the apparatus is thereby rendered heavier, or more costly, or unsightly,—or whether the bulk of amateurs or professionals are likely to trouble their heads about these improvements,—or the trade likely to modify the instruments which are now made and sold by the gross. My remarks are addressed to the thinking, pains-taking photographer, who will be glad, I am sure, to have any method pointed out to him, by which his own apparatus may be improved.

To the point, then :—

I will asume, for the sake of argument, that the glasses of the lens do their work properly, and produce a good image upon the focusing screen, and that the camera is light-tight, and well put together. The question then becomes,—is all extraneous light which enters through the lens completely prevented from falling upon the image? I regret to say that in general it is not; and my object in this paper will be to endeavor to show why, and where, stray light finds its way into the camera, and falls upon the picture.

Suppose, gentlemen, you were any of you to enter an artist's studio, and observe him at work before his easel, and you saw that while he was painting one part of his picture in pure clean colors, a monkey seated upon his shoulder was amusing himself, unknown to the artist, with applying a long brush filled either with black or white paint, to some other part of the picture—would you not be inclined to knock that mischievous monkey off his perch, and remonstrate with the artist for permitting such an animal to enter his studio? Now, the unfortunate photographer is very much in the position of the artist in the above case, only instead of the monkey, he has to deal with a thousand stray beams of light which the optician has allowed to enter the camera, and which paint a second picture of their own upon the legitimate image. Let us then do battle at once with these straggling rays,—trace them back through their tortuous paths to the point of ingress, and banish them from the image, so as to get pictures free from accidental blurs and fogs.

The way to deal experimentally with this subject, is to take the camera out of doors, and expose it to a view that is strongly lighted,—then, (the end of the camera being open, and without the ground glass), to throw the black cloth over your head, and draw it tightly under your chin and the bottom of the camera, and observe what light you see within, bearing in mind that whatever light from any part enters your eye, would also fall upon the sensitive tablet in the same place.

I will first discuss the case of the view-camera and lens with a stop in front.

The first thing you will observe in this or any other camera is, that the picture formed by the lens is round and larger than the oblong end of the camera, so that on all four sides of the camera, next to the open end, a luminous image is thrown, in the shape of the segment of a circle; consequently the reflected light from these four segments, which enters your eye and renders them visible, from *all possible positions*, must fall upon *every* part of the sensitive tablet. Here then we have discovered one source of diffused light, which fall upon the entire picture, and produces universal fog, to an extent depending upon the reflecting power of the sides of the camera. These outer segments of the image formed by the lens, and which fall upon the sides of the camera, may be easly cut off by a diaphram, having an aperture, the size and shape of which is determined by supposing a straight line to travel round the circumference of the back lens, and the edge of the picture, and at the same time always to pass through the axis of the lens. In all my cameras the first thing I do is to insert a diaphram, made of millbord, at about one-fourth of the distance from the picture to the lens. I make the diaphram like a shallow cardboard box, and push it into the camera to the required distance. Should the lens be raised or lowered by the sliding adjustment in the front of the camera, a different diaphram must of course be substituted for the first. This involves a little trouble. I leave it to your ingenuity to suggest some simple plan for effecting these changes, without which I think you will agree with me, that no camera is complete. It would answer the purpose nearly as well, to put a diaphram having an aperture the same shape as the picture against the back of the lens, but the objection to that plan is, that such a diaphram would cut off the outer half of all the extreme oblique pencils. In some cases it might be necessary to add a second diaphram between the first and the lens. In fact it may be stated as a general principle to be observed in the construction of all optical instruments, that a series of diaphrams, having suitable apertures, should be inserted between the lens and the image in order to cut off reflected light from the side of the tube. On looking through such a tube towards the lens, nothing would then be seen but the lens, because the dark sides of the diaphrams would be turned towards the eye, and these could reflect no light. I do not know whether this principle is generally observed in the tubes of telescopes used at Observatories, but I have a fine astronomical telescope $4\frac{1}{2}$-ins. focus, in which the principle has been overlooked, and the consequence is a want of purity in the image, which is sadly diluted with diffused light.

The insides of cameras are usually blackened with lamp-black and glue, which is a very good composition for the purpose. I think black velvet unnecessary when proper diaphrams are inserted. I believe nothing more is wanting in the inside of the camera.

The next stray light you will perceive is a ring of light round the lower part of the circumference of the lens. This is seen most clearly from the middle and upper part of the camera. To convince yourself of its bad effect, put the ground glass in its place, and you will find that the shadows in that part of the picture are diluted with diffused light; but the effect disappears if, while you are looking in, some one shades the upper part of the lens with his hand, so as to cut off oblique light from the sky; but this shading of the lens must be carried down to such an extent as to cut off also a part of the picture. The proper remedy is simple enough. The lens should be made half-an-inch larger in diameter, and an annulus a quarter-inch wide, should cover the outer part of its face; because this luminous ring is occasioned by light, which is internally reflected from the broad outside edge of the lens.

Next, remove the lens from the tube, and make your observation again for stray light. In some view lenses the tube is shaped like a cone, having the stop at the small end and the lens at the large end. In this case the inner sides of the cone are lighted by oblique rays, and consequently reflect light, which is scattered in all directions by refraction through the lens. This conical mounting of a view-lens is as ill-conceived as can well be. But suppose the lens to be mounted in a cylindrical tube, having a small stop midway between the open end and the lens;—observe what happens. The lower part of the tube, outside the stop, is lighted by the sky; some of this light is reflected through the stop and lights the upper part of the tube inside, and a confused image of this patch of light is formed by the lens towards the bottom of the picture. The prolongation of the tube beyond the stop is therefore of no use. Instead of this, a diaphram, having a round hole of suitable diameter, should be placed midway between the fixed stop and the lens. When this is done no light will be seen on the inside of the tube, and the mounting of the lens is perfect.

We have, so far then, a properly-constructed view-camera with a properly-mounted view-lens of the ordinary form; but I have not yet done with this instrument. You all know that by going down to the bottom of a well the stars may be seen at mid-day. That is because the diffused light existing in the atmosphere is cut off and only the light emitted directly from the star allowed to enter the eye. Now this principle should be observed in the construction of cameras, and only the light which is emitted by the objects of the picture be allowed to fall upon the lens. To effect this, a long tube is by no means necessary; all that is required is to continue the camera in front of the lens to about two-thirds its focal length, and to close the open end of the camera in front by a diaphram having a hole the same shape as the picture, and of the proper size. This renders the instrument complete, and no light, save from the objects to be taken, can by possibility fall upon the picture. Some time ago you will perhaps remember that a little discussion was conducted in this Journal between myself and some other gentlemen with respect to the shape of the diaphram as determining the shape of the picture. What I said then is not contradicted by what I say now. The diaphram in the lens tube may be any shape you choose,—round, square, or triangular,—and the picture will still be round; but a diaphram in the front of the camera produced *will* determine the shape of the picture, for it will form, so to speak, a part of the picture. I hope this is now clearly understood,

The modification which I have made in my own cameras, and which I have now described, may therefore be summed up as follows:—

My camera is a box, nearly twice as long as the focal length of the lens. Nearly in the middle of this box, a partition is inserted which carries the lens upon a slider having two motions in the usual way, and which when necessary passes through the sides of the camera. One side of the camera has a trap door through which the hand may be inserted for focussing the lens. Both ends of the camera are open. In one the dark slide is placed; in the other a diaphram the same as the picture. Between the lens and the dark slide, and rather nearer to the latter, a diaphram is inserted. With such a camera, and a lens mounted as I have described, no stray light can by any possibility fall upon the image.

There are one or two other points connected with the camera, on which I shall be glad to have your opinion. I think it a very desirable thing to be able to do away with the ground glass, and to focus upon the film itself; partly because the ground glass is an extra article to carry, and one very liable to get broken; principally because a better focus would in general be obtained by focussing directly upon the film. I find it perfectly easy to focus upon the film, when a piece of yellow glass is put before the lens,—the head and arms being of course inserted in a black bag attached to the back of the camera. Let us then see if we can get rid of this black bag operation, and still focus upon the film.

My idea is that the dark slide should have two sliding shutters, one in front as usual, the other at the back; and that instead of putting the head and shoulders in a black bag, a Ramsden's eye-piece should be used as a focussing magnifier, which might be passed about upon the back of the plate, and be connected with black stuff to the end of the camera. The lenses of of this magnifier, (which are simply two equal plano-convex lenses with the plane sides outwards) should of course be made of yellow glass. One great advantage of focusing upon the film would be in taking instantaneous pictures; the proper moment for uncovering the lens might then be determined to a nicety and the yellow cap be removed by the mere pressure of the finger upon a trigger; and while on this subject I should be glad if you can tell me of the best contrivance for an instantaneous cap.

There is however another plan for focussing upon the film itself which might be better than a Ramsden's eye-piece, with yellow lenses, and a black bag. Every dark slide, you all know, should be made capable of taking non-reversed pictures if required, by putting the plate with its plain side next to the lens. Suppose then we make the slide so that the plate is put in from the front and that either side of it may rest upon silver wires, while some simple contrivance at each corner fixes it in its place. The back of the slide may then be made of yellow glass, covered with a black curtain, and the focusing may be done upon the film, with the head under a black cloth in the usual way. These are matters which I think worthy of your consideration, and I shall be glad to have your suggestions with respect to them.

I would now discuss the mode of mounting the Orthoscopic and Portrait combinations, did your time permit; but I believe that enough has been said to indicate the principle which should be observed in the mounting of photographic lenses. The bad effects of not attending to these principles are immediately perceived when a portrait lens and camera of the usual construction are taken out of doors, or when a common view lens is turned a little towards the origin of light, or towards the sky, for the purpose of taking clouds. As for the portrait-lens, the mounting of that instrument might properly form the subject of a separate paper.

With respect to the mounting of the Orthoscopic Lens, I cannot suggest any improvement. The diaphram which has been judiciously inserted between the back and front lenses appears to be all that is required.

I shall be glad to have your opinion on a point connected with the portrait-lens when used with a small diaphram for taking views. According to my experience, it happens with all portrait-lenses, when the diaphram is placed between the lenses, (or in contact with the front lens, it matters not), that a round patch of fog occurs in the middle of the picture, when the lens is presented to an ordinary well-lighted view. I cannot quite explain this satisfactorily to myself. It does not proceed from dew upon the lens, nor from diffused light which enters in any way, because I have taken every possible precaution tó prevent this. My impression was until yesterday, that this patch of fog did not occur when the stop is put midway between the lenses, but I find I was wrong in that idea. Only yesterday, I went out for the first time to take some views with my large portrait-lens, which is 4-ins. diameter, and 13-ins. focal length, and midway between the lenses of which I inserted a stop three-eighths-of-an-inch diameter. I took three negatives, in the centre of everyone of which a dark spot the size of a half-crown was produced. Before sitting down to write this paper this morning, I busied myself for a couple of hours with the attempt to unravel this mystery, but I am sorry to say in vain, for I can only guess at the cause of that spot. It appears, however, that the larger the diaphram the larger and more diffused the spot becomes, so that with full aperture out of doors the entire plate is covered with a veil of fog, which is thickest in the middle; and when the lens is used for instantaneous pictures, this fog destroys the brilliancy of the shadows in the centre of the picture, a defect which I have perceived in all the instantaneous pictures by other artists that I have seen, and which have been taken with portrait lenses. I am inclined to think that this spot is occasioned by light which has been internally reflected at the inner side of the convex surface of the front lens, and which forms a sort of cone of light, having the front lens for its base and its apex a little way nearer to the back lens than the stop. This apex then forms the origin, so to speak, of a diverging pencil very near the back lens, which pencil, after refraction through it, forms a confused circle of aberration upon the picture, which occasions the unfortunate spot in question. I have never thought the portrait combination at all adapted for taking views, even with a small stop, and now that this spot seems to be a frequent accompaniment of the use of that instrument out-of-doors, I shall in future feel doubly distrustful of it. The Orthoscopic lens, although a double combination, works extremely clean, but that may be because the back lens is actually placed at the stop, so that any supposed cone of internally reflected light from the front lens would not have the opportunity of coming to an appex or point, but would be scattered in all directions. I wish it to be understood, however, that the spot produced by a portrait-lense with a small diaphram between the lenses only occurs to an injurious extent when one part of the view, (the sky for instance,) is strongly lighted, and the exposure timed with reference to the deep shadows. Besides, I sometimes develop my negatives with iron, and that may fetch out the spot more disagreeably.

And now, I think, gentlemen, I have pretty nearly exhausted your patience, and the time alloted to the reading of a paper. I fear my subject has not been very entertaining, and that I have not treated it in a very amusing way. It is however important that all obvious optical defects should as far as possible be removed from the instrument in which photographers take their pictures, and I trust that my introduction of the subject will elicit some able comments and suggestions from yourselves.

Permit me, in conclusion, to assure you of the pleasure it always gives me to receive for insertion in my *Photographic Notes* the valuable communications read at your meetings, and of the satisfaction with which I observe the growing importance and increasing usefulness of your Society. If I can, in any way, as a Journalist, promote your interests, I beg you will never hesitate to make use of me. I am sure you will be glad to hear that the Journal of your Society has nearly doubled its circulation during the present year,—that it is gradually gaining a footing in America, through the kind exertions of Messrs. Anthony, of New York,—and that in India, Australia, China, and the Cape it has numerous subscribers, principally among military gentlemen, many of whom have now adopted photography as a hobby; while on the Continent most of the eminent photographers with whose names you are well acquainted appear to be famaliar with its contents. In fact, the *Notes* are now rejoicing in a state of financial prosperity which far surpasses the expectations I originally formed of such a periodical. I have been frequently asked why I do not carry out an idea I once entertained of publishing a weekly.—but I have thought it better to leave well enough alone, having my doubts how far a weekly Journal of Photography is really required or could be satisfactorily sustained, and feeling quite sure that a weekly Journal would take me too much from my dark room, and interfere with the experiments which can alone sustain my original articles, and keep me up to the mark in my replies to correspondents. I confess it is my ambition to be something more than a mere newsmonger or writer,—and that being the case, my dark room, and the days I spend in it, are as necessary to my Journal as the type and printing press.

You know I have published lately a Dictionary of Photography. I have enclosed a copy along with this communication, which I trust you will honour me by adding to the library of your Society.

ROMANCE AND RUBBER;

Or The Vicissitudes of an Inventor.

Every man who has labored to bring into being some creation for the common good of mankind, has been subjected to unkind criticisms, opposition and derision. These remarks forcibly apply to Mr. Charles Goodyear, the inventor of the numerous improvements in the manufacture of India Rubber. We subjoin some extracts from the opinion of Mr. Holt, the Commissioner of Patents, on the application to extend Mr. Goodyear's patent. They will amply repay the reader for their perusal:

Upon the first point, the testimony alike of the applicant and of the contestants is concurrent and conclusive. From the first moment that the conception entered his mind until his complete success—embracing a period of from sixteen to eighteen years—he applied himself unceasingly and enthusiastically to its perfection, and to its introduction into use, in every form that his fruitful genius could devise. So intensely were his faculties concentrated upon it that he seems to have been incapable of thought or of action upon any other subject. He had no other occupation, was inspired by no other hope, cherished no other ambition. He carried continually about his person a piece of India rubber, and into the ears of all who would listen he poured incessantly the stories of his experiments and the glowing language of his prophecies. He was, according to the witnesses, completely absorbed by it, both by day and night, pursuing it with untiring energy and with almost superhuman perseverance. Not only were the powers of his mind and body thus ardently devoted to the invention and its introduction into use, but every dollar he possessed or could command through the resources of his credit, or the influence of friendship, was uncalculatingly cast into that seething caldron of experiment which was allowed to know no repose. The very bed on which his wife slept, and the linen that covered his table, were seized and sold to pay his board, and we see him with his stricken household following in the funeral of his child on foot, because he had no means with which to hire a carriage. His family had to endure privations almost surpassing belief, being frequently without an article of food in their house, or fuel in the coldest weather, and indeed it is said that they could not have lived through the winter of 1839 but for the kind offices of a few charitable friends. They are represented as gathering sticks in the woods and on the edges of the highways, with which to cook their meals, and digging the potatoes of their little garden before they were half grown, while one of his hungry children, in a spirit worthy of his father, is heard expressing his thanks that this much had been spared to them. We often find him incarcerated in the debtor's prison, but even amid its gloom his visions of the future never grew dim, his faith in his ultimate triumph never faltered. Undismayed by discomfitures and sorrows which might well have broken the stoutest spirit, his language every where, and under all circumstances, was that of encouragement and of a profound conviction of final success. Not only in the United States did he thus exert himself to establish and apply to every possible use his invention, but in England, France, and other countries of Europe, he zealously pursued the same career. In 1855 he appeared at the World's Fair in Paris, and the golden medal and the Grand Cross of the Legion of Honor were awarded to him as the representative of his country's inventive genius. Fortune, however, while thus caressing him with one hand, was at the same time smiting him with the other; for we learn from the testimony that these brilliant memorials passed from the Emperor and reached their honored recipient, then the occupant of a debtor's prison, among strangers and in a foreign land—thus adding yet another to that long, sad catalogue of public benefactors who have stood neglected and impoverished in the midst of the waving harvest of blessings they had bestowed upon their race. Throughout all these scenes of trial, so vividly depicted by the evidence, he derived no support from the sympathies of the public. While the community at large seemed to have looked on him as one chasing a phantom, there were times when even his best friends turned away from him as an idle visionary, and he was fated to encounter on every side sneers and ridicule to which each baffled experiment, and the pecuniary loss it inflicted, added a yet keener edge. The mercenary naturally enough pronounced his expenditures, so freely made, culpably wasteful; the selfish and the narrow-minded greeted the expression of his enlarged and far-reaching views as the ravings of an enthusiast; while it is fair to infer from the depositions that not a few of the timid and plodding, who cling, tremblingly apprehensive of change, to the beaten paths of human thought and action, regarded him as wandering on the very brink of insanity, if not already pursuing its wild and flickering lights. Such in all times has been the fate of the greatest spirits that have appeared on the arena of human discovery, and such will probably continue to be the doom of all whose stalwart strides carry them in advance of the race to which they belong. With such a record of toil, of privation, of courage, and of perseverance in the midst of discouragements the most depressing, it is safe to affirm that not only has the applicant used that due diligence enjoined by law, but that his diligence has been, in degree and in merit, perhaps without parallel in the annals of invention.

* * * * * * *

Inventors and other men of high creative genius have ever been distinguished for a total want of what is called "business habits." Completely engrossed by some favorite theory, and living in the dazzling dreams of their own imagination, they scorn the counsels and restraints of worldly thrift, and fling from them the petty cares of the mere man of commerce, as the lion shakes a stinging insect from its mane. The law, in its wisdom, takes cognizance of human character, and deals with men and with classes of men as it finds them. It seems, in this instance, to have assumed, and justly, that, if we would have the magnificent creations of genius, we must take them with all these infirmities, which seem as inseparable from them as the spots are from the sun.

* * * * * * *

Sulphur had already been advantageously combined with India rubber by Hayward, so that the discovery had been approached to its very verge. The step, however, which remained to be taken, short as it was, was indispensable, and without it all those which had preceded it would have been unavailing. Science could afford but little assistance in the inquiry, for, as the event proved, the most potent element in the process was too subtle to be disclosed by the severest chemical analysis.

The applicant had, therefore, to pursue the investigation gropingly; but he persisted in it with an ardor and a courage which nothing could abate or daunt. His aim was definite, his conviction as to its attainability complete. As one who searches for a hidden treasure in a field where he knows it is to be found, so pursued he his explorations in quest of this secret. He sought it on the right hand and on the left, by day and by night, in the midst of ceaseless toil and lavish expenditure, and by the light of every form of experiment which his most fertile genius and daring spirit could suggest. He became completely master of everything known in regard to the properties of the material which it was his ambition to improve, and so thoroughly was he imbued with the soul of his inquiry, and so intensely quickened was his vigilance, that no phenomenon, however minute, could meet his eye; no sound, however faint, could fall upon his ear without his at once detecting and appreciating its bearing upon the great problem whose solution he was seeking. From four to five years were passed in these unremitted labors, when an incident occurred which at once revealed the long-sought truth. And it is a singular coincidence, that the spark of light yielded by this incident, was elicited by a collision, so to speak, the result of that intense zeal which, so far as health and fortune were concerned, had been the consuming fire of his life. In one of those animated conversations so habitual to him, in reference to his experiments, a piece of India-rubber combined with sulphur, which he held in his hand as the text of all his discourses, was by a violent gesture thrown into a burning stove near which he was standing. When taken out, after having been subjected to a high degree of heat, he saw—what, it may be safely affirmed, would have escaped the notice of all others—that a complete transformation had taken place, and that an entirely new product—since so felicitously termed "elastic metal"—was the consequence. When subjected to fuller tests, the thrilling conviction burst upon him that success had at length crowned his efforts, and that the mystery he had so long wooed, now stood unveiled before him. His history in this respect is altogether parallel with that of the greatest inventors and discoverers who have preceded him. The lamp had swung for centuries in the Cathedral of Pisa, but, of the thronging multitudes who worshipped there, none had heeded the lessons which it taught. It was reserved for the profound and observant intellect of young Galileo to extract from its oscillations the true laws of the pendulum, which led to the creation of an infallible measure of time. The theory of universal gravitation loses nothing of its grandeur or value, because suggested by the falling of an apple from the tree. In all lands, by teeming millions, this phenomenon had been observed, but to none had it imparted instruction—to none had it spoken of that wonderful secret which lurked beneath its simple features. At length its "still small voice" fell upon the delicate and appreciative ear of one whom it startled into inquiry. The light thus afforded, to which all had been blind, was, indeed, dim and twinkling; but, following its guidance as one who traces back the dawn, the great Newton soon plunged into the full orbed splendors of a discovery confessedly the most brilliant which has gilded and ennobled the annals of science. On all the hearthstones of the civilised world, for thousands of years, the kettle had boiled and lifted its lid by the expansive power of its steam; yet for none had this seemingly trite and ever-recurring incident been significant—to none had it announced that measureless power of which it was the humble but distinct exponent. At length the movement caught the eye of a lonely student of nature, then a prisoner in the Tower of London, and in the soil of his prolific mind it proved the rapidly expanding germ of that steam engine whose triumphs have changed the social, political, and commercial aspects of the globe. So India-rubber, in combination with sulphur, may by accident have been exposed to a high degree of heat often before, without attracting the attention of any; and it is safe to allege that it might have been thus exposed a thousand times afterward without the world having been the wiser or wealthier for it. The thorough self-culture and training of the applicant, and his unwearied researches, prepared him at once to seize upon, to comprehend and embody in a practical form, the truth he sought the moment it presented itself, no matter how dimly, to him. This was his merit—the same in kind with that of the most illustrious inventors who have appeared in the world, and by that of but few of them surpassed in degree. It is a figure of speech—but an exalted mode of expression—which assigns to a man any part in the work of *creation*. In his very best estate he is but a ministering priest at her altar, and when he has reached the highest walk in the drama of intellectual power, to which his feeble steps can ascend, he is still but an humble translator of the languages of nature. It is a fact which singularly increases the credit due to this inventor, that the very path in which he finally achieved success, was the one which the experience of the past had taught him to shun. A low degree of heat had been applied to a combination of India-rubber and sulphur, and it had melted under it, so that heat—the increased intensity of which consummated the discovery—was the very element which he had felt himself admonished to avoid. The discovery being made, the applicant soon thereafter added white lead to the combination, which rendered it complete, and, assuming that his mission was but begun, he bravely bent himself to the task of surmounting the obstacles which still frowned upon him on every side. These obstacles, so graphically sketched in the testimony, seem to have been almost unprecedented. Capitalists shrunk away from the discovery, so confidently announced, as a chimera, and manufacturers who had suffered so deeply by the India-rubber business, denied it their confidence. Its practicability had to be demonstrated by a long series of illustrations, which the total want of experience rendered protracted, and often ruinously expensive. Every inch occupied in the enlarging field of its usefulness, had to be conquered by many sacrifices, while of the Protean-formed applications to which it was destined to attain, where was not one that did not involve an outlay of treasure, of toil, and high artistic skill? All these, from the beginning to the present hour, have been bestowed—unceasingly bestowed—upon it, and as the fruits of all these have been, and are still being reaped by the public, the applicant is entitled to remuneration for them.

Has the applicant been remunerated for the TIME which he has devoted to this invention, and to its introduction into use?

It is extremely difficult to estimate into the coin of dollars and cents the worth of eighteen years of the prime of human life—especially so when that life is one of lofty genius, of indomitable enterprise, and of stainless virtues. It is, however, about that period of precisely such a life that has been consecrated to the pursuit and development of this discovery—nor would a shorter period of time have sufficed for the arduous and perplexing task. This declaration may be made with the more emphasis, because, in all the volumes of testimony filed, there is not one word found tending to its contradiction. Throughout those long and toilsome years it is apparent that there has been no compromise with the suggestions of avarice, or with the claims to self-indulgence and ease. It has been already fully shown that the applicant's fortune, his health, the comforts of his family, the freshness of his early, and the patient energies of his later manhood, have all been unhesitatingly melted down in the crucible of his inquiry, and he is now seen tottering toward that grave which must soon open in his path, with nothing left of the heroic and athletic man but what remains of the maimed and scarred soldier on the battle-field—a wreck which every great and generous people have taken fondly to their bosom. The time of the indolent, the selfish, the dissolute, and the dull is little worth to a world which they rather cumber than bless by their presence; but the time of the gifted, the brave, the philanthropic, and unconquerable sons of genius, has for mankind a value which we should but feebly express in the arithmetic of dollars. But while we may have no means by which to measure with unerring accuracy the intrinsic worth of the ingenuity and time which have been expended, and cannot by any analysis weigh or compute their ingredients, there remains to us one standard by which a proximate estimate at least may be reached, that is, *the results which have been produced.* What that time and ingenuity have yielded to the public is the test of their value, alike to that public and to the inventor; for what the former have received the latter must, upon every principle of sound logic, be held to have parted with. What, then, have been the results of the discovery and introduction into use of the vulcanizing process? The testimony is very full upon this point. We learn that through this instrumentality a large foreign commerce has been created in the raw material, and an inland trade in the India rubber fabrics, amounting to between four and five millions of dollars annually; that extensive India rubber manufactories have grown up, giving profitable investment to some seven million of dollars of capital, and active employment to some ten thousand operatives; and that a large portion of these fabrics is intimately connected with human comfort and preservation of human life.

Not to enumerate more of the articles produced by this process, it would be hazarding nothing to say that the shoes and wearing apparel perfected by it, and so cheaply and abundantly made, and almost universally in use, have saved thousands from a premature death, and may save millions in the ages which are to come. In the presence of these vast and still expanding achievements of this invention, the criticisms which have been made upon the applicant's accounts, as though they were some petty grocer's bill, shrink into insignificance, and indeed, can scarcely be listened to without a blush. We have, however, a yet more definite basis on which to rest our judgment—the testimony of Hayward and Haskins. Both have long been India-rubber manufacturers under the vulcanizing process, and the former made the valuable discovery of combining sulphur with the gum, for which a patent was granted to him. Their depositions are marked by frankness, and leave no doubt of their perfect acquaintance with this great interest in all its ramifications and aspects. Hayward says that the vulcanizing process for the next seven years would be worth to the public one million of dollars; if so, it should have been worth two millions for the last fourteen years. Haskins does not hesitate to estimate the process at "many millions of dollars." It should be observed that the evidence of the contestants does not reduce these estimates. It is not possible to escape from the conclusion to which statements so emphatic, and coming from sources so fully entitled to credit, lead us. If, then, this process is worth two millions of dollars, the applicant has received but a little more than one-fortieth part of the remuneration which he was entitled to claim.

It has been assumed, as a means of avoiding the force of these estimates, that the applicant is entitled to receive from the public, not what the invention is now worth, developed and established as it is, but what it was worth when the patent issued. This view has been urged with much persistance and plausibility, but it has not impressed me as liberal or sound. When the invention came, timid and strugling, into existance, meeting in every quarter with scoffs and distrust, had it been offered for sale in the market, it would probably have commanded a few thousand dollars—possibly less. But to say that its value is to be measured by what it was then considered to be worth, would be to determine that the character of the tree is to be judged rather by the green than by the ripe fruit found upon its branches. The present expanded and prosperous condition of the invention is mainly owing to the genius and unceasing struggles of the applicant, and he may justly reap what he has sown and so diligently cultivated. In the adjustment of machinary to accomplish the ends so distinctly pointed out by the inventor, and in the manipulation of the gum and treatment of the fabrics in the various stages of their manufacture, it is admitted that many improvements have been made by skillful mechanics and operatives, and these have their utility and importance; but to allow such labors to rival or depreciate the claims of the applicant, would be to rank the simple plowman of the fields with that sublime and beneficent Providence which creates alike the soil out of which the harvest springs and the sunshine and the shower by which it is nurtured and matured.

Another and most potent reason why this patent should be extended is found in the acknowleged fact that the public have not kept the faith they plighted with the applicant when he covenanted to surrender to them a product which was, in effect, the concentrated essence of the physical and intellectual energies of his entire life. That public stipulated with him that he should peacefully enjoy for fourteen years the monopoly created by his patent and, had he been permitted to do so, he would, no doubt, long since have realized a handsome remuneration; but, so far from this having been the case, no inventor probably has ever been so harrassed, so trampled upon, so plundered by that sordid and licentious class of infringers known in the parlance of the world, with no exageration of the phrase, as "pirates." The spoilations of their incessant guerilla warfare upon his defenceless rights, have unquestionably amounted to millions. In the very front rank of this predatory band stands one who sustains, in this case, the double and most convenient character of contestant and witness, and it is but a subdued expression of my estimate of the deposition he has lodged, to say, that this Parthian shaft—the last that he could hurl at an invention which he has so long and so remorselessly pursued—is a fitting finale to that carear which the public justice of the country has so signally rebuked.

Important as are to the parties to this issue the immediate consequences bound up with it, they are insignificant indeed as compared with the value to the public of the principle involved. From the very foundation of this government, it has been its settled policy to secure a just reward to all inventors, and it is the inflexible maintenance of this policy that we are indebted for the unparalled advancement which, as a people, we have made in the useful arts. All that is glorious in our past, or hopeful in our future, is indissolubly linked with that cause of human progress of which inventors are the preux chevaliers. It is no poetic translation of the abiding sentiment of the country to say, that they are the true jewels of the nation to which they belong, and that the solicitude for the protection of their rights and interests should find a place in every throb of the national heart. Sadly helpless as a class, and offering in the glittering creations of their own genius the strongest temptations to unscrupulous cupidity, they, of all men, have most need of the shelter of the public law, while, in view of their philanthropic labors, they are, of all men, most entitled to claim it. The schemes of the politician and of the statesmen may subserve the purpose of the hour, and the teachings of the moralist may remain with the generation to which they are addressed, but all these must pass away, while the fruits of the inventor's genius will endure as imperishable memorials, and, surviving the wreck of creeds and systems, alike of politics, religion, philosophy, will diffuse their blessings to all lands, throughout all ages.

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At the close of all his toils and sacrifices, and of the humilations he has been called on to endure, this public-spirited inventor, whose life has been worn away in advancing the best interests of mankind, is found to be still poor, oppressed with debt, and with the winter of age creeping upon his shattered constitution. It is perfectly manifest that this is in no degree the result of vice or improvidence on his part, but an inexorable consequence of the impoverishing experiments inseparable from the prosecution of his great enterprize, and of that prolonged and exhausting strife in which unscrupulous men have involved him. He now begs of that country to which the energies of his manhood have been so freely and so faithfully given, that he may be allowed to enjoy for a few years longer that precarious protection which our most feeble and imperfect laws extend to the fruits of intellectual labor; and were the appeal denied, I feel that I should be false to the generous spirit of the patent laws, and forgetful of the exalted ends which it must ever be the crowing glory of those laws to accomplish.

The patent will, therefore, be extended for seven years from the 15th June, 1858.

Freshly made collodion gives the most sensitive film. Sensitized albumen-paper can be kept three or four days if the albumen is good.

DARK TENTS.

To the Editor of Photographic Notes.

SIR,—In Mr. J. Archer's paper, inserted in the last *Notes*, information is sought as to the best form of tent for working plates 9 × 7. The following very simple contrivance I have found to answer the purpose admirably :—A tent, one yard square and 6½ high, is made of black Holland, lined with one thickness of yellow cambric : the only support required is two splines, placed diagonally, inside, at the top, and a piece of stout card passed through the centres of the splines and tent, and thrown over the branch of a tree or any other projection at hand, in the shade. The tent is thus drawn up to the proper height, and fastened at the bottom by pegs and loops at each corner.

The entrance at the corner is fastened by three buttons, and the light effectually excluded by means of a lamp of yellow cambric inside.

A small square of black Holland is cut out at the proper height, and two or three thicknesses of yellow cambric inserted in its place to form the window; this completes the tent, which can be pitched in less than five minutes, and when taken down can be folded in a small roll and carried under the arm without the least inconvenience. The splines (weighing only a few ounces) can be packed up with the camera legs.

The entire cost does not exceed 12s. or 14s. I have used it with great comfort and invariable success, and strongly recommend its adoption by all practitioners of the wet collodion process.

The accompanying view of Farmlingham Castle was printed from a negative developed in a tent of the above description on a *windy* day.

CHARLES S. ALGER.

Diss, September, 1858.

WET v. DRY COLLODION.

From Photographic Notes.

SIR,—"For after all what is any man's *ipse dixit* worth, *without the guarantee of a specimen?*"

I take this sentence from page 208 of your number of *Notes*, for September, as my text, and have to complain of the off-hand way in which some of, indeed I may say all, the writers in the Journals state how actively their plates work, taking a *"picture"* in 25, 30, 45, seconds, and so on, without informing us what *kind* of picture it is, whether it is a *house* a *grove of trees*, or what? Let them state that important particular, and I'll ask no other guarantee, except, in all good faith, I trust to their honor, that the "picture," is a *prime one*, and not a failure.

In your interesting account of your photographic trip lately, I agree fully in one remark, "that when you have all the requisites by you, there is nothing like the wet collodion process."

I may safely say, that no one has worked harder than I have at the dry processes, and I think, as well as I can judge in this remote place, *without seeing* the "guarantees," that I have succeeded at least as well as my brother photographers ; but I have now settled down to the collodion process, and am now beginning really to *enjoy* photography. Before, it was late nights, and many weary hours of toil in the dark room, with their attendants--pale face, jaded limbs, and reduced health ; now it is all open air and sunshine, with their attendants—good helath, good spirits, good appetite, and *good pictures;* and no mistake.

I do my work with a very portable dark box of my own design and workmanship; the pictures are all begun and finished in the open air, under the blue canopy, free from suffocating odours, and they yield me the full enjoyment on the spot of the beautiful and delightful wonders of our fascinating art. In conclusion, if you receive this letter kindly, I may be induced to send you some "guarantees" (I like the word) of my dark box.

R. HAINES.

82 Grand Parade, Cork, Sept, 1858.

ACIDITY OF COLLODION.

To the Editor of Photographic Notes.

DEAR SIR,—I have a bottle of collodion, rather acid, whether from old ether, (the cotton being imperfectly washed) or from what cause, I don't know. When iodized it will do, but being rather high-colored, I fear it may acidulate my bath. Be so good to say in your next whether soda, ammonia or potash would do to add to the plain collodion in minute quantity, and if so, which is best?

Have you *Oleum Vini* in your Dictionary? Some time ago, when working large glass positives, I found 6 drops to one pint of developer caused it to flow over any size plate without a stain. I took the notion from its property of causing ether to mix with water, a portion of which, *i.e.*, ether, remaining for some time in good-bodied collodion after coming from the bath. No doubt it would be equally useful in negatives.

THOS. T. OPIE.

St. Agnes, Sept. 10th.

—Dissolve caustic potass in alcohol and add a drop or two to the collodion; it will remove all the redness by causing the free iodine to combine with the potassium. But if the pyroxyline should be decomposed and rotten, this will not restore the collodion to good working order. [ED. P. N.]

INSTANTANEOUS PHOTOGRAPHY.

In a recent number of this publication we drew attention to some singular results obtained by Mr. Skaife, of Blackheath, when taking instantaneous photographs of some military shells in the act of exploding, but want of time and space prevented our describing the particular apparatus employed by that gentleman for the purpose. We now propose, however, to do so, as it differs in many important details from the appliances usually resorted to.

Within the camera, and immediately behind the back combination of a portrait lens, a *square* opening, somewhat larger than the diameter of the lens, is closed by means of a pair of shutters fitting tightly and slightly overlapping one another by means of a small rabbet or groove in the corresponding edges of the shutters. The material of which they are constructed is that known as "Vulcanite," a combination of caoutchouc with some other ingredient, in extensive use for the manufacture of combs, &c., under a patent of Mr. Goodyeare's. This article is hard, strong, of but little weight, and impervious to light and moisture.

Each little shutter is hinged so as to cover one half of the aperture, and the pair can be opened and shut precisely like a pair of folding doors. The hinges consist of wires attached to one edge of each shutter, and these wires are prolonged upwards so as to project through the top of the camera. Each wire is armed at its upper extremity with a very small reel or bobbin, with little projecting pins or "studs." Now, by turning the bobbin one quarter of a revolution, that is, by bringing any one of the "studs" to a position at right angles to that in which it was previously, the shutter attached to its wire is completely opened, and being of such trifling weight, this operation is accomplished by a minimum expenditure of force.

If we regard the position of the pair of shutters with respect to their proper "bobbins" as *east* and *west*, the "studs" are north and south, and a silken cord connects the *north stud* of one with the *south stud* of the other, the south stud of the former being also connected with the north one of the latter by means of a ring of vulcanized India rubber stretched between them, the elasticity of which keeps the shutters *tightly closed*, excepting when a sufficent force to overcome the power of the elastic band is exerted in an opposite direction.

It is only necessary, then, to rotate one of the bobbins a quarter of a turn in order to cause *both* shutters to be *completely* opened, as any movement of one bobbin is immediately conveyed, but in an opposite direction, to its companion, by means of the silken thread or the elastic band, the latter always coming into play when extraneous force is withdrawn; consequently, if a thread be attached to and partly wound round one bobbin, by a very slight jerk of the thread the shutters may be completely opened, and will of themselves close again in a very small fraction of a second of time. Of course with a stereoscopic bi-lens camera there will be two pairs of shutters and four "bobbins," and by attaching each end of one thread to the extreme two of the four bobbins, and acting upon the centre of the thread by a slight touch *all four* of the shutters will be opened and closed simultaneously, and the same length of time will, therefore, be allowed for the partial or entire exposure of each lens, no matter how short a time that exposure may be for.

We have now described, however imperfectly, the ordinary arrangement of Mr. Skaife's apparatus, but rapid as is its action even in this condition, the movement of the finger was found to be far too slow for some of the experiments that it was considered desirable to make. In order, then, to accomplish a greatly increased rapidity of movement, an addition was made of a little lever to act like the touch of a finger upon the thread, this lever being held in place by a small detent resting in a notch at the shorter extremity of the lever, the detent being raised at will by means of a key or trigger, and the ensuing movement of the lever regulated as to velocity by means of vulcanised India rubber bands, which, by variations of thickness and number, can be made to produce any amount of quickness desired. These bands are preferred to more permanent springs, as they are economical, more under control, and any fracture is quickly and easily repaired by the merest tyro.

We have endeavoured to describe, as well as we are able without the aid of intricate diagrams, this very ingenious contrivance, which is far more simple in fact than in description; those of our readers, however, who feel interested in the matter will probably take an opportunity of examining the apparatus for themselves.

Before entirely quitting this subject we may as well take another of Mr. Skaite's manipulatory hints, for the especial benefit of our friends who work with wet collodion in the field, which enables the operator to dispense with a portion of the troublesome fingering of the excited plate.

The bath containing the solution of nitrate of silver is furnished with a lid, like the cover of a box, fitting over it all round. To this cover the *dipper* is attached, it being somewhat in form of the letter W, the lower angles of which are recurved so as to hold the coated plate much in the same way as the ordinary dipper acts.

The usual dark sliding frame of the camera is altogether omitted, and in place thereof a couple of ledges of about one quarter of an inch in length are constructed at the lower angles of the camera to receive the plates for exposure, a point for it to rest against being provided at the upper extremity.

A piece of ground glass is attached to and depending loosely from the upper part of the camera by means of tapes, and little pieces of cork are attached to the ground side of the glass, very near to, but not quite at the four corners.

A slit or groove in the tailboard of the camera is provided to receive the sensitizing bath when in use.

The mode of operating is as follows:—A hood of black velvet with a window of yellow calico to admit light being placed over the head of the operator and end of the camera the plate is coated and inserted in the bath by means of the dipper attached to the lid, which closes down upon the solution and keeps out the light.

The ground glass screen, already depending close to its proper place, is lifted on to the ledges and pressed up to its bearings, the focus is then adjusted, and the point of view finally decided on.

The ground glass is next turned back upon the top of the camera, the excited plate lifted out of the bath by means of the dipper and lid close beside the place intended to receive it, and by this form of dipper it can be immediately placed *in situ*, merely pushing it off by applying one finger between the legs of the W. The ground glass is then turned down against the back of the plate, the pieces of cork pressing against it and keeping it in contact with the same bearings previously touched by the focussing screen.

By this arrangement the operator is not encumbered either with separate focussing screen or dark slides, and the plate is ready for exposure while retaining its maximum of sensitiveness.

Although this last described arrangement is almost a necessity in order to avail one's self of the advantage of shutters, it is clear that the shutters are not a necessity as regards the application of this adaptation.

The best developer for instantaneous negatives is composed thus,—

Distilled water..................	1 ounce
Proto-sulphate of iron...	5 grains
Acetic acid.....................	5 minims

When the collodion and nitrate bath are in good order no after-intensifying is required, nor need any silver be added to the developer.

From Liverpool and Manchester Photographic Journal.

DIFFICULTIES IN FOTHERGILL'S PROCESS: Bag for changing plates.

To the Editor of the Liverpool and Manchester Photographic Journal.

Sir,—I shall be much obliged for your valuable assistance in the following matters, which as regards the first I think may be caused by my own unskilfulness in the manipulation.

After developing some plates prepared by Fothergill's process agreeably to Mr. Keen's useful suggestions, I find occasionally that the edge of the plate becomes stained with a long brown or dark slaty border, on which the film curls up and peels off on drying. I don't know whether this is attributable to the quality of the collodion or to some neglect on my part, but I shall be glad to be informed how it is to be avoided.

Not long ago, making an excursion to South Wales, I took a few stereoscopic plates with me prepared as above, and transferred them for exposure to the slide in a dark closet by the light of a candle. Several days after exposure on my return home, I tried to develop them, but found they turned to a grey muddy color in developing, without a vestige of any object, and in fact were utterly spoilt. I am inclined to suppose that it was caused by the candle-light, which was probably injurious to a sensitized plate.

The difficulty of transferring plates brings me to Mr. Lawson Sisson's "Treatise on the Turpentine Waxed-Paper Process," at page 29 a bag is described for this purpose which I have no doubt would be most useful if I could make out the description, which is as follows:—

"For greater security in changing the papers in the open air, I employ a black cotton velvet bag, lined with yellow calico, the ends of which have a strong vulcanized India rubber ring running loosely in a hem so as to close tight round the wrist. In this I can change either papers or dry collodion plates."

I am puzzled by the word "ends" and how the plates and slides are to be introduced, the shape, also, of the bag. Perhaps some of your readers who have used such a one can enlighten me, as I wish very much to have one made.—I am, yours, &c., W.

September, 1858.

[The dark brown line which readily peels off is probably owing to an error in coating the plate, the collodion at that part not having become so dry as the remainder before immersion in the sensitizing bath. It may be caused also by some of the water from the washing collecting at the lower edge while draining. Perhaps Mr. Keene may furnish a reply on this head. Regarding a bag for changing plates, we have formerly employed one of yellow calico, of three thicknesses, with openings for the hands *at the lower angles* furnished with elastic bands, the mouth of the bag, also supplied with elastic, fitted over the end of the camera (the box of plates being put into the camera previously). We had also a couple of circular pieces of yellow glass, about the size of spectacle lenses, sewn in the side of the bag, with another piece of elastic across them, which was slipped over the head when in use, so as to bring and keep the glasses in contact with the eyes, like spectacles, thus enabling us to observe what we were doing. The plates we then used were $8\frac{1}{2}\times6\frac{1}{2}$ inches in dimensions.—Ed.]

From Liverpool and Manchester Photographic Journal.

THE SOURCE OF WHITE SPOTS ON PAPER POSITIVES, And other Observations Connected with the Subject of Photographic Printing.

BY THE EDITOR.

Some time back a report by Messrs. Davanne and Girard appeared in the *Bulletin de la Societe Francaise de Photographie*, these gentlemen having been appointed by that body to examine various points relative to the question of positive printing, which, however interesting, did not contain anything of sufficient novelty to demand from us immediate notice, especially as at the time of its issue, we had before us an abundance of matter demanding precedence of consideration: We now, however, turn to it with some satisfaction, for, although (as we have already indicated) it contains many things not absolutely new, it confirms very completely the conclusions on the same subject arrived at by our English investigators.

Were it at all permissible to make use of such a word as *rigmarole* in connection with the details of a scientific enquiry, we should have been almost tempted to apply it to the report under consideration; but, at any rate, we may say that the conviction forces itself upon us more and more—that our allies set to work upon a matter which interests them in quite a different manner from that which we adopt; or rather, they have quite a different mode of conveying their intelligence.

In France the report of a scientific commission becomes quite a work of literary art—the various possible courses of proceeding are passed in review; *this* might be adopted because so and so—but then there is a grave objection on account of something else; *that* might be substituted as the mode of investigation—but that *such an convenience* forbids it. Is there not, then, any way of avoiding both of these courses, and yet attaining the object sought? Certainly there is: by doing it in *such a way* we accomplish it perfectly, &c., &c. Then comes the account of how it was done, omitting none of the dramatic disappointments, taking care however, not to hint at the solution until the last paragraph is reached, where it culminates as in the point of a jest. This is so completely the case that old hands at reading a French report know at once where to look for the pith of it.

In our own country we are far less artistic in these matters; like blunderers, as we are, to use an inelegant but expressive phrase, "*we let the cat out of the bag*" at once, and then explain such incidents and mishaps as may still retain any interest, but by so doing we annihilate that of nine-tenths of what might otherwise have been included in the report. It is true that by acting thus we may give a more condensed account, but we must bid adieu to all *dramatic* effect.

In the report which has called forth these remarks, the course of investigation into the cause of the annoying white spots so frequently found in our paper proofs is indicated, as also the source of those which are most detrimental, which do *not make their appearance* until the proofs are subjected to the action of the hyposulphate of soda, and by which all the previous manipulations are rendered nugatory.

That the spots are due to minute particles of copper or brass is affirmed; and thus the assertion to the same effect published in "Notes and Querries" by Dr. Diamond some five years back, confirmed by these gentlemen, as it also was at the time by many of our own countrymen—the novelty of the present suggestion consisting simply in the presumed source of these annoying particles; Dr. Diamond attributing them to portions of the wires used in the formation of buttons which may have accidentally been crush up with the pulp when being converted from rags, of which it is made, while Messrs. Davanne and Girard conjecture that they may be owing to minute particles abraded from machinery employed in tearing the rags, many of the "combs" in some mills being made of brass. Now, although this may seem but a small matter in itself, it is important in its way, as teaching us to avoid papers made where brass machinery is employed in the process, the injurious effects of particles of steel or iron being much more easily guarded against.

We have, in previous numbers of our *Journal*, alluded to earlier portions of the report of these gentlemen especially directed to the influence of the size in the paper, and since writing the above a third portion of their report has appeared, in which the effect of employing different chlorides for the purpose of producing decomposition of the nitrate of silver is considered, as well as the substitution of other haloid salts and organic bodies known to be capable of producing definite compounds more or less impressionable by the actinic force: and here again we have the satisfaction of finding that our own views, which we have long ago published upon the subject of the chlorides, are fully corroborated, viz:. That provided they are all in a state of tolerable purity and neutrality, and corresponding *chemical equivalent quantity* of each of the alkaline chlorides be employed, the results are indistinguishable from one another. This is a point we have insisted on over and over again, having first deduced it from theory and verified it by repeated experiments.

What say these gentlemen upon the subject? "At first, in employing these salts in a state in which they are found in commerce, we observe very noticeable differences, which fully justify the preferences accorded by photographers in order to obtain such and such results." But after testing them as above indicated by us, "the numerous differences which we had previously observed had then *entirely disappeared*, all the proofs shewing a tone and vigour *perfectly identical*."

We have now to call attention to some facts of which we had a vague sort of conviction previously, but which have been fully and satisfactorily established by the carefully conducted experiments of Messrs. Davanne and Girard. These relate especially to the presence of free alkali and free acid in the prepared chloride papers; we give the results in their own words: "If we compare a proof furnished by the *neutral* bath with those by each of the three others, we remark, in the first place, that of the four, that which is printed in the pressure frame with the greatest rapidity is the one prepared on the bath having *ammonia*, while those prepared with *free acid or free alkali* are more slowly impressed than that from the *neutral* bath. In a word, that the presence of ammonia *accelerates*, whilst that of an acid or a fixed alkali *retards* the luminous action. As regards color, the acid and alkaline baths present a tone of the same order, at once more red and clear than that of the neutral bath, whilst the ammoniacal one gives rise to that woody tone habitually observable when ammonia is employed as a fixing agent." They further observe that as acids and alkalies have both a solvent action upon the sizing of the paper, especially when starch of any kind is employed for the purpose, the advantage using a neutral salting bath will be readily appreciated. Another special point of interest will be found in the conclusions derived from experiments directed towards the substitution of other combination with a silver base instead chlorine, for instance, those of iodine, bromine, cyanogen, phosphorus, carbon sulphuric, acetic, and citric acids.

Papers prepared with the above named substances were compared as to their effects with one of the ordinary kind from chloride of sodium, which after an exposure of *five minutes* in the pressure frame had assumed the usual appearance. Long before this, however, with an astonishing rapidity the sheet prepared with bromide had produced an image, unfortunately, however, not presenting the sharpness and vigor of an ordinary proof, being veiled, greyish, and tinted in a somewhat uniform manner. With a rapidity hardly equal to that of the chloride, the proof from the phosphate of silver presented similar defects, though in a slighter degree, to those apparent with the bromide. With the remainder of the substances, although impressions of some sort were obtained. one word will described them—failures.

The facts described convinced the investigators that chlorides, bromides, and phosphates are the only insoluble compounds with silver that can be employed with advantage to impregnate paper for positive printing, but even these cannot be applied under the same conditions.

It is suggested that where the negative is harsh from excessive contrast of lights and shadows, the addition of a small portion of bromide to the salting solution would probably enable us to obtain good results, as the lights would not then appear so startling, nor the shadows so intense as without this addition. This appears to us as a happy idea, and one well worth a trial.

In conclusion, we shall sum up in the words of the authors of the report,—"Amongst all the salts that can be employed in positive photography to incorporate with the paper an insoluble salt of silver, the *chlorides are always those which give the best result*; the addition of a certain quantity of bromide or phosphate may, under the conditions indicated with sufficient precision above, produce happy effects; but we do not consider that either one or other of the two last named classes of salts employed alone, can give results equal to those that are produced by the chlorides alone.

From Photographic Notes.

CHORLTON PHOTOGRAPHIC SOCIETY.

The monthly meeting of this Society was held on Wednesday, the 8th ult., Mr. Dean, the Vice-President, in the chair.

A mode of preparing highly albumanized paper was made known to the meeting by the chairman.

Coat the paper in the usual way on albumen, then coagulate with nitric acid, coat again with chlorized albumen, and dry.

The following paper,

"ON SOME FAILURES BY FOTHERGILL'S NEW PROCESS AND THEIR CAUSES,"

was then read by Mr. John Heywood.

On the 25th April last this process was announced to the public through *The Times*, by Mr. Fothergill, who deserves the praise for the unreserved manner in which he has made known his discovery; and should these remarks be made public, I would ask the Society to acknowledge the debt we all owe to this gentlemen for perfecting a process which has already outrivalled any dry process known. Mr. Ackland, who has done much to perfect collodio-albumen, and therefore a high authority, says, "this process is far superior to collodio-albumen, gelatine, metagelatine, or oxymel process, possessing a hard surface when dry, is very quickly prepared, yeilds negatives of great softness and delicacy, develops with rapidity, and, if an opinion may be formed from no deterioration or stains on plates after being prepared a month, we may safely infer they will keep any length of time.

I would also mention that Mr. Keene has kindly given me all the information possible by letter, and without his useful information I should have long since abandoned the process. I hope to make this paper useful to those gentlemen interested, not so much by saying how to work this process, for that has been fully described in the Journals by Mr. Keene and J. P., and lately by Mr. Ackland, but by describing some failures I have met with, and their causes.

1st —Want of sensitiveness.

Those who have worked the collodio-albumen process, and were accustomed to wash away all the free nitrate, found very little sensitiveness, and looked with doubt upon its usefulness; the error was not in the process, as many of my friends have since discovered, but in their wrong washing. To obtain the greatest amount of sensibility requires very careful washing; if the free nitrate is *all* washed away, as in collodio-albumen, very little sensibility remains; but by washing as described by Mr. Keene to whose method I shall presently refer, the highest amount of sensitivness is obtained. The exposure as compared with wet collodion and collodio-albumen, I find thus:—Say, wet collodion one minute, Fothergill's one-and-three-quarters, collodio-albumen three to four minutes. I use this method of indicating the exposure, as lenses and other appliances vary so much that operators are liable to be deceived by the time of exposure given by one operator, and subjects also vary so much in the exposure required. I have, on the same day and with similar light, given one subject one minute and another ten minutes, with no perceptible difference in the negative; proper drying is also requisite,—the sensibility being increased by it. There are two states of dryness, if I may be allowed the expression, surface dryness and dryness of the film. If the latter is not complete the plate is unevenly sensitive, and developes with different degrees of intensity, the partially dry part is not so sensitive as the thoroughly dry part, the opposite result to what is generally experienced in other processes. In drying place the plate on a corner in the dark for one to two hours to dry spontaneously, then complete the drying by a little heat, and the plate assumes a pale blue color as the moisture dries off, if dried rapidly by heat, one end is more sensitive than the other; when dried spontaneously, dust, &c., &c., is very apt to attach itself to the film. Marbled patches are apt to be produced if the washing is improperly done and the washing water not well drained away, causing an unequal deposit on the plate. The remedy is easy: drain well, and then rest a moment on clean filtering paper; one and a half drachms albumen will then coat the plate evenly. Lines somewhat circular are caused by the washing water coming to a stand in being spread over the plate; they are rather faint, but still they will injure the finished negative in beauty of appearance. When the washing water is poured on the plate, it will not flow so well as the developing fluid, and requires forcing well up to the edges in a wave. By looking across the plate, it can be best observed. None should be spilled, or that plate will be increased in sensitiveness. In dry plates uniform sensitiveness is important. By moving the water about for thirty seconds, all greasiness will have disappeared; and I pour the water into a bottle for evaporation, and further uses which will suggest themselves. Dark patches are produced round the edges, and spread more or less over the plate, by the bath solution not being well washed away from that part; consequently, when albumen is poured on an unevenly sensitive surface is the result. Let the washing water flow well up to the edges, and this will be obviated Lines in the direction the plate has stood to drain, producing lighter or darker parts in the developed negative, are generally caused by bath or albumen being on the fingers, and by them transferred to the edges of the plate afterwards running over the film. A damp towel to wipe the fingers after being in contact with either substance, is an excellent remedy A snip in the edge of the glass, if of any extent, will often produce the same effect; the remedy is obvious. Many have met with the marks similar to those left by a comb in the hair, and have found them very frequent. They are the effect of not washing until all the greasiness has disappeared. This causes the albumen to come in contact with nitrate of silver at too great a degree of concentrated strength, and it is partially coagulated I have found such success from using Mr. Keene's collodion, that I have preferred it to other samples, either for this process or others; there is such an absence of what has been facetiously termed "blacking and whitewash." Circular rings are caused by a drop of water falling on the plate during preparation, and leaving their impression on the finished negative. I will now describe the modes of washing, and conclude my paper.

1st. For stereoscopic size: pour on the plate four drachms filtered rain water from the corner, and spread it over the plate evenly as if developing a negative, it will not flow so easily, and requires moving to throw the water where it is required to go. After covering the plate well up to the edges and corners, keep it moving about for half a minute and drain off well, then touch it on filter paper for a second or two before pouring on albumen.

2nd. Immerse in a dipping bath containing sufficient water to cover the plate well, and after moving up and down several times, take out and drain as before-mentioned. Many plates may be washed in the same water.

3rd. Place in a vertical bath containing six ounces water, as described by Mr. Ackland, and washed by being raised and lowered ten times.

I believe any of these ways of washing will answer, but the first way, as described by Mr. Keene, gives in my hands the most sensitive plates; in the second the dipping is very easy in comparison with the four drachm washing, which requires care and a little practice; the third, the latter, I have not tried. Washings, I should remark, at this stage of the process, must be with filtered rain or any other water.

Albumen may be washed away with common water, and to prevent holes in the sky, as they are termed, flooded with two or three drachms of filtered rain water.

Other failures common to all photographic operations are not a part of my subject, yet to ensure success, they also must be guarded against, these particulars may appear minute and tedious, but they are not so in reality, and the operator may more easily ensure the result he desires by this process than any other.

No one who provides himself with pure water, a suitable collodion, a neutral bath, pyro', developer, and hypo', can fail with care. A bath prepared in March is still working well. I exhibited some negatives taken then by this bath, and those I bring here to-night are prepared in the same, with no addition except a few grains of nitrate of silver; only on one occasion, when it was alkaline, I added two drops of nitric acid to ten ounces.

The thanks of the meeting were given to the chairman, for presiding; and to Mr. Heywood, for his paper, which concluded the business of the evening.

From Photographic Journal.

STEREOGRAPHY.

BY WILLIAM ROSS, NEW YORK.

The discord usually attendant on the discussion of any other *questio vexata* is not yet ended as far as this subject is concerned, if one may judge from the incessant outpourings of fresh recruits rushing into the wordy warfare.

I have already appeared in the field, as may be seen in No. 18 of the last volume of this *Journal*, and should have done so a second time in the same volume, only my communication and *material* were lost on the road between here and Liverpool.

As that article miscarried in some way I intend in this to go over the same ground as near as I can; not that I hope to do it better, for nothing that I have seen since has induced me to change my views on the subject.

I have always believed that the object was to *see things as they are*, or as they could be seen by both eyes at once, and not to look at an object—say on the right side of the street with the right eye, and afterwards at the other side of the street with the other eye, at stations equal to thirteen or fifteen metres apart.

Being professionally conversant with perspective, I was at no loss to understand that anything projected by its rules was truly a *monocular* view, and that a stereographic picture must be composed of two such from different stations adjacent to each other, and on the same horizontal plane, forming what may be called a *binocular* view, when super-imposed on each other by means of the stereoscope.

Now the question arises, what is the proper horizontal distance, and how can it be ascertained? Assuredly the rule of three cannot be the proper rule for a mathematical solution of any difficulty, whether in optics or in anything else. Many adopt no other rule, while some others have some empirical formula depending on the *distance* of the object; one in twenty-five being Professor Wheatstone's rule, so that a tape line or a surveyor's chain is a necessary adjunct to the stereographic tourist.

I quote the following paragraph from Mr. Berry's paper, read before the Liverpool Photographic Society in June, 1856, and which may be found in the *Journal* for that month—"I believe, then, if we desire to depict, by any photographic process, a miniature representation of (for example) a street view, which shall faithfully represent the original when viewed through the stereoscope, we must use an instrument which shall be constructed as near as possible in accordance with the optical arrangements of the human eyes, to which only it is destined to be applied."

To this doctrine I fully subscribe, and I believe the present editor of the *Liverpool and Manchester Photographic Journal* holds opinions not very dissimilar to the above; but neither that gentleman nor Mr. Berry have given us a formula representing, in a concise manner, the application of their doctrine to the stereoscopic camera having lenses of some particular focal length, far less for lenses of any focal length whatever, that may be applicable to the purpose. This I now propose to do, and I take my data for "the optical arrangements of the human eyes," from the work of Dr. Mackenzie on "*The Physiology of Vision*," (London, Longman & Co., 1841,) a work replete with optical information, and which ought to be in every practitioner's library.

The close analogy between the ordinary camera and the eye is too well known to be dwelt upon. Each eye is a distinct camera, having each its own lens and surface on which the image is formed. Each eye forms its own picture round its own axis, each picture being precisely of an equal area to that formed by the other eye, and this is precisely the conditions we have to meet in producing stereoscopic pictures to be viewed by the stereoscope. Taken singly, each of these pictures formed by the eyes is a *monocular* picture, just as is a perspective view from one station; and in order to ascertain the distance between that station and another, from which the other perspective view is to be taken to match the pair formed by the eyes, we must make that distance precisely *proportional* to the distance between the two eyes, and neither less nor more.

In investigating this subject, we do not require to notice either the correction or non-correction of the aberrations of the eye, nor need we do more than mention the controverted question of the adjustment of the eye to different distances; for if we consider the distance between the retina and the optic centre of the eye to be the focal length of the eye for objects infinitely distant, it will require no adjustment whatever for any object beyond the distance of distinct vision, provided it subtends an appreciable angle. It is well known that every lens, whatever may be its focal length, has conjugate foci for all distances up to a certain number of its focal lengths, while every object beyond that distance is in focus at the same time. That distance varies in the number of feet, yards, &c, for every lens of different focal length; but by using the focal length as the unit of measure, the number of focal lengths is constant for every lens, as well as for the eye.

The following proportions of the eyes are extracted from Dr. Mackenzie, pp. 72 and 98.

Axis of eye...........................	$\frac{19}{20}$ of an inch.
Axis of *transparent* media of eye.........	$\frac{18}{20}$ " "
Diameter of crystalline.....................	$\frac{7}{20}$ " "
Aperture of pupil varies from $\frac{12}{100}$ to $\frac{25}{100}$	" "
Distance between centres of pupils.......	$2\frac{4}{10}$ inches.
Distance from optic centre to retina......	$\frac{6}{10}$ of an inch,
(focal length of eye.)	

Taking the focal length of the eye as the unit of measure, we see that the distance between the centres of the pupils is equal to four times the focal length.

A binocular view may therefore be enunciated thus: *It is a combination of two monocular views formed by a pair of equifocal lenses* (the eyes) *taken from two stations situated horizontally* *apart, at a distance equal to four times the focal length of the lenses employed.* Hence the formula is, when F is the focal length and E the horizontal distance of the stations apart,

$$D = 4\ F.$$

This formula will apply to lenses of any focal length whatever, so that lenses of short foci may be used for very *near* objects, and as such lenses would give to distant objects too minute a character, lenses of long foci should be used for the latter.

The gross exaggeration in the distance from which the pair of views of very many of the stereographs sold have been taken, is such as to render them contemptible as works of art, or even of curiosity. Such exaggeration can only affect the *horizontal* proportions of objects, leaving their *vertical* proportions of the proper height, while they are so dilated horizontally as to be downright caricatures of the original. In cases where the object is so distant as to render a great separation of the stations necessary to shew its solidity, the impression ought to be taken by a lens of a corresponding focal length. "The celebrated view of Paris," which was taken at fifteen *metres* apart, ought to have been taken by a lens of four *metres* focus!

The greatest stereoscopic effect is always produced on the bodies or objects nearest the foreground, the objects in the background having little or no stereoscopic appearance, beyond the fact that they stand behind the other objects, which really appear to stand out in relief. These near objects should therefore be the principal portion of the picture; and hence, buildings consisting of a plane facade only cannot form pleasing stereographs from a near station, unless the relief is produced by a conspicuous object or group between it and the camera.

I have just finished the fitting up of a waggon for the purpose of a camera, in which to take *views* of all sizes up to 24× 20 inches, and of every kind—scioptric, stereographic, and cyclopic, by the wet collodion process, and shall, if encouraged, send the negatives to Britain for sale. I use lenses of different focal lengths, all of them achromatic. Those I use for stereographic purposes are in pairs, four and a half inches and eleven inches focus respectively. The apertures are pierced in the waggon at the proper horizontal distances apart, and are so large as to permit a considerable adjustment of the lenses when the waggon stands on sloping ground, so that both pictures can be taken on the same level. The lenses are fitted to the proper distance apart, according to their focal length, as herein indicated, and the caps of each pair are so connected as to be opened and closed simultaneously and instantaneously. The closed waggon is itself the camera, every operation, from cleaning the glass to finishing the impression, being performed in it.

From the Liverpool Photographic Journal.

OPTICAL AND CHEMICAL EXTINCTION OF THE CHEMICAL RAYS.

At the meeting of the Royal Society, held on 18th June, 1857, a third communication upon "*Photochemical Researches,*" was presented by Prof. Bunsen and Henry E. Roscoe, B. A., Ph. D. On "*The Optical and Chemical Extinction of the Chemical Rays,*" they state:—

"In order to determine whether the act of photochemical combination necessitates the production of a certain amount of mechanical effect, for which an equivalent quantity of light is expanded, or whether this phenomenon is dependent upon a restoration of equivalent loss of light we must now study the phenomena occurring at the bounding surfaces and in the interior of a medium exposed to the chemically active rays.

"If I_0 represents the amount of light entering a medium, and I the amount issuing from the medium, we have $a\ I_0 = I$, when a represents the fraction of the original amount of light which passes through the medium, on the supposition that the light extinguished is proportional to the original intensity of the light. The first series of experiments was made with the view of determining this point. The intensity of the chemical rays proceeding from a constant source of light was measured before and after passage through a cylinder with plate-glass ends, filled with dry chlorine. The amount of transmitted light I, was determined for various intensities of incident light, I_0 and the fraction $\frac{1}{10}$ was found to remain constant, proving that the absorption of the chemical rays varies directly as the intensity of the light. From this result, the general law of the optical and chemical rays in transparent media may be deduced. For as it has been shown that the amount of light transmitted through a medium of infinite thickness is proportional to the intensity of the incident light, it may be assumed that this same relation will hold good for an infinitely thin medium. According to this supposition, the relation between the transmitted light, I, and the thickness of the medium, is represented by the equation $I = I_0 . 10^{-ha}$ and $a = \frac{1}{h} \log \left(\frac{I_0}{I}\right)$, in which I_0 represents the light before transmission, I, that after transmission through a layer of h thickness, and $\frac{1}{a}$ the thickness of absorbing medium by passing through which the amount of light has diminished to $\frac{1}{10}$th.

"The difference between the incident and transmitted light, *i.e.* that lost in passing through the medium, is made up (1) of a portion effected, and (2) of a portion absorbed or extinguished. We have experimentally determined the values of the coefficient of reflexion ɔ, and the coefficient of extinction a, for the glass plates used in our cylinders. We found that 4·86 per cent. of the chemical rays, from a flame of coal-gas, which fall perpendicularly on a surface of crown glass, are lost by the first reflexion; and that the amount of light absorbed in our plates was so small as to fall within the limits of observational errors. The value of p for the plates of glass employed was found to be 0·0509. When the coefficient of reflexion for glass p is known, the amount of light a transmitted by n plates is found from the formula $\frac{1-p}{1 \times (2n-1p} = a.$

Hence the amount of light transmitted by two plates is 0·823. We have confirmed the accuracy of the calculated result by direct experiment, and obtained a value 0·800, or a mean of 0·811 as the coefficient of transmission of our plates.

"If all the transparent media have not the same coefficient of reflexion, the order in which the media are placed will affect the amount of transmitted light. We have given an example of the mode in which the calculation must in this case be made, in the determination of the coefficient of extinction of water. We found that the amount of light absorbed by a column of water 80 millimetres thick was inappreciable. According to the method here adopted, it is possible to determine the coefficient of reflexion of all transparent fluids for the chemical rays. We have only determined the coefficient of reflexion for American mica; for the chemical rays of a coal-gas flame p was found to be $= 0·1017$. From the coefficient of reflexion, the refractive index (i) can be calculated from the equation

$p = \left\{\frac{1-i}{1 \times i}\right\}^2$ or $i = \frac{1-\sqrt{p}}{1 \times \sqrt{p}}$. The refractive index for crown glass thus calculated from $p = 0·0509$ is found to $i = 1·583$; the refractive index for Fraunhofer's line H has been optically determined to be between 1·5466 and 1·5794 (Buff's Physik).

"Another important element in the investigation of photochemical extinction is the law according to which the optical coefficient of extinction varies with the density of the absorbing medium. A series of experiments proved that the amount of chemical rays transmitted through a medium varies proportionally with the density of absorbing medium.

"'We may now proceed to the investigation of the original question proposed, viz:—in the combination of chlorine and hydrogen effected by the light, are the chemical rays expended in a relation proportional to the quantity of hydrochloric acid formed? The first point to be determined, in order to answer this question, is the coefficient of extinction of pure chlorine for the chemical rays of a coal-gas flame. The amount of light was measured before and after transmission through cylinders filled with chlorine.

From the Liverpool and Manchester Photographic Journal.

DECREASE OF THE INTENSITY OF NEGATIVES.

Sir :—Having seen how kindly you answer the numerous queries of perplexed young photographers, I trust you will include me among that favored number. The other day I took a most beautiful negative (a potrait), the shadows ot which were exceedingly sharp and delicate, but when I came to varnish it, the intensity of the negative was considerably lessened. causing it to appear of a bluish tint when viewed by transmitted light. A print from it was not nearly so sharp, and most of the delicacy of the half-tone was completely destroyed. If you can suggest a remedy I shall be much obliged. If the color of the negative could be changed to a more yellow hue, I think it would be all that would be required. I am, yours, &c.

A Constant Reader.

Liverpool, September 6, 1858.

[The delicacy and sharpness of detail in the shadows of a picture are not of themselves sufficient to make a good negative ; they are simply an indication that the correct exposure for the collodion, &c., employed has been obtained. It is probable from your description, either that the development was interrupted at a stage too early to have allowed of a sufficiently intense deposit, or that the collodion was too thin for a negative, or too lightly idolized. In order to change the color now it would be necessary to entirely remove the varnish, but this would probably destroy the picture altogether. You may, however, still get good proofs from it by the process of development instead of sun printing, by giving very short exposure, and developing highly ; we should recommend albumenised paper for this purpose, and gallic acid as a developer.—Ed.]

From Photographic Notes.

PHOTOGRAPHIC BATHS AND DISHES.

To the Editor of Photogrnphic Notes.

Sir,—I have lately seen many letters concerning baths and dishes for photographic purposes, some, and as it is frequently offered to the public, *there* advocating porcelain, some gutta-percha, some glass ones, and others again recommending a combination of the two latter. Gutta-percha has the advantage of strength and lightness for travelling purposes, but I don't like it ; you cannot see if it is clean ; and as it is frequently offered to the public, there is considerable mischief done to the nitrate of silver. My travelling baths are of gutta-percha, and varnished inside with shellac, as recommended by some writers ; this is certainly an improvement ; but a slight deposit still forms now and then ; all resins and gums precipitate silver, and I fancy that the shaking about disturbs the first-formed deposit, thus again exposing the gum to the action of the liquid.

In the last number of the Photographic Journal, page 32, the Editor recommends a *porcelain* bath, and not even a *porcelain* dish, of English manufacture ; those made in England are of common earthenware, soft, glazed over, and I do not hesitate to call them rubbish ; the glaze soon cracks all over, and then are worse than useless.

I happen to possess some French dishes of which I can speak very favorably ; they are of white *porcelain*, (real porcelain), hard burnt, and vitrified through their whole substance ; depth an inch-and-a-half inside, with the edges ground level, so that a glass plate lies over the top forming an air-tight cover; the name on them is Cuilloux ; they come from Paris, as iodizing pans for large Daguerreotype plates, and after four years constant use, with all sorts of liquids, they are as good as ever. Now, why cannot *our* china manufacturers make the same sort of thing,—or rather, why don't they ? Are we always to look to other countries for improvements in such articles.

The glass upright baths we see in London are certainly very nice things, but do you really know any one who travels with one of any considerable size ? I don't ; and for this reason : they make them so wide, that it takes an awful lot of liquid to fill them. A glass bath, 12×10, as at present made, is an inch-and-an-eighth wide inside, all the way down, requiring about *half-a-gallon* of solution to fill it, and this, with water-tight cover and case, will probably weigh 15 or 20lbs. I can afford the price, but cannot afford the weight and inconvenience of such a bath ; therefore, my indoors bath I made with plate glass and marine glue, and my travelling baths are of gutta-percha.

Now, what is the use of this width of an inch-and-an-eighth ? The V-shaped baths, made by the late F, Scott Archer' were a step in the right direction ; and why cannot we have a V-shaped bath of glass or porcelain, (mind no common eartheware for me), say 12×10-ins., about three-quarters-of-an-inch wide at top, and three-eighths of-an-inch wide at bottom ; such a bath would hold rather less than a quart when full. This would be much more portable, and the width quite enough for any but the most clumsy operator. I have used a bath for plates 8-ins. square, which was only three-eighths-of-an-inch wide at top, and found no difficulty *out of doors even*. The sellers of the present glass baths will tell you, that the strength of a small quantity of nitrate solution is soon exhausted ; but it is easy to carry nitrate of silver and drop in 5 or 6 grains for every ounce of collodion used up.

Now, Mr. Editor, you will, I know, have all sort of objections made, particularly to my last suggestion of narrow porcelain baths ; some will say they can't be made ; and others will declare that they can't be used if made ;—to such I can only say, "try first and form an opinion afterwards." The actual quantity of nitrate solution taken up by a large collodionized plate is only two or three fluid drachms, and for the sake of this small quantity, we are compelled to carry a half-a-gallon about with us,—very clever, certainly, for the nineteenth chetury.

I formerly worked upon 8-in. plates, and by way of showing how I succeeded with the above-mentioned bath, three-eighths-of-an-inch wide, I enclose a spoiled print for your inspection. I am now more ambitious, having got to plates 11×9, and am at once met with the inconvenience of increased bulk and weight. If you will assist in getting rid of these difficulties, you will, I think, do good service to the art generally, as well as to

Your obedient Servant,

"Simonides."

From the Liverpool and Manchester Photographic Journal.

FOTHERGILL PROCESS.

Sir :—In reply to "W.'s" enquiries respecting curling off of film and dark border at the edges of the plates, the most probable cause of the first is unsuitable collodion ; but, if satisfied that the collodion is right, it may be looked for among the following :—Plates not roughed or well cleaned at the edges, also those placed in a box or dark slide before being perfectly dry ; collodion not allowed properly to set before the plate is placed in the bath ; or *prepared albumen not carried well up to the edges of the plate*. Remedies for the first four are obvious, and for the latter all that is requisite is to cause the albumen to follow the finger all round the edges of the plate, taking are that the finger is *quite clean*, and rests rather against the under edge of the plate, so as not to disturb the collodion film. The long brown or dark stains mentioned (if the dark slide does not admit light) are caused by either not carrying the water well up to the edges at the *commencement* of washing the sensitized plate, so that the middle is washed more, or rather the bath on it more diluted than at the edges—*vide* my communication in the *Journal* of 15th September—or the plates have been put in the box or dark slide before the "film" has become dry.

Before concluding, I would draw attention to the remark by Mr. Heywood, in his ably written paper "*On the Fothergill Process*," reported in your last as read at a meeting of the Chorlton Photographic Society, to the effect that there are two states of dryness—one that he has termed *surface*, and the other *film* dryness—and that plates used before the latter has taken place are liable to uneven sensitiveness, recommending artificial heat to complete the drying as obviating this, and also increasing the sensitiveness.

This I consider particularly worthy of attention, and am inclined to think that to plates having been placed in dark slides, and *more particularly in deal boxes before the film has been thoroughly dry*, may be attributed the difference experienced by some in the keeping properties, and in many instances the brown stains at the edges, and other similar ones mentioned by W., several circumstances have tended to convince me that this is the case ; among many others, on one occasion I put some prepared plates in a dark box *quickly* after preparing them, and all proved more or less damaged, while others prepared at the same time and under the same circumstances were *quite perfect*.

The advantage of using artificial heat has also been observed by others besides Mr. Heywood. Mr. Prichard mentioned in a communication in the last *London Photographic Journal*, recommending the plate to be placed on a hot water plate for the purpose, and Mr. Ebbage, another of our amateurs, has for some time past practiced it ; his plan is to place just underneath the shelf of the cupboard in which he finally puts them to dry, a suitable bottle of nearly boiling water. With plates thus dried and a four-and-a-half inch Ross' stereoscopic landscape lens (single,) very small stop, he gives, on general subjects, an exposure of from forty to sixty seconds ; forty-five and fifty being the usual, and the results are the *most beautiful I have ever seen*.

Both these plans of drying avoid the necessity of removing prepared plates from the operating room, and also the risk of too high a temperature. Three gentlemen, so well versed in this process, having, without any knowledge of each others proceedings, arrived at the same conclusion, strongly recommends the plan, to say the least, to our notice.

It may further commend this much admired process to your readers by informing them of its superiority for copying purposes. I have this day seen the copy of a print, by another of our persevering amateurs, Mr. Bright in which every line and shadow, even the most delicate, of the original is delineated, without the harshness of contrast so frequent and objectionable. It is decidedly superior to any he has taken by the wet process, though very successful, and requires an experienced eye to detect that it is merely a photographic copy. I am yours, &c.

Leamington, Oct. 6th, 1858. ALFRED KEENE.

From Liverpool and Manchester Photographic Journal.

On a Convenient Method for WORKING WITH WET COLLODION IN THE OPEN AIR.

BY THOMAS GULLIVER.

Perceiving that there are still enquiries for a ready method of employing wet collodion for landscape purposes, without being overwhelmed with incumbrances, I beg to offer the following statement of my method of operating with the dark tent, described in a letter of mine, which appeared in No. 4, February 15th, of the *Liverpool and Manchester Photographic Journal*, which I have had in use now seven months, and can speak highly in its favor.

A short time back I received an order for three views of a bridge to be used in a court of justice as evidence. I started with the tent about three in the afternoon, having to walk a mile to the place of action, and I returned by half-past four with four negatives, three of which were good.

I will now describe the *modus operandi*. The chemicalsk taen consisted of thirty ounces nitrate of silver solution, two ounces collodion, four ounces developer, and four ounces of syrup. No water for washing, nor any hyposulphite of soda. And here let me advise all photographic tent travellers never to encumber themselves with these nuisances. On arriving at the spot the camera was screwed on to the top of the tent, which serves as the camera stand. The plate having been coated and put in while the focus was adjusted, was exposed for twelve seconds, and taken inside the tent, and a developer poured on, consisting of protosulphate of iron and acetic acid. When the picture was fully brought out, about three-quarters of an ounce of syrup was poured on and off three or four times, then the plate, $8\frac{1}{2} \times 6\frac{1}{2}$, stowed away in a plate box, and thus a negative secured in the short space of three and a-half minutes.

On my arrival at home the plates were first washed in water, then a solution of pyrogallic acid and silver poured on and off till sufficient density was obtained, and finally cleared with hyposulphite of soda, washed and varnished. There is no fear of the film coming off, as the syrup fixes it firmly as a sheet anchor. The syrup is composed of coarse brown sugar, honey, an acetic acid, and water. I do not trouble myself to carry any developing table or tray, as I consider them quite useless, and the little mess that is made is left on the ground. I enclose a print from one of the negatives taken on the occasion described above.

[The manipulation of the proof is decidedly good, the faults that are present appear to belong to the lens not working too well towards the edges.—ED.]

Personal & Art Intelligence.

VERY little has occurred since our last worthy of comment. We are sorry to say that very few of our subscribers who were in arrears on the first of July, have responded to our last call. They do us great injustice by their neglect. While we have so many *black sheep* among our subscribers this year, it is refreshing to receive such letters as the following, from a man who *always pays in advance* : JAMESTOWN.

MR. H. H. SNELLING :

Dear Sir—I have had the honor of having my name enrolled amongst the subscribers to the *Journal* from its commencement to the present time. It has been the source of much gratification and the vehicle of very valuable information ; it is continually presenting something new that is of highly practical importance to the Photographer, and is deserving of their highest commendation. I am so well pleased with the *Journal*, and the aid it has been to me, that I would not be deprived of it for the future for more than double its cost ; and I lament very much that I am incapable of contributing anything that would be worthy a place in its pages. I have no doubt but you met with much difficulty during the earlier part of its publication. I thought at the time that it was a hazardous enterprise, and would not be remunerative ; but as it came regularly I began to think that I was mistaken, and that your zeal and very commendable perseverance was duly appreciated and met its reward. To those who are indifferent as to the success of the *Journal*, I would say, contrast the first volume with the eleventh ; consider the labor, care, anxiety, and disappointments the Editor must have experienced during its growth—let them sum up the many advantages it has been to them, and they could not do otherwise than give you, Mr. Snelling, their heartfelt thanks, and the support and encouragement you so richly merit.

May the *Journal* continue to flourish and its subscribers increase—and may they all be prompt paying ones, is the sincere wish of your friend,

JOHN C. GRAY.

FRIEND LONG, of St. Louis, writes despondingly of the business in that city, and of the languishing state of their Photographic Society. A "good time" is coming, depend upon it, when long faces shall be made short and drawn down mouths will put on a broad grin ; but never expect to sustain a Photographic Society, or any other on a *price list* basis. It will never succeed. *Brains* are the only capital that can give a *quid pro quo* in such an investment.

CHS. G. CRANE.—The best toning baths we have ever used, and decidedly, in our opinion, the best formulas extant are those given in the June number, 1857, and January number, 1858, of the PHOTOGRAPHIC AND FINE ART JOURNAL.

THE following just tribute is from the *Augusta Dispatch* :

THE FINE ARTS IN AUGUSTA.—MESSRS. TUCKER & PERKINS' GALLERY.—None of the evidences of improvement in our devoted city afford us a more pleasing topic for a paragraph, than to note a growing taste for the fine arts. If any evidence is needed to convince "Gunny Bags" that our busy people are not wholly engrossed in his staple, we would refer to the Art Gallery of Messrs. Tucker & Perkins.

We have before alluded to the very creditable specimens of Photographic portraiture executed by them; but their Gallery now contains a collection of portraits such as has never before been exhibited in our city. These comprise life-size Portraits in oil, Photographs, colored in oil, pastel, and plain, besides their usual collection of fine Ambrotypes. They have secured the very best artists in each department, and there is no gallery in the Union where better work, from the full-sized likeness in oil, down to the smallest Ambrotype—can be obtained.

Among those who are engaged at their Gallery, are Mr. W. Hunt, an English Artist of celebrity, Mr. R. Freeman, whose portraits have been admired throughout the Union, and Mr. J. M. Tomlinson, an Artist of fine ability.

Messrs. T. & P. will exhibit a large number of specimens at the Fair in Atlanta, next week, and as they will be shipped to-morrow, we advice our citizens to look at them before they leave.

Among the works of Mr. Hunt, on exhibition, are life-sized portraits of Miss Gallagher, a very beautiful young lady of Savanah; Miss Levert, (daughter of Mrs. Levert, of Mobile;) Mrs. Keasley, of New Haven; Mrs. LeConte, formerly of Athens, Mr. Potter, of Savannah, Judge LeGrande, and Col. Anderson, of Baltimore; C. A. Laear, of Savannah, a staid looking Quaker family, and gentleman and child not named.

Among the notable pictures by Mr. Freeman, is a most exquisite portrait, in oil, of Miss Finly, of Macon; one of Mr. and Mrs. Fitzgerald, of Perry, Ga; a family groupe, quite a novelty, and a fine life-like portrait, in oil, of Col. Lochrane, of Macon.

Mr. Tomlinson has completed a portrait of Miss Perry, of Covington, and is engaged on one of D. H. Hill, Esq. All these, and many others are fine specimens of art. We hope our enterprising friends, Tucker & Perkins, will be re paid for the pains and expense they have incurred in offering our people such facilities for fine pictures. Their prices, we learn are very reasonable—usually below the rates of Northern galleries.

Our readers can prove the correctness of all we have said, by calling at their rooms, nearly opposite the *Dispatch* office, over the store of S. S. Jones & Co., and looking for themselves.

We clip the following from the *Syracuse Daily News*:

"The Fine Arts.—When the Roman General asked his faithful servant Zenani, what favor he could grant him, he replied, "Thy likeness, my master." The favor was granted; but history does not inform us in what style of art the coveted picture was taken. Daguerre was then unborn, and the Camera reposed among the unwaked skill and science of the inventor's brain. It is therefore safe to surmise that the pallet and the easel were summoned into requisition to fulfil the humble Zenani's request. As pictures, ambrotypes are abortions and worthless as mementoes of departed or absent friends, a few months fade them; the film peels off the glass, or the varnish becomes yellow. As the material is cheaper which composes the ambrotype, some makers urge their sale, but it is conceded not only by the most skilful artists and practical chemists of the day, but by persons of any discernment in the art of picture-making, that for durability, richness, softness, delicacy of detail, with all the minutely exquisite gradations of light and shade, and perfection of a whole picture, the daguerreotype is superior to all others. No delineation of the human face receives such boldness as that by the Daguerreotype process. The cry has been often raised that the daguerreotype fades! This is untrue. We will show the fallacy of this error, and if you, dear reader, have a faded daguerreotype, and you are prejudiced against it, let us remove that prejudice. Take off the glass and clean it with alcohol and your daguerreotype will look as good as new. It is contrary to the nature of things that a perfect daguerreotype fades. When the glass that covers the daguerreotype becomes warm, it expands, and the pores open, and when it chills the pores of the outside close, pressing the moisture through on the backside of the glass, where it dries, forming a scum, and blurring the picture. By removing the glass and properly cleaning it, the picture looks as well as ever, and will stand the test of ages. The moisture does not injure the face of the picture, whereas it spoils the ambrotype. The reason of this is obvious: moisture will press through the glass of the ambrotype in the same manner as the daguerreotype glass, but lodges between the collodion film and the glass, rendering it impossible to clean without effacing and spoiling the picture. We saw an experiment of this kind tried recently at the Daguerrian Gallery of J. S. Coonley, in the Frankin Buildings, and we were not only highly pleased with the process, but shall ever believe with Mr. Coonley that a perfect daguerreotype supersedes in every way all other pictures made by the hand of man. Photographs have their merit, and as to durability they will rank with the daguerreotype, and come nearer the daguerreotype than that of any other process for boldness and delineation of light and shade, but in very large pictures it may be said the Photograph is superior to the Daguerreotype."

The beautiful Diaphaneotypes, "The Five Senses," of which we spoke in our last, as being on exhibition by Mr. Faris, at the Fair of the American Institute, were destroyed by the burning of the Crystal Palace. The largest photographic sufferers at that fire were Mr. J. Gurney and Mr. Fredericks, who both lost large and valuable collections.

Our illustrations this month show a decided improvement in Mr. Cutting's Photo-lithographic pictures. These prints are furnished by Messrs. Cutting & Turner, of Boston.

We shall illustrate our next January number with a splendid view of Long Island, from the New York shore, taking in a portion of Blackwell's Island, on a full size sheet—picture 16× 18 inches. The capabilities of Mr. Harrison's new view lenses will be beautifully illustrated by this picture, and as we have made new arrangements for our photographic printing, we can promise that the execution of these pictures, as well as all others hereafter published in our Journal will be of the first class.

We have received a communication from a Mr. Parsons, of Albany, in answer to our leader of last month; but too late for this number.

Death of M J. Gurney of Natchez, Miss.—It is with extreme regret that we learn—from the following paragraph—of the death of our old subscriber and friend, M. J. Gurney, and we sincerely sympathize with his brother and family in their bereavement. Our intercourse with Mr. Gurney, has always been of the most pleasant, and we shall always bear him in memory with pleasure, and regret for his loss.

The Late Marsh J. Gurney.—On Sunday evening last, a long procession of mourning friends, preceded by the Adams Light Guard, accompanied to their last resting place the remains of Marsh J. Gurney, so well known in our city and county.

Mr. Gurney died on Saturday night last, of yellow fever, after an illness of less than a week's duration During a residence in this city of many years, he had endeared himself to all who knew him. His smiling countenance told of earthly happiness, and his merry laugh and friendly word betokened the warm, generous heart that beat within his manly form. A member of the Light Guard, that company turned out in force to pay the funeral honors over the grave of their comrade, and sad was it to hear the slow and measured music which marked the time for their mournful procession. Mr. Gurney's loss will be deeply felt, not merely by a troupe of friends, but in the peculiar branch of art of which he was so enthusiastic an admirer, and so great a proficient.

"Art is brief, and time is fleeting,
And our hearts, though strong and brave,
Still like muffled drums, are beating
Funeral marches to the grave."

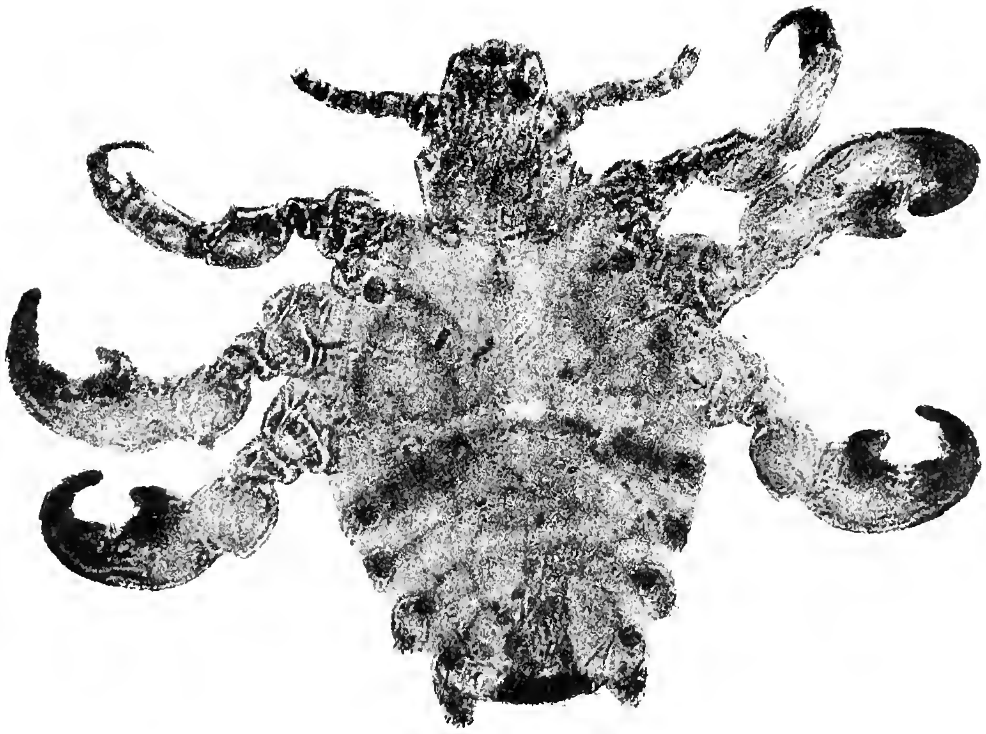

Photo-Lithograph
by Cutting & Turner

From Liv. and Man. Photographic Journal.

THE NEW PETZVAL LENS.

BY WILLIAM ROSS, NEW YORK.

No diagram of this celebrated combination has yet found its way to this country, without which it is very difficult to understand wherein its claimed improvement consists.

As soon as it was first announced here, and long before the most vague description of it had been given, it was gravely asserted in "our Journals," that the problem had already been quietly solved here, and that a more celebrated optician (for this last term read "*common lens maker.*") than either Dr. Petzval or Voightlander,[1] had not only done so, but had made the lenses themselves "eighteen months ago !"*[2] a *canard* of course, but its key will be found in the fact that the *celebrated optician* cannot sell a lens except through two houses, who are equally celebrated as "Dealers in Photographic materials," who each own *(sub rosa)* a *Journal* of their own[3]—hence the facilities for celebration.

Whatever may be the qualities of the new lens, it is henceforth—"An American Invention" and so far as I can see, from the published descriptions, the priority of date will not be worth disputing.

Mr. Fenton's statements of his trials with it are the first reliable accounts we have of it. M. Pretch's German idiom is to me imcomprehensible, and Dr. Petzval's own is, although better English, still less *descriptive* of the lens than could have been wished, especially from the inventor. From the first announcement of the thing I was led to think that all the three lenses were used at once, till Mr. Fenton "let the cat out of the bag," and showed the new addition lens to be only a substitute for one of the others. From all the other statements since published, this must be the fact, although some of them are not very explicit on that point, and so far as *they* go, leave this in doubt. I, therefore, assume the fact of substitution as being confirmed. The whole claim therefore, simply amounts to getting an impression in a shorter time than with a lens of the ordinary description.

The ordinary landscape lens is a single achromatic, in front of which a diaphragm is usually so placed as to be readily removed and replaced by another containing a larger or smaller aperture as the wants of the artist may require. The time in which the impression can be made is directly as the area of the aperture in the diaphragm, compared with the focal length of the lens.

For portraits, in addition to the above lens, another achromatic lens is placed behind it, at a distance much nearer to it than where the image is formed; the effect of this is to change the direction of the rays transmitted through the first lens, and cause them to form an image—not only much nearer than where it would be formed by the first—but also smaller and brighter, by condensing all the rays into a smaller area. From this squeezing the image into a smaller space much of the aberration of the oblique rays is rendered imperceptible to the eye and this is the same as if it were entirely removed—consequently a much larger aperture may be and is used with a double combination than can be used with a single lens.

But, according to the claims for this new lens, its substitution for the above back lens is to cause an enlargement of the picture above what the front lens would give alone, while it shortens the exposure and at the same time renders the image, *sharper*, attributes which seem to me incompatible, except by supposing that the new lens is of very much longer focus than the one for which it is substituted, so as to enlarge the picture (nay, in order to do this, it must be a *concave* lens, even though one of its component glasses may be *convex*, for we are told it is achromatic), and that the aberrations are cured, either by a small aperture, or the lens itself must be of much smaller diameter ; in which case most of the light from the front lens will of necessity be entirely stopped out. What particular benefit can we derive from the lens as now proposed ? We merely substitute a small lens behind our present landscape lens, instead of a diaphragm with a small aperture, which would answer every purpose of the new lens, for its faculty of enlarging the image enlarges also its imperfections, whatever they may be.

With any kind of a lens of large aperture, and whatever its focal length, our impressed image is only a compromise, selected, as we may term it, from among a number of images all formed near together, not on different *planes*, but on different bases of globular surface, and we select and call the focus that one which appears to the eye as being less indistinct than the others, being in fact the circle of *least confusion*. To reduce the number of these bases or circles with their separate images is the object of stopping out the rays that form them by a diaphram, and in proportion as these are shut out, so much sharper and more distinct will be the impression. A plane surface cannot, therefore, have an image of plane object equally sharp all over its surface, unless such surface equals only a very small part of the focal length of the lens. A landscape, however, has its various parts in different planes ; but when these are all *beyond* a certain number of focal lengths of the lens, no difficulty is experienced in getting the focus—while, when they are situated within this distance more skill is required to get a fair picture, and this increases in proportion as the distance between some of them and the lens decreases. In many cases the difficulty can be overcome by using a lens of short focus, but wherever practicable, a lens of long focus is to be preferred, especially where any rectilinear object is near the margin of the proposed view. With the new Petzval lens we shall be no better off than before in either of these cases, while in America our light is so good that I get *instantaneous* stereographic impression with an eighth of an inch bottle aperture in sunshine, as if there were a foot of snow on the upper surface of every projection as well as on the ground, caused by over exposure, although the lens is opened and shut by a spring.

In the above paper I may have been arguing on false data in regard to the new lens. Could not a crude diagram, without regard to scale or degree of curvature, be given in the *Journal* ? It would no doubt be of interest to many others as well as to me.

[The preceding was written by our American correspondent shortly after the first rumor of the newly-introduced lens reached that country, and it will be at once noticed that upon some of its peculiarities he is completely at sea, more especially upon the mode in which the aberrations are rectified. These misapprehensions have been doubtless by this time corrected by better information ; but we have considered that it would be interesting to our readers to lay before them a genuine expression of the impression realized from an American point of view,[4] from

* *i. e.* About August 1856.

NOTES BY ED. P. & F. A. JOURNAL.—[1] We will venture to say that there is not one word of truth in this assertion. Not one of the American Journals ever expressed an opinion contrary to the acknowledged talent and position of M. Petzval.

[2] This undoubtedly refers to remarks made by ourselves. The writer, however, designedly misquotes. We stated that *similar* results had been obtained by Mr. Harrison of this city—that is, similar to those described at the time our comments were made, and if Mr. Ross did not look through the *green goggles* of a supercilious Englishman, he would show better judgment and write with less bearish venom. We again assert that Mr Harrison produced similar results long before M. Petzval's announcement was made in Europe.

[3] This assertion is a falsehood. He suffers his prejudices to over-ride truth.

[4] The English editors must not base their opinions of "*American views,*" sentiment, feelings, inventions—or anything else *that is American*—upon any of Mr. Ross's communications ; for they will find his state-

the first announcement of the lens in question. Some of the theoretical observation in the preceding article we cannot assent to, but it is needless to particularise them at present.—ED.]

From Photographic Notes.

CARBON-PRINTING AND PHOTO-LITHOGRAPHY.

Our readers will remember that about six months ago Mr. Pouncy patented provisionally his process of Printing in Carbon. In taking this step certain particulars relating to his process were described in a document deposited at the Patent Office, to be kept secret for six months, according to the Patent Laws, and then made public. The six months having now expired, and Mr. Pouncy not having completed his patent, these particulars of his process have become public property, and we are of course at liberty to publish them

Mr. Pouncy's Provisional Specification is as follows :

POUNCY'S PROCESS OF PRINTING IN CARBON.

No. 780.—JOHN POUNCY, of HIGH WEST STREET, DORCHESTER, in the County of DORSET. "Improvements in the production of Photographic Pictures."—*April 10th*, 1858.

"I, John Pouncy, of High West Street, Dorchester, in the County of Dorset, do hereby declare the nature of the invention for 'Improvements in the production of Photographic Pictures,' to be as follows ;

"This invention has for its object improvements in producing photographic pictures on paper and other surfaces ; the surface has usually been prepared with substances which, when acted on by light in the process of producing the picture, are chemically acted on so as to produce (either immediately, or when other substances are applied afterwards to the surface,) the coloring matter, or substance, in which the picture is formed. Now, according to my invention, I prepare the paper, or other surface for having the picture produced on it, by applying over its whole surface the coloring matter which is to form the picture, and together with this coloring matter, is applied a substance which is acted on by the light. The following is the manner in which I proceed when printing positive pictures on paper from negative pictures :—I coat the paper, or surface which is to receive the picture, with a composition of vegetable carbon, gum arabic, and bi-chromate of potash ; and on to this prepared surface I place the negative picture, and expose it to the light in the usual way ; afterwards, the surface is washed with water, which dissolves the composition at the parts on which the light has not acted, but fails to affect those parts of the surface on which the light has acted; consequently, on those parts of the surface the coloring matter remains in the state in which it was applied, having experienced no chemical change. Sometimes, for the vegetable carbon, I substitute bitumen ; or other coloring matter may be employed.

"By this process, pictures are obtained which are not liable to fade like ordinary photographs."

Such, then, are the main features of Mr. Pouncy's process.

Now, the subscribers for the purchase of Mr. Pouncy's process will have to consider whether they will remain content with the above particulars, which are exceedingly imperfect, or carry out the original plan, and purchase from Mr. Pouncy the FULL particulars of his process, with the view of giving publicity to the whole secret of the manipulation. We advise them strongly not to desist from their original intention. The mere knowledge that Mr. Pouncy uses bi-chromate of potass, vegetable carbon, and gum arabic, is not enough to enable any one to succeed at once in getting such a print as that which we last received from Mr. Pouncy. The proportions of the ingredients, the mode of mixing them, and of applying them to the paper, are not described in the Provisional Specification, nor is any allusion made to the particular kind of paper which it is really necessary to employ. The experience of six months has enabled Mr. Pouncy to produce very much better specimens than those which he exhibited at the last Exhibition of the Photographic Society, and those who purchase from him the full particulars of the process which he now uses, will be able to get good pictures as once, and will gain information which it would be very important to publish. Nevertheless, we cannot disguise from ourselves or our readers the fact that the publication of the main feature of Mr. Pouncy's process releases subscribers from any promise they may have made, and puts the matter of the subscription on a somewhat different footing from before. So far as we are concerned, we shall be happy to carry out our part of this affair by publishing the subscription list, when complete, and the process when purchased ; but at present we do not quite see our way in the matter. It remains now for Mr. Pouncy himself to come forward and state clearly what his intentions are, and whether he will now, for a certain sum, publish his entire process, and inform subscribers how they are to arrange matters with him. We place this Journal at his service and that of his subscribers for accomplishing the object they may have in view ; and we have written to him urging him to take a decisive step in this matter. We have all along understood from him that the document deposited at the Patent Office contained no information from which any one could produce prints similar to his, and our surprise was therefore extreme when we received from the Patent Agent the paper published in this number. Nevertheless a great deal remains untold, and if £100 would purchase that information, it would be money well laid out, and at the same time fairly earned by Mr. Pouncy.

The history of Carbon-Printing may now be briefly told :

In 1838, Mr. Mungo Ponton described in the Edinburgh New Philosophical Journal, a mode of producing photographic prints, by applying to paper a mixture of bi-chromate of potass and sulphate of indigo. In this process the bi-chromate, the color ing matter, and the organic matter of the paper, are the three materials on the reactions among which, under the influence of light, the principle of printing in carbon or pigments depends. The prints produced by Mr. Mungo Ponton appear to have been the first permanently-fixed photographs, and we may consider that gentleman as the discoverer of Photography, for the Talbotype and Daguerreotype processes were not published until the following year, 1839.

The next step, if it can be called a step, in this direction was taken by M. Poitevin, who patented in England, in the year 1855, a process of Photo-Lithography and Printing in Pigments : that clause of his Specification which relates to the latter process, being as follows :

"I apply various liquid and solid colors upon paper, cloth, glass, and other surfaces, by mixing such colors with the aforesaid mixture of a chromate or bi-chromate with organic matter, and applying this new mixture or combination to the paper of other fabric or surface.

"The photographic impression is produced upon this prepared surface by the action of light passing through a negative photographic picture, or an engraving, or other suitable object, or screen, or in the camera-obscura, and it is then washed with a sponge and a large quantity of water. The albumen or other organic matter is rendered insoluble at the parts where it has been acted upon by the light, and the design is thus produced in the color which has been employed. Mixtures containing different colors may be applied to different parts of the surface, corresponding to different parts of the negative or screen employed to produce the photographic impression. A design in several colors may thus be produced. The proportions of the materials may be varied."

The organic matters which M. Poitevin has alluded to, are mentioned in the former part of his specification, and are "albumen, fibrine, gum arabic, gelatine, or similar organic substances." The materials used by Mr. Pouncy, viz : bi-chromate of potass, gum arabic, and carbon, or solid matter, are therefore included vaguely in M. Poitevin's specification, and the mode of removing the unaltered chemicals by washing the paper

ments of these subjects quite as incorrect as his ideas, above expressed, on the Petzval lens. His evil genius has led him into many precarious, perplexing predicaments since he came among us, and we fear that the lessons he has received have not yet taught him discretion or liberality.

in water is also indicated. But we have never heard of any prints produced by M. Poitevin having been exhibited, nor do we think his patent would hold good after what had been published by Mr. Mungo Ponton, in 1838.

The next step in this direction was that taken by M Testud de Beauregard, who, in December, 1857, provisionally registered a secret process for some "Improvements in Photography," the specification of which was made public in May of the present year, and published in No. 54 of this Journal. M. T. de Beauregard applies a mixture of bi-chromate of potass and gelatine to a sheet of paper, and when dry applies the carbon, denying at the same time the possibility of producing a print by applying the mixture of bi-chromate, carbon, and gelatine, directly to the paper.

The next step was taken by ourselves, without any knowledge of what M. Beauregard had done a fortnight previously. In No. 42 of this Journal, that is in the number for January 1st of the present year, at p. 7, we make the following remarks :

"Some experiments in which we were engaged a few weeks ago, lead us to believe in the possibility of Printing in Carbon, by the following process :

"First—Dip a sheet of blotting-paper in a mixture of bi-chromate of potass, albumen, and finely-ground charcoal ; or blacken it (in the dark,) with Indian ink, ground up with a solution of bi-chromate and gelatine, or albumen.

"Next—Dry the blackened paper, and expose it to light, under a negative.

"Lastly—Immerse it in water, which will more or less perfectly remove the black material from those parts where light has *not* acted, without disturbing those parts where light has acted, and thereby rendered it insoluble. In this way a print in black, and a sort of dirty white, may be produced. After which it is probable that immersion in an alkaline solution may clear up the lights sufficiently. This was the direction in which we were experimenting a few weeks ago, when some matters interfered to prevent our carrying the experiments any further."

The use of blotting paper was wrong, but we are convinced that with vegetable carbon, and either albumen or gelatine, good prints may be obtained.

Now, comes the part which Mr. Pouncy has played in this matter. In the month of March, of the present year, that is, about two months after he had seen the foregoing remarks in this Journal (to which he has been a subscriber from the first,) he enclosed us some carbon prints, in which the whites were clean and the blacks black ; and on the 10th of April he patented the process provisionally, according to the specification published in the present number. Since that time he has greatly improved in his manipulation, but has allowed the patent to go uncompleted. To us it appears that Mr. Pouncy was the first to produce a presentable carbon print, and that to him belongs the credit, and a very great credit it is, of having practically worked out a process which was merely suggested by others, and brought it to about the same perfection as any other photographic process. So far then as the discovery of Carbon-Printing is concerned we should consider Mr. Mungo Ponton the discoverer of the principle, and Mr. Pouncy the discoverer of the best mode of carrying it out ; at the same time we entertain a high appreciation of what M. Poitevin has done in Photo-Lithography, and also of the many ingenious experimental investigations of M. T. de Beauregard, but with all due deference to these gentlemen, we require to *see* their productions in direct Carbon-Printing, or to hear of some one who has, before we can give to the patentee of what appears to have been little more than an idea, the glory which by right belongs to the man who has, after many months of indefatigable toil, produced fine results.

So much for Carbon-Printing, a process which was suggested before the discovery of the present methods of Photography, and which has been taken up and perfected during the present year. Hitherto all the productions of photographers have been more or less perishable. Daguerreotypes fade if not properly washed ; collodion positives and negatives fade if not properly washed and varnished ; developed prints upon iodide and chloride of silver fade if not properly washed ; untoned sun-prints upon chloride of silver fade if not properly washed ; toned sun-prints upon chloride of silver frequently fade when they *are* properly washed ; but in Carbon-Printing the case is reversed, for those parts which are not properly washed, become permanent, and the difficulty in this process, if it can be said to have a difficulty, is to prevent parts of the picture from becoming too permanent ; at the same time, if a thing whith is already perment could be supposed to become more permanent, the exposure of a carbon print to light fixes it more indelibly to the paper. Another important feature in Carbon-Printing is the absolute purity of the whites ; and it is a remarkable thing that a sheet of paper which has once been blackened all over should by mere washing in water entirely regain its original whiteness a trace of discoloration—but so it is. It is also a remarkable and important fact, but one which is consistent with all that we know of direct sun-printing, that the amount of carbon fixed by the isolated bi-chromate and gum should be in exact proportion to the amount of isolation, so that all the half-tones of the picture are faithfully rendered. With respect to definition, that must depend, in any photographic process, upon the smoothness of the tablet, and if Carbon-Printing could be applied to opal glass or porcelain, nothing would be left to desire on this point. Taking then all these things into consideration we are inclined to think Carbon-Printing a very important step in photography, and one which is capable of many useful applications, and which may open new branches of industry. To us it does not seem likely that any method of photographic engraving, or etching, or Photo-Lithography, will ever achieve the same delicacy of detail and modulation of tone as Carbon-Printing, for the mechanical operations of pulling a proof in printer's ink can hardly yield so perfect an impression, even supposing the plate more perfect than it is ever likely to be, as the direct action of light in Carbon-Printing. But all these processes are interesting, and who can tell to what the progress of discovery may lead? Let us hear what the Americans have to say on these subjects :

Mr. Snelling's *American Photographic and Fine Art Journal* for August last is illustrated with an exceedingly fine Photo-Lithographic copy of an engraving, by Messrs. Cutting, Bradford, & Turner, Boston, U. S., and contains an article on Photo-Lithography, from which we make the following extracts :

"Among the many processes which have claimed the attention of searchers after hidden things, that of *Photo-Lithography* was among the first. In fact, it was quite simultaneous with the publication of the Daguerreotype, by MM. Niepce and Daguerre, the most successful attempt having been made in 1839 by an Italian nobleman, (whose name has escaped us,) who succeeded, by the aid of a telescope, in impressing the nebulæ of Orion upon a lithographic stone, and taking pretty fair specimens from it with lithographic ink.

"So far as we are enabled to learn, the next attempt at all worthy of our consideration, was made by Joseph Dixon, Esq., who, in 1840, made several experiments in this direction, and succeeded partially in solving the problem ; but it is reasonable to suppose from his having abandoned his researches, that he failed to come to any satisfactory practical result.

"Several French and German *savans* essayed to elaborate this process and apply it to illustrative art, but up to the present time their endeavors have met with slight reward ; we hear of nothing having been done to render it worthy the notice of publishers, or those who take an interest in the progress of Art matters. With so many of the first minds of Europe engaged in the study of this branch of photography, and delving deeply into the hidden recesses of nature with the purpose of transferring the exquisite limnings of the sun to stone, copper and steel, in aid of their multiplication, it is—and should be—a source of great pride to us, that it was left to the *American mind* to attain that perfection in *Photo-Lithography*, which alone can make it of practical utility.

"It was left to Messrs. Cutting, Bradford and Turner, of Boston, to perfect this art, and that they have done so in a masterly manner is shown by the results before us.

"For these improvements Messrs. Cutting and Bradford obtained a patent, and although in photography proper we have invariably set our face against patents, (and were we to-day to discover one of the most important improvements that could be made in it, we should not take out a patent); yet if we never felt disposed to have a hand in patents before, the results of Messrs. Cutting, Bradford and Turner's *Photo-Lithography*, which the latter gentleman has shown us, have given us a very strong inclination to bid for an investment.

"We have seen many specimens of European *Photo Lithography*, and of European and American Lithography, and we venture to say, without fear of contradiction from any who have the opportunity to compare the results, that in any point of view, natural or artistic, elaborate finish or detail, or in striking effects, nothing can be superior, in the present state of the art, to prints produced by Messrs. Cutting, Bradford and Turner. We have been shown prints of every description,--microscopical objects, magnified thousands of times, portraits from life, copies of drawings and engravings, views of manufactured articles, landscapes, fossil remains, &c., &c.; all possessing delicacy and minutiæ of detail, which we say, without hesitation, cannot be approached by the eye and hand of the best artist.

"As a partial--and it is only a partial indication of what is to be accomplished--evidence of the truth of our opinions, we give our readers, in the present number, a copy of an engraved head. It will be seen that every line is accurately copied, and that the print partakes materially of the nature of the engraving from which it is taken. The grain of the stone, as shown in this, is admirably overcome in many of the other specimens shown us. In fact the process is capable of entirely obliterating all trace of lithographic grain, and giving the picture the appearance of a fine mezzotint engraving, or of a first class photograph.

"In the illustration of every description of books, this process *must supersede* the present lithograph, and to the naturalist and physiologist it is invaluable. In copying insects, animals, fish, fowls, mineralogical specimens, trees, and all kinds of vegetable productions, not a speciality is lost, for, as with the photograph what the eye alone cannot see is revealed upon the application of the magnifying glass.

"Another point to be considered in this Photo-Lithographic process is, not only its general application to illustrative art, but its adaptation to the wants of a large class of artists who usually wish to multiply their drawings and paintings at a nominal cost. All they require is the process, the photographic material, and the stone—any lithographic printer can strike off the desired number.

"Our readers, by comparing the picture in the present number with those given in April and May, will at once note the rapid strides the patentees have made in improving their process, and we feel convinced we shall be able to give, in future issues, pictures that will indicate this improvement in a more marked degree. There is no *American* improvement in art that has given us so much pleasure and satisfaction as this, and we do not regret that it has fallen to our lot to congratulate a gentleman who we have hitherto been—reluctantly--obliged to oppose. This subject admits of still further observation, and we shall again refer to it."

We also extract the following remarks from the last number of Mr. Seely's American Journal. They occur in an article by Mr. Seely, headed, "Carbon Photographs,—Photo-Engraving &c." :—

"As to Carbon-Printing, I have little doubt that Photo-Lithography will prove the best process where many copies are needed,--the best in view of economy and rapidity. The preparation of the stone requires little labor and but a few minutes, when it is ready for printing, in every respect, by the ordinary lithographic press. Photo-lithographs can be produced cheaper than other lithographs, for the reason that the photographic impression on stone is easier made than a drawing in the usual way (an important item) while all other expenses are precisely the same. As to the permanency of Photo-Lithography nothing need be said; and any who have examined the best work done by Cutting, Bradford and Turner, of Boston, and Isaac Rehn, of Philadelphia, are satisfied that the Photo-Lithographs are not far behind the photograph in truthfulness. I have seen no carbon impressions produced in any way that can be considered as superior as pictures.

"On page 32, bi-chromate of potash, &c., are alluded to as materials for producing carbon prints. I commenced experiments with those substances eagerly. The theory of the process, and the manipulations seemed palpable and easy. But my ardor cooled on learing from the "Bulletin" that M. Poitevin had anticipated me by several years--had not only made photographs in carbon but a variety of pigments by the same plan.

[These remarks in the Bulletin were simply extracts from *Photographic Notes*.—Ed. P.N.]

"The method I find quite easy is as follows:--I make a solution of gum arabic in water about as thick as molasses. With this I grind on a glass or in a mortar a sufficient quantity of calcined lampblack, ivory black, or other pigment. When the mixture is thorough, I add in the dark an equal part by measure of a saturated solution of bi-chromate of potash in honey, diluted with an equal part of water. The whole is now to be carefully mixed by stirring or grinding. This intimate mixture is a point of the greatest consequence. The paper I prefer is the highly albumenized. The mixture is laid on by floating, or with a large flat brush. Dry in the dark. The printing is performed in the usual way, only using about half the time for ammonia-nitrate paper. After exposure the print is soaked ten minutes or more in water, and then exposed under a stream of water till the whites are fully brought out.

[Mr. Seely has pretty nearly hit upon Mr. Pouncy's process. --Ed. P.N.]

"Any one on reflection will perceive that the above process cannot produce a picture so perfect in detail and delicate shading as the ordinary silver prints. The only recommendation I can give it is the permanency of the results, and its simplicity and economy. Although better pictures have been produced here than the specimens of Mr. Pouncy's work sent by Mr. Sutton to America, they are as yet slightly inferior to the best Photo-Lithographs. Assuming that they may be made of the same quality, it appears to me that Photo-Lithography will be found advisable when fifty or more prints are required.

"The changes I have in the process as published are : the use of honey, to facilitate the washing development, and the albumenized paper.

"I have attempted, on a totally different theory, to produce carbon prints, and although I have not had much success, I have not lost confidence in the principle. It is well-known that a mixture of chlorine and hydrogen is extremely sensitive to light, combining speedily and only in the light. If carbide of hydrogen is substituted for the hydrogen, the carbon is precipitated on exposure to the light. Saturate a sheet with camphine a (carbide of hydrogen) and expose it to the camera image in an atmosphere of chlorine, and the image will be fixed; or expose the camphine paper to the vapors of chlorine or bromine—and then to the image, or under a negative. Such a procedure thus stated is evidently impracticable, yet I have little doubt that it may prove the germ of something valuable.

"Photo-Engraving.—For the following process I am indebted to Mr. Joseph Dixon, of Jersey City, by whose courtesy I am permitted to give it to the public. I have had no opportunity to test its value by trial, but I am assured by Mr. Dixon, that it is capable of very good results : 'The process is founded on the fact that if a polished steel plate be rusted in spots, printer's ink will adhere only to the rust, from which it may be printed in the ordinary way. Expose a paper or collodion photograph to the vapor of iodine. The iodine is absorbed only where the impression exists. The photograph is now pressed in close contact with a steel plate, prepared as for engrossing. The iodine partly leaves the photograph and rusts the steel correspondingly. The time required for rusting properly may be days. The applying the ink and printing are quite similar to the common method of the steel printers, making the necessary variation for the raised surface instead of cavities.'

" A conversation with Mr. Dixon on the above suggested to me a plan which has some advantage. It is commonly known that if an ambrotype be cautiously heated to about 500° the collodion film burns away, leaving the whole of the silver picture undisturbed and adhering to the glass. The plate may now be etched with hydro-fluoric acid, and thus a tolerable printing surface obtained. But I should prefer to transfer the collodion picture to a plate of metal burn the film, and etch with any acid which will not affect the silver. I found the transferring the film easy enough, but ou burning the film the silver did not adhere, owing apparently to a film of oxide formed on the plate If the metallic plate is first amalgamated the difficulty is mostly overcome, but the sharpness of the etching suffers.

" Both of the above processes require a positively transmitted light."

The above remarks of Mr. Seely's appear to contain some very valuable suggestions.

An improved process of photographic etching has lately been patented by Mr. Fox Talbot, and has been called by him Photoglyphic Engraving. We shall publish his specification *in extenso* at the earliest opportunity,* and in the meantime the following particulars of the process will suffice :

A steel or copper plate is first cleaned with soda and whiting, then coated with a mixture of gelatine and bi-chromate of potass, and exposed under a negative to light. It is then, without being washed, powdered all over very thickly with finely pulverised copal, which is then melted upon the plate by holding it over a spirit lamp. This forms a sort of a quatint ground. As soon as it becomes cool a solution of per-chloride of iron is applied to the plate with a camel's hair-brush ; this attacks the parts which have *not* been acted on by light, and thus the plate is etched ; after which the surface is cleaned, and prints pulled from it in printer's ink in the usual way.

This new process differs from the former one patented by Mr. Fox-Talbot in 1852 in the following particulars : viz., in the plate not being washed after exposure to light, in its receiving an aquatint ground, and in the substitution of per-chloride of iron for per-chloride of platinum.

While on these subjects, we may mention that we are endeavoring, with the help of a gentleman who is one of the engravers for the Illustrated London News, to perfect a process of taking photographs upon wood, so that they may be afterwards cut, and we hope shortly to be able to illustrate a number of this Journal with a picture produced in this way.†

Can any of our readers kindly reply to the following query from the engraver who cuts the diagrams for this Journal ? He wishes to know how the ink of a very old print may be transferred to a wood block. If a proof, recently printed, is simply damped, laid upon a wood block, and the back rubbed with a burnisher, the design is transferred to the block, but the plan does not answer with an old print. We have advised to damp the old print with a solution of caustic potass in alcohol. A method of transferring the prints is successfully practised in America. Can any of our American readers favor us with the particulars of this process ? We are told that the solution employed turns the paper buff-color.‡

In a former number we recommended the use of the "Excelsior Printing Ink" as a black varnish for Ambrotypes. This is a patent Ink, the component parts (except coloring matter) of which are entirely different from ordinary printer's ink, and may be had of the "Excelsior Printer's Ink Company," No. 34 Ann St. New York City.

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*See present number *P. & F. A. Journal*, page 333

†Perfectly successful methods for producing collodion pictures on wood for the engraver have been practised in this country for two years past. One by Mr. Waters, another by Mr. Bernard. The latter gentleman received the premium at the Fair of the American Institute for 1857.—*Ed. P. & F. A. Journal.*

‡Mr. Sutton has hit upon the American method ; a solution of caustic potash in alcohol, of medium strength, being used. The impression is moistened with this, placed upon the block, and passed through a copper plate press.—*Ed. P. & F. A. Journal.*

From Photographic Notes.

NEW COMBINATION OF LENSES.

We have alluded on two or three former occasions to a new combination of lenses invented by a gentleman at Manchester, in which distortion of the image is absolutely corrected, and we mentioned that immediately on hearing of this invention we got Mr. Ross, of Featherstone Buildings, to make for us a combination on the new principle, in order that we might thoroughly try and report upon its merits. This we are now prepared to do, but must observe in the first place that we are not at liberty to lay the full particulars of the construction of the instrument before our readers, as the inventor has not yet completed a novelty which he is working out in the mounting of the lenses, and which he imagines will render the instrument much more perfect ; so far, however, as the general principle of the arrangement of the lenses is concerned we can sufficiently explain it in a few words.

Let the reader imagine a pair of achromatic convex lenses of any form, but identical in all respects, placed in a tube at any distance apart within a certain limit, with their similar sides opposite, and a diaphram exactly midway between them. Or, in order to fix the ideas, let him suppose the arrangement to consist of a pair of plano-convex achromatic lenses, having their convex sides outwards, and their plane sides inwards and opposite to one another, and a small diaphram midway between them ; this combination will then be perfectly symmetrical. Now, let any straight line be drawn through the centre of the diaphram till it meets the inner sides of the lenses, and let it then be continued through the lenses according to the law of the refraction of light. It is evident, from the symmetry of the combination, that the directions of the two lines without the lenses will be accurately parallel ; from which it follows that if a ray of light be incident obliquely and eccentrically upon the front lens in such a way as that its course between the lenses may pass exactly through the centre of the diaphram, it will emerge from the back lens in a direction parallel to that at incidence.

Now let us suppose the diaphram infinitely small, that is to say so small that only a single ray can pass through it, and let the combination be presented to the objects of a view. From every luminous point of those objects a pencil of light proceeds which covers the entire front lens, but of that pencil only one particular ray can pass through the diaphram, and that ray will, after passing through the back lens, emerge in a direction parallel to its direction at incidence—the deviation which it suffers in consequence of refraction through the front lens being exactly counteracted by refraction through the back lens. If, then, we suppose an infinitely faint image produced by these single rays impinging upon a focusing screen, that image will be entirely free from distortion, as much so as the image formed by a pinhole in the front of a dark camera, in which case, as in that of the combination, the rays suffer no deviation.

All this being understood, it remains to show that the actual image formed in the photographic camera by this new combination when the diaphram is of small but finite size, and when for single *rays* of light we substitute *pencils* of light passing through the diaphram, is equally free from distortion. To demonstrate this point we shall assume that the image is sharp and distinct upon the focussing screen, and that the astigmatism of the foci is of too small amount to be appreciable by unassisted vision ; or in other words that the " circles of least confusion" of the oblique pencils are of inappreciable diameter If this be not the case, and if the image be "fuzzy" and indistinct it is hardly a subject for comment or criticism. The object is to show that the apparently sharp image upon the focussing screen of a luminous point not situated upon the axis of the lens is really in the line of the ray which passes through the centre of the diaphram. This is a very simple matter. The focus of a pencil is produced by the concourse of *all* the rays which pass through the diaphram, and since the ray which passes through its centre is one of them, the focus is formed at the point where that particular ray meets the focussing screen. The combination therefore absolutely cures distortion of the image in the ordinary process of working with it, with a small diaphram.

The reasoning does not involve any particular form of the equal and similar lenses, the conditions of the combination may therefore be satisfied in an infinite number of ways, but of the infinity of solutions which it allows one particular solution is the best for remedying spherical aberration and curvature of the image. That best form we imagine to be plano-convex, and the combination which Mr. Ross has made for us consists of two equal plano-convex achromatic lenses, separated by an interval which is capable of variation, and mounted with their plane sides inwards, and a diaphram midway between them. This new combination we have now thoroughly tried, in a variety of ways, and the following are the results obtained :

With respect to distortion. When the diaphram is placed nearest to the *front* lens, and the image of a perpendicular straight line is brought to the edge of the field, it is curved *inwards* at its extremities. On the contrary, when the diaphram is placed nearest to the *back* lens, the line is curved *outwards* at its extremities. When the diaphram is placed exactly *midway* between the lenses the line is absolutely *straight*. So far, therefore, the results of theory are strictly borne out in practice.

With respect to spherical aberration and flatness of field. When all the stops are removed the combination gives inferior central definition to an ordinary portrait combination, and the marginal definition is very bad ; so that the combination has, on the whole, no other advantages than that of curing distortion. We were not surprised to obtain this result, for we expected to find the new combination inferior to the ordinary portrait lens as regards central definition, and so far as we can judge, it is inferior. Any one who possesses a twin lens stereoscopic portrait camera, will find, on removing the front lens of either combination and mounting it as a back lens to the other combination, with its flat side inwards, that inferior definition is obtained.

With respect to curvature of the image. Neither the new combination, nor the ordinary portrait lens give a flat field. The Petzval view-lens is by far the best in this respect. The new combination is therefore only fit for use with a small diaphram, and then it makes a good view lens, or a perfect copying lens, rendering the lines of a stereoscopic picture copied by it full size as accurately as if the print had been obtained by superposition. No ordinary lens will do this.

Having thus explained at some length the principle of this combination, it is not too much to say respecting it that it is the most important optical instrument that has yet been made for photographic purposes, for it is an absolute fact that all the photographs which have been taken with the common lenses are more or less false and distorted representations ; while of all optical instruments that can be conceived none is so fearfully bad in the matter of distortion as the view-lens with a stop in front, no matter how it is achromatized, whether with the crown or flint glass in front.

In the common portrait combination the deviation occasioned by the front lens is to a great extent corrected by an opposite deviation produced by the back lens, and there is consequently much less distortion with a portrait lens having a diaphram between the lenses than with a single view lens and diaphram in front. But the diaphram not be placed exactly midway between the lenses ; that has been a mistake ; its best position for curing distortion would be at a certain point which may be determined by trial.

The inventor of the combination which we have described, and which is a symmetrical combination, has devised a system which is un-symmetrical, and which nevertheless cures distortion, and gives a flatter field than the other. The particulars of this instrument will be published by him in the course of a few weeks, and when his arrangements are ready for supplying it commercially they will be duly advertised in this Journal. He does not intend to take out a patent, and if, on trial, Mr. Ross finds them answer, he will manufacture them for sale.

In concluding this article we beg of the reader to study it carefully. Photographers may now turn over a new leaf. Hitherto their works have been, without exception, false in outline : in future they may be absolutely true.

Mr. Ross is now making for us a second lens, identical with the first, so that the pair may be fitted to a stereoscopic camera. The focal length of these combinations is only three-and-a-half inches, and yet with a small diaphram they cover a field three-and-a-half inches in diameter, with an image sharp in every part and absolutely free from distortion. Mr. Cox, of Skinner street, has lately made for us a beautiful instrument for copying stereoscopic negatives by means of the above lenses. It answers to perfection, so far as we have tried it in copying a single picture, and will of course answer equally well for the pair when the other lens arrives. When we have become perfectly familiar with the use of this instrument we shall devote a long article to the subject of coping transparent stereoscopics by wet collodion. In the meantime it may be important to observe that ordinary negatives will not do, as they are much too dense. The negative should be full of detail and half-tone, and in density something between a positive and a negative. Our new combination, with a three-quarter-inch diaphram between the lenses, yields a perfectly sharp image the same size as the original, an exposure of one or two seconds to light from the Northern sky transmitted through the negative being sufficient; but it is more convenient to use a much smaller diaphram, The copying box is a camera having two sliding bodies, one of which carries the negative, the other the dark slide. Its entire length is about eighteen inches. It has a partition in the middle which carries the lenses, and another partition longitudinally in the middle down its entire length. One lens copies one picture while the other lens copies the other. But more about this matter on a future occasion.

From Photographic Notes.

PHOTOGRAPHIC PRINTING.

The amount subscribed for the purchase of Mr. Pouncy's process now so nearly reaches £100 that Subscribers may consider it tolerably certain that the process will be published in all its particulars in an early number of this Journal. They must therefore be good enough to transmit at once to Mr. J. Pouncey, High West Street, Dorchester, by P.O., the sums they have kindly promised to subscribe. The matter will then stand thus : —should the entire sum received by him fall short of £100 he will transmit to Subscribers a private copy of the particulars of his process, for their sole use, until the full amount is realized ; but we think it nearly certain that the £100 will be made up and the process published in our next number. Our intention was to have ourselves made good any little deficiency that might occur towards the end of this transaction, and to have concluded the list with our own subscription, but having very recently sustained a very heavy pecuniary loss, in consequence of the complete destruction of our laboratory by fire, we are scarcely at this moment in a position to carry out that intention. The matter must therefore be left more completely in the hands of Subscribers. On the conclusion of the business a correct list will be published of the names of those to whom photographers are indebted for the purchase and publication of this important process, together with the sum actually subscribed by them ; and we hope that many will increase their subscription in order to remove any difficulties which may occur at the last.

We have from the first strongly advocated Mr. Pouncy's process of Carbon-Printing, because we feel convinced that it is the true solution of the problem of permanent printing, and that the future of photography upon paper lies in this direction. Positive printing has for many years occupied much of our attention, and we had not been three months engaged in experimenting before we became convinced that the method of printing and toning now commonly employed was wrong in principle, and if persevered in would bring photography into disrepute. This we endeavored emphatically to point out in a series of letters which appeared in the Photographic Journal in the year 1853, and the remedy we then suggested was the substitution of gold for silver in the proof, by means of a toning-bath of sel-d'or, which preceded and was independent of the fixing bath of *fresh* hypo. The experienced of five years has proved that that process yields proofs which are so far permanent that we have never known one of our own to fade. It is not, however, entirely free from objections and difficulties, for the prints are sometimes inky in color, the material costly, and the manipulation a little troublesome. Some operators have endeavored to improve upon that process by the substitution of chloride of gold for sel-d'or, but this is wrong in principle, because oxide of gold is substituted for oxide of silver, in *both* cases, while the liberated chlorine in one case destroys a portion of the material of the image, which remains quite unaffected in the other case. Observing, therefore, at that time the good effects of sel-d'or toning, and remarking shortly after the great stability of negatives produced by development or compared with that of positives produced by sun-printing, we endeavored to combine gold-toning with development-printing, and the result of these experiments was so successful, and the proofs so entirely to our taste in their color and artistic qualities, that we immediately published the process in a pamphlet, and proceeded, in conjuntion with M. Blanquart-Evrard, to carry it out professionally. Out of some thousands of prints issued by us, and bearing the stamp "Permanent Photograph," only one has been returned as faded, (from a lady residing in the north of England), and strange to say, this has *not* faded, but is merely a meanly print. But these prints, which were upon plain paper, were not generally liked, partly because they possessed less vigor and brilliancy than albuminized prints and partly because they were deficient in modulation of tone, which fault was attributed by certain persons to an inherent defect in the development process, instead of to the true cause, viz., the two great density of the negatives. (It is surely quite absurd to attribute to the process of development of a latent image an inherent defect when employed in positive printing upon paper, which does not occur either in Collodion Positives or Negatives, or in printing upon glass from transparencies, or by superposition). Such then was the state of affairs when Mr. Pouncy sent us his first Carbon priut, and in that print, faulty as it was, we perceived the germ of an important new printing process, because there was black and white with gradation of shade, and also sharp definition of straight lines; and the faults, which consisted in want of vigor and the presence of grain or smudginess, we attributed to the wrong kind of paper having been employed, and to improper manipulation in some stage of the process. But there evidently lay the germ of a valuable new process, and now that it has been greatly improved it became important to discuss the principle on which it is founded.

In Carbon-Printing, vegetable carbon is intimately mixed with gum arabic and bichromate of potass; a piece of paper is then blackened with this mixture, dried, and exposed to light under a negative; it is then put into water, which after a time completely dissolves out the black stuff from those parts where light has *not* acted, leaving it permanently attached to the paper in the parts where light *has* acted, which parts form the shadows of the picture. Now, it has been urged as an objection to this process, that half-tones cannot be produced by it, because light does not *immediately* render the gum insoluble, but causes it to pass through various stages between solubility and insolubility, and when the action is stopped at any one of these stages it must depend upon the treatment which the print receives in the final washing whether the partially insoluble gum, along with its adherent carbon, is to remain in the paper or be removed. There is some show of reason in this opinion, but we believe it to be incorrect and opposed to facts. The probability is that the atoms of gum do *not* pass through any intermediate stage between solubility and insolubility, but pass at once from one state to the other the instant that the bichromate is deoxydized by light; and thus atom by atom of gum and carbon are combined with an atom of reduced chromium salt, so as to form an atom of insoluble black cement firmly attached to the paper. *These black atoms accumulate in quantity dependent upon the intensity of the light and the time of its action*, and thus the deep blacks and all the half-tones are produced; and on washing the print it is found just as impossible to remove the paler shades as the deepest blacks; in fact the print is faithful to the negative, and no artifice in washing can obliterate any part of it; it might be dragged across the Atlantic behind the stern of a vessel, and the half-tones remain as permanently fixed and as unalterable as the strongest blacks. In short, the objection that we have endeavored to remove is as absurd as it would be to suppose that in sun-printing there are an infinity of gradations between chloride and sub-chloride of silver, and that none of these gradations of shade would appear in the finished print. We imagine that in sun-printing the atom of chloride exposed to light passes *at once* from chloride to sub-chloride, and that the deepening tint due to continued exposure is produced by the *accumulation* of atoms of sub-chloride. It is certainly as wrong to suppose that in sun-printing the whole mass of chloride is simultaneously acted on and passes *by degrees* to sub-chloride through an infinity of intermediate stages, as to suppose that a mass of carbon mixture passes *gradually* from solubility to insolubility. No. The analogy between Carbon-Printing and chloride-printing, and all kinds of sun-printing is no doubt perfect.

We have therefore strongly advocated Carbon Printing because we believe it to be correct in principle, and that the utmost degree of vigor, finish, and gradation of tone may be obtained in this way by using the proper tablet to print upon. As for the objections which have been raised to it, it is right that a matter of this kind should be thoroughly discussed; let us hear the objections by all means; and when the process is published let all photographers try it and compare notes; if good it will stand,—if not it will go to the wall. Mr. Pouncy has sent prints to a great many influential persons, but he has only one pair of hands and other business to attend to, that is why more have not been publicly exhibited. Those who have not seen any of these specimens must have faith for a little while, and, as we trust that we have never yet deceived our readers in any matter, place confidence in our opinion that the process is one of *great promise*, and well worthy of their notice.

From the Liv. and Man. Photographic Journal.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The Annual Meeting of this Society was held on the 3rd instant, at the house of the Literary and Philosophical Society, 36, George-street. Mr. Laird in the chair.

The Chairman stated that Mr. Cottam, the late Honorary Secretary, having been obliged to resign his Secretaryship from ill-health, Mr. Mann had been appointed the Honorary Secretary of the Society.

After the election of the Officers of the Society for the ensuing year, it was unanimously resolved that a vote of thanks be returned to Mr. Cottam for his past services as Secretary.

In consequence of the absence of both the Treasurer and Secretary from ill-health, the Annual Report was not prepared for the Society, but would be ready by the next meeting; it was stated that there was a small surplus now in the hands of the Treasurer.

Some very beautiful landscape and sea-views, with clouds, by Mr. Ribble, of Glasgow, were exhibited, and much admired.

Also four very beautiful prints, from collodio-albumen negatives, were presented by Mr. Sidebotham to the Society's portfolio.

A few prints taken by Mr. McCraw's bichromate printing process, by a member, were shown, but considered very unsatisfactory, some being half positive and half negative, and some quite negative, and otherwise imperfect.

A letter was read by the secretary, from the Liverpool Photographic Society, to the members, inviting them to a conversazione at Liverpool, on the 18th instant, when Mr. Shadbolt has promised to read a paper.

The Secretary also read the following Report of the Committee appointed to experiment on the various dry process on glass:—

Report.

The Committee appointed in November, 1857, to examine the published dry processes on glass, present the following Report :—

Each of the processes has one or more good qualities not possessed by the others, and by all of them good pictures may be produced ; but it is only when the various processes are tried by the same individuals that a true comparison can be made.

After very careful experiments, your Committee have arrived at the conclusion that the best dry process yet discovered for landscape photography is that known as the Taupenot or collodio-albumen process.

Its superiority consists in its rapidity and certainty and also in the beauty of its results; the fact that since this Committee was formed, the members who previously had successfully practised the albumen, the oxymel, and the dry collodion processes, have abandoned them for the collodio-albumen, greatly favors this conclusion.

Your Committee briefly state what they consider the points in which the other processes are inferior.

ALBUMEN PROCESS.

The long exposure and development required, and the difficulty in the preparation of the plates, so as to produce an even film perfectly free from spots.

DRY, OR BAKED COLLODION.

The difficulty of producing a collodion of suitable character, also that the plates do not bear long keeping, nor prolonged development.

OXYMEL.

The long exposure required and the difficulty of carrying a stock of sensitve plates, and keeping them free from dust. The modification of this process lately published by Mr. Llewellyn, appears very promising, being founded on the correct principle of leaving a definite amount of free nitrate of silver on the plate, but your committee are not prepared to report finally upon it, although several members have tried it and speak very favorably of its results.

GELATINE PROCESS (DR. HILL NORRIS AND OTHERS.)

The time of exposure required is considered to be at least double that of the collodio-albumen. Your Committee have tried great numbers of plates, prepared both by themselves and Dr. Hill Norris, taking the same views upon them and on collodio-albumen plates, and their experience in every case shows that *very much longer* exposure is required than that usually recommended. In common with all dry processes, there is often a deposit formed on the plate during the development ; this in collodio-albumen can be entirely removed, but in gelatine it cannot without destroying the picture.

Since this Committee was formed, Mr. Fothergill has published his process, which promises much from its simplicity. It has been carefully tried by some of the members, of this Committee, and by them considered not equal to the collodio-albumen process, in the longer exposure required ; in the negatives obtained being of inferior quality ; and also any deposit formed on the plate cannot be removed.

Your Committee will now briefly state what they consider a few of the advantages possessed by the collodio-albumen process.

Any good collodion, whether positive or negative, will do it.

The albumen, being prepared with ammonia, will keep almost any length of time. The exposure required is moderate. Pictures may be taken with an exposure of fifteen seconds and upwards, according to the focus of the lens, subject, &c. The exact amount of exposure is not a matter of such great importance as in some processes. A negative, either over or under exposed a little, may generally be so treated in the development, as to come out quite perfect, whilst any deposit which may be formed on the surface can be easily removed by the finger without injury.

The great drawback to this process, viz., the liability of the plates to blister, may be entirely avoided by adopting the following precaution :—Have the plate thoroughly dry before coating with collodion ; leave the film to set well before immersion in the bath ; and after coating with albumen, and the plate well drained, to dry it quickly with the face to the fire.

During the investigation of the various processes, your Committee have been strongly impressed with the difficulty under which photographers labor, in the multiplicity of the published processes, each of which is said to surpass all others. Many photographers, working almost alone, are inclined to think too well of their own productions, and, consequently, of the process they use, and your Committee think it would be a great benefit to the members of this Society if specimens were to be procured from well-known operators, or inventors of new processes, showing, as far as possible, of what each process is capable, and also serving as standards of which to judge their own productions.

Manchester, Nov. 3, 1858.

A vote of thanks was unanimously passed to those gentlemen who experimented upon the various processes and prepared the Report.

A general discussion as to the collodio-albumen process took place, particularly to the blistering of the film.

Mr. Broughton stated that he had very successfully removed the red color of collodio-albumen plates, occasioned by long keeping, and took with him a reddened plate belonging to a member, which he promised to bring to the next meeting, free from the red color. He stated the plan he adopted was, to use a very weak solution of bichloride of mercury.

Mr. Perry explained his contrivance for drying collodio-albumen plates after the albumen coating consisting of a gas light under very fine wire gauze.

It was proposed and agreed that a lantern should be obtained by the next meeting, and that members be invited to bring transparencies for exhibition.

After passing a vote of thanks to the Chairman for his services, the proceedings closed.

From Liv. and Man. Photographic Journal.

LONDON PHOTOGRAPHIC SOCIETY.

The ordinary general meeting of this Society was held on the 2nd November, 1858, R. Fenton, Esq., in the chair.

The Chairman read a note from Sir Frederick Pollok, in which it was stated that, in consequence of the meeting falling upon the first day of the Michaelmas term, the President would not be able to attend and take the chair.

The Chairman then introduced the new Secretary Dr. Diamond, to the meeting, and stated that he would, no doubt, be welcomed by the Society with the same cordiality as by the Council, and hoped his appointment would bring increased prosperity to the Society.

The minutes of the last meeting having been read and confirmed, and several new members elected, Mr. Reeves Traver, M.R.S.C.S., &c , read the following paper,

"ON THE PHOTOGRAPHIC DELINEATION OF MICROSCOPIC OBJECTS."

The application of the photographic art, to which the following remarks more especially apply, is undoubtedly one of the most beautiful and interesting with which its followers are acquainted.

Thanks to the modern popularization of science, most people now know, that in each humble plant that thrives in every hedge, there exists a diversity of beautiful minute structure, an examination of which prompts the mind to venerate as well as to admire ; while every insect, indeed the whole of animate creation, teems with marvels for the student's eye, which show him how wondrously the Creator's power has arranged and ordered all portions of each economy, whether of high or of low type, so that its intended functions shall best be carried on.

To delineate with the accuracy of photography some of these beautiful structures must surely be both interesting and instructive ; and I regret that I have not had opportunities lately of preparing more numerous specimens for your inspection, but I trust that the few which I shall have the pleasure of laying before you will be sufficient to illustrate my remarks, and to prove how easy it is to obtain magnified representations of microscopic objects.

The first difficulty I met with was caused by my attempts to adapt the body of the microscope to a camera. I hadread of successess obtained by means of blackened tubes, and of course tried that method, but must confess that I found it both inconvenient and unmanageable. Finally, when in Paris, I had some conversation with M. Nachet, the intelligent microscope maker of that city ; and the result was that he made, from my description, the instrument I have ever since used, and which has thoroughly fulfilled the purpose for which it was intended.

The necessary indication in the construction of such an instrument is to adapt the essential portions of a microscope to a camera, viz , the object-glass, the stage, mirror, and the adjustment. These are so arranged in the apparatus which I use, that the whole screws bodily in the camera, and thus becomes entirely under control.

The first of these essential elements (the object glass) requires some consideration. I would advise any person about to purchase one to go at once to a good maker ; he will have to pay a good price for it ; but as the whole success of his microscopic study depends upon the excellence of the "glasses" he uses, I am inclined to think that no one will regret the expense, seeing that he will most likely possess as good an article as modern intelligence can produce. Of the stage little need be said except that it should be of sufficient size, and furnished (if intended to assume a perpendicular position) with a "spring-clip," or some other contrivance which will hold firmly the slip of glass on which the object is mounted. I am of opinion that what are called "stage movements" are expensive luxuries, and not essential to the instrument ; for with a little practice the hands will soon be found to become thoroughly educated, and capable of moving the object with the greatest delicacy. I found that the mirror originally adapted by M. Nachet was too small, and I now use one of two and a half inches diameter. Two adjustments, a coarse and a fine, will generally be found to be necessary ; the former for focussing when using the lower powers, and the latter when the higher are employed. The milled-head belonging to the fine adjustment may be marked into a certain number of divisions, to enable the photographer accurately to give it any portion of a rotation that he may find necessary, should the chemical and visual foci of his object glass not correspond. There is also an arrangement on the distal side of the stage, which allows me to fix an inverted object glass in the track of the rays of light, and thus condense them on the object itself.

I will now explain, as briefly as possible, the *modus operandi* I adopt ; and from that description you will, I hope, fully understand the applicability of the apparatus I have described. Not having a "glass room" at my command, I operate in the open air, and commence by placing my camera on a firm table in the sun, so that its long axis is identical with the sun's rays, taking care to throw a light colored cloth over it, to protect it as much as possible from the heat. The mirror is now placed at such a distance from the object glass as to equally illuminate the field, which, if using the concave side, I found was best done by allowing a space slightly greater than its focal length to intervene between it and the object, so that the rays should enter the instrument just after they have commenced to disperse; otherwise, if the object was in the focus of mirror, I observed a bright white spot occupying a portion of the field, which quite destroyed the picture. I fancy this was caused by an image of the sun being formed nearly on the ground glass. At any rate, I never am now troubled with this difficulty, provided I place the mirror as I have described.

If the object glass be a quarter-inch or a higher power, I always use the concave mirror, and employ an object glass of power next below that with which I intend to photograph, as a condenser. They should now be arranged so as to give a circular field, and when this is *evenly* illuminated, the object may be placed in position, the proper focus found, and then all is ready for the sensitive plate. Should a very large representation be wished, and the operator does not regret a slight loss of definition, he may place a high eyepiece in the brass tube from the inside of the camera. The large photograph of the "Acarus" parasite of the *Xylocopa violacea* was taken under these circumstances.

Photographic manipulation, as practised by me, presents nothing peculiar ; indeed, it is that usually adopted in the collodion process. I need not, therefore, enter into its description; but a few remarks on the causes of some failures I have met with will perhaps be interesting

The first that I had to encounter was the white spot, of which and its cure I have already spoken. The next was induced by the fact, that in object glasses of lower power than a quarter of an inch, the foci of the chemical and visual rays do not correspond : from their being slightly over-corrected for colors the chemical focus is separated a little from the visual, and hence the glass must be moved a little way from the object. Judging from the recorded experience of others, I must be very fortunate in my glasses, for this focal difference is very slight, even in the lowest powers. I may add here, that they are all of Messrs. Powell and Lealand's manufacture. In my half-inch glass this imperfection has been counteracted by the addition, at its back, convex lens, of about four inches focal length ; and I have found out by experience how much of a circle it is necessary for me to turn my fine adjustment to succeed with the lower powers.

Another difficulty which I met with was the time of exposure, that general bane of photographers. In common with other operators, I have found that, *cæteris paribus* the actinic power of the sun's rays varies greatly day by day, and hour by hour on the same day ; but with collodion iodized over night, I have taken good negatives on a clear, quick day, in one second, sometimes in less; while on other occasions I have been obliged to expose my plate for seven or even ten seconds, very rarely for more ; be it always understood that I am now speaking of an unclouded sun. Once or twice I have, curiously enough, succeeded with a short exposure, late in the day, with the sun within a very few degrees of horizon.

It may excite the wonder of some of my hearers that I have not alluded to the photography of opaque microscopic objects. I must here plead inexperience, but I am about to institute some experiments with a view of photographing the Foraminifera. The only difficulty I anticipate is that of illumination ; but I think that a proper arrangement of an oblique condenser, and a little longer exposure, will enable me to succeed.

I may, perhaps, be allowed to mention that the collodion I now use is of my own manufacture. I confess that motives of economy prompted me to the attempt, and I think it right to pay a tribute of excellence to that manufactured by Mr. Hardwich and Mr. Greenich, to the good qualities of which I can fully testify. The pyroxyline I employ is made in Paris ; and it may not be without interest to add that I sensitized with the following combination :—

Iodide of ammonium.................. $2\frac{1}{2}$ grains,
Iodidide of cadmium.................. $1\frac{1}{4}$ grain,
Bromide o potassium.................. $1\frac{1}{4}$ grain,
to collodion, 1 ounce.

This collodion I have found to be the most sensitive I have hitherto used ; I have taken good negatives (portraits) with it in three seconds, and it gives good intensity with half-tone.

And now, gentlemen, although I have not added any new fact to photographic science, I trust I have been successful in describing an apparatus by means of which photographs of microscopic objects can easily be taken; and that, in conclusion, I may be allowed to thank you for your patient attention to the remarks I have had an opportunity of making.

Mr. Harding: Supposing that the microscope is fixed in the camera at this moment as it lies upon the table before you, and you were about to operate, where do you suppose the sun to be ?

Mr. Reeves Traer: Behind my head.

Mr. Harding: And you always have it behind you ?

Mr. Reeves Traer: Yes.

Mr. Harding: And I suppose that experience has taught you that that is the best position in which you can work?

Mr. Reeves Traer: Yes; you can get a circular field in that way.

Mr. Harding: I suppose it is by working with the sun behind you that you are able to avoid that white spot to which you alluded?

Mr. Reeves Traer: No; I fancy not. I get rid of that by rapidly moving my mirror. I should be very happy if any gentleman would inform me what the real cause of that white spot is. I went to two or three opticians and manufacturers of object-glasses, and they could not tell me.

Mr. Shadbolt: I have been for many years connected with the Microscopic Society of London, and I recollect the introduction of this subject by Mr. Delves, of Tunbridge Wells, who, I believe, was the first person who produced a presentable photograph of a microscopic object. Mr. Traer has suggested one or two points for consideration, to which, I think, photographers will do well to attend. I am very glad that he has brought this subject before the Society; for I confess that I had not the courage to do it, having found in the early days of this Society's existence such an utter and thorough misapprehension of the object of a microscopic photograph, that it was then vain to expect to render one's self intelligible; but as the *furor* for mere details of phorographic manipulation is by this time worn out, microscopic photography may have some chance of attention.

The only difficulty we have in obtaining facile impressions of opaque objects is that of illumination, and I have but little doubt about readily overcoming that. The intense white spot which Mr. Traer has met with is, I believe, owing solely to the use of the *concave* mirror, which is unnecessary if he employs a condensing apparatus. The usual mode of working would be by the achromatic condenser The position selected by Mr. Traer with regard to the sun is certainly something with reference to getting the greatest amount of light, but beyond that I think it would be just as well to have your face or your side to it, the position being immaterial for insuring an uniform circle of light. The "*stage movement*," which Mr. Reeves Traer has said is "*an expensive luxury and wholly unnecessary*," I must state as the result of my experience, that for photographic operations this is correct, but for observation of living objects, a mechanical stage is a *sine que non*, for it would be utterly impossible to follow the eccentric movements of some animalculæ by hand. A fine adjustment, unless it works very smoothly, is almost useless, as it renders the instrument liable to vibration. In some astronomical telescopes a little arrangement is adopted of a long lever, furnished with a ring and a screw, which pinches the coarse adjustment, the lever hanging down when the screw is loose. This might be adapted with advantage to the microscopic camera, as by fixing that screw your movement can be regulated to perhaps not more than the thousandth part of an inch.

With regard to the chemical and visual foci differing, I may observe that I am intimately acquainted with the microscopic object-glasses of Ross, of Smith and Beck, and Powell and Lealand, and I think it is impossible to have any one of those makers' glasses without this difference existing, because for microscopical purposes it is essentially necessary that the chemical and visual foci should differ, in order to allow for the amount of correction that takes place in the eye-piece. It is not that with high powers they do not differ, but simply that the focal length is so small that the difference is scarcely perceptible to the eye, especially with sunlight. If an object-glass be either under or over corrected, it will be found that the light from a camphene lamp and that from gas will require a different amount of movement for correction of chemical focus with the same object glass and the same distance; and I think the same remark applies to other artificial lights. With the low powers; for instance, an inch and a-half or two inches objective, the amount of correction is soon ascertained for the particular light you employ; but a very convenient arrangement for removing the defect was suggested by one of our members (Mr. Wenham,) a clever microscopist and ingenious photographer. It consists in employing a convex crown glass lens of slight power in place of the posterior diaphram. One of the most perfect combinations that I know of for microscopic purposes, and the form constantly employed by our three best makers to this day, is that first suggested by Mr. Lister, a Fellow of the Royal Society, to whose investigations it is owing that we have them. This form I consider well adapted for certain photographic purposes. The peculiarity of it is that these two [*pointing to a diagram*] combinations are so arranged that a ray of light proceeding from the first is transmitted in such a direction towards the second, that the correction is absolutely perfect at any point desired. I omitted to state in the previous part of the explanation that there are two anterior foci at which the achromatism is absolutely perfect, but at any point between those two the achromatism is only approximating, and he conceived the idea that by transmitting from the front pair of lenses a ray of light proceeding from the *near* perfectly corrected focus, in the direction of the back pair, as if proceeding from its distant absolutely achromatic focus, he would then have an object-glass, in which the amount of error in one lens would be exactly compensated by that in an opposite direction in the second lens, and such is found to be the case; so that though we can never have a *perfect* image photographically under any circumstances, yet we might get as perfect a one as we have in the microscope. What I have stated with regard to the low powers does not hold good with the higher ones, say, from four-tenths to one tenth of an inch, because their construction is entirely different.

The illumination for photographic purposes of microscopic object is a point requiring more attention than usual. When you have illumination from sunlight you have not much difficulty, because, of course, you receive your rays parallel to one another, but with artificial light that is not the case. When I was at work at this subject my great object was to use artificial light for the purpose, and I succeeded in delineating many similar objects to those now in the room, enlarged to about three inches diameter. I imagined, *prima facie*, that the more light I could throw on my object the more rapid would be the action, but I did not find it to be so; and, of course, on reasoning upon it I found why. Supposing I had a little flame *here* from a camphene lamp, which I exhibited in this room one evening, I got a condenser which brought the rays on it *this* way, at an angle of, perhaps, ninety degrees, and the consequence was that, although I had got the light condensed upon the object, the object-glass could not make use of it, because it was only adapted to sixteen or twenty degrees of aperture, and as I had ninety on the object I got a false light in the camera. I went to work then on a different tack. I placed the lens in *that* position, and threw the rays of light in this direction, and found I had got much better off, but still could not get the amount of light I wished for. I then came to the conclusion that I ought, in illuminating, to take a precisely similar course to that employed in delineating an object. I had, first of all, placed very close to the flame a small sized bull's eye lens, to collect the rays of light proceeding at a very great angle, probably at one hundred degrees, it was so placed that it would not form an image of the flame, but it simply collected the light in this direction. I arranged this at such a distance from the light that I could fill the whole area of this second lens, which threw the rays nearly parallel, so I could afford to place my object very near to it, and this made a very great difference. Having worked in that way I found that by using, instead of a bull's eye lens, a very small one of similar form, that is to say, a plano-convex lens of great convexity, I got another advantage, for instead of covering a large surface I only covered a small one by the same number of rays, and by this mode of throwing them nearly parallel, or very slightly converging, I found illuminated the object so brilliantly and so perfectly that the rapidity gained was very considerable. In order to ascertain the amount of chemical variation, I recollect working with a parasite of the water rat, the limbs of which are studded with numerous small hairs in different planes. I may remark that the object glasses of the same maker, although worked from the same tools and corrected to the same point *apparently* do not worked absolutely alike, but the amount of correction required for one object glass is not exactly a criterion for another. Those made by Powell and Lealand are less over corrected than either Ross's or Smith and Beck's. I may further remark, with regard to the enlargement of the object by means of the eyepiece—of course, as Mr. Traer has stated, you do not gain anything in definition, on the contrary, you must of necessity lose somewhat, and it has another inconvenience, it increases the convexity of the field of view, which is not so flat as when the eyepiece is omitted. Some little time ago I was discussing with Mr. Thos. Ross this very subject, and he told me then that he had had some time in contemplation the construction of an eyeyiece expressly for photographic purposes, so as to correct the variation in the object glass itself. There is one other point which, I think, Mr. Traer has left a little without explanation—he did not communicate how he focussed his objects. If you take the ground glass of a camera, and attempt to focus ocjects requiring high powers, there are certain fine marks and lines which would be absolutely imperceptible upon the ground glass in the camera ; moreover, you would require the assistance of an eye-piece, in order to render them perceptible. Now, the most useful adjunct that I can recommend is a positive eye-piece, the construction of which is very simple. It consists only of two lenses fitted in a tube, the foci being as 2 to 3, and they are placed apart at such distance as to be equal to half the sum of their foci, the peculiar arrangement of which is, that you get a flat field of view ; you can then use this upon the camera, and you will get the enlargement of the eye-piece to the amount of some twenty or thirty diameters, according to its power. But it is better than using ground glass to take a piece of plain glass, coat it with collodion, sensitize, wash, and dry it, and you will have a beautiful surface on which all the most delicate details of an object will be visible.

Mr. Reeves Traer: I never found any difficulty in focussing. The glass I use is not ground glass—it is matted glass ; and I have always found my object sufficiently defined to enable me to see the marks with my naked eye of all the objects I have produced. I have lately been devoting my study to photographing the diseases of the human body, such as the deposit in urine. I have always used sun-light, because I fancy you can get much better photographs by sun-light than by artificial light. Geting a photograph in less than a second I always fancied was a great advantage, therefore, I never went into the question of artificial light. I have not noticed that the addition of the eyepiece had the effect described. If you look at "*that large picture*," you will not find that there is any great convexity.

Mr. Grant, (of New York) : I should wish to suggest, as applicable, an improvement patented by Mr. Harrison, of New York, termed the "Scroll movement," by which you can move the hundredth part or the sixteenth of an inch without any slipping whatever. [Mr. Grant explained the mechanism as consisting of a pin on the inner tube working into a spiral or volute slit]

Mr. Hughes: I am in possession of two of Mr. Harrison's lenses, which vary in their foci. They are the second or third lenses that I have had that varied, and varied considerably. I also work with Ross's, and they do not vary. I think the coincidence of the foci is altogether an English notion.

Mr. Shadbolt: With regard to the scroll movement, which is an ingenious adaptation of the wedge, I doubt whether it would do for microscopic objects; for, however perfectly a fine adjustment is made, we find they all shake more or less with very high powers.

Mr. Grant: What made me suggest this was that Mr. Pike, our most celebrated optician in America, has adopted it, and uses it for all his best instruments, even on the very smallest scale.

Mr. Malone: M. Claudet maintains that every object glass varies according as the light varies, and, therefore, that it is impossible to have an object glass so corrected as to be correct in all circumstances.

Mr. Shadbolt: I think that M. Claudet is under a misapprehension in consequence of his using a Voigtlander lens, which varies in its chemical and visual foci. I believe it to be perfectly possible to correct a lens so as to be fitted for all times and seasons. I have had some conversation with M. Claudet, and requested him to show me how he operated. The moment I saw him operate, I came to the conclusion that this notion of his was owing to his not being thoroughly careful in the way in which he focussed. The way he worked was with an ordinary magnifier, by which he may see the object, not on the ground glass, but through it. The least movement nearer or further off will alter the focussing plane. It is only by employing an eyepiece of considerable power that you can be certain that you have your focus correctly.

Mr. Malone: Mr. Shadbolt has put it upon a question of manipulation. M. Claudet is a manipulator, and Sir David Brewster agrees with M. Claudet. He could hardly see a probability of a lens being corrected for white, sun-light being affected in precisely the same manner by a sun-light which has passed through an absorbing medium; which is no longer sunlight, for it has certain rays abstracted.

Mr. Shadbolt: I may at once remark that Mr. Malone has put it upon quite a different footing than that upon which I understand M. Claudet to put it. I quite agree that the amount of correction for different sources of light, or, what amounts to the same thing, pure sunlight, and sunlight from which some of the rays may be filtered out, must be different; but, if he contends that the difference between sunlight in the morning and evening, or in summer and autumn, must upset correction of the lens, I must differ from him

Mr. Malone: M. Claudet finds that focussing in the morning gives a certain result, but focussing in the afternoon does not give the same result. He does not attempt to define the cause, but merely suggests that the sunlight of the morning may have passed through different absorbing media. I have worked with M. Claudet for two years.

Mr. Watson: I have frequently remarked that in the morning a lens is very diffeıent to what it is in the afternoon, particularly as it gets towards sunset; and, particularly, if there is a tendency towards yellow golden rays in the atmosphere, you cannot get such a sharp picture as in the morning.

Mr. Hughes: M. Claudet was the first person who called our attention to this difference in the foci; but I cannot help thinking that M. Claudet has refined upon his own practice, and finally carried his theory so far that he has got it beyond the range of practice. Theoretically, I think we must take it that if the sun's rays pass through the clouds, of necessity they pass through the medium which extracts some of them, and the same in passing through the glass of our own rooms. If this variation is sensibly and materially to interfere with our arrangements, it will cause us to re-adjust our instruments every day and hour. A great deal has been said about the difference of chemical and visual foci, and I believe very excellent lenses have been condemned simply because they have not agreed. I have worked, and others have done the same, for many years with lenses that did not agree. I think it is simply a question of cabinet work. Now, the lenses that are constantly being sold as having their foci coincident, only coincide at certain distances. If those distances are exceeded, their foci vary exceedingly. I put the question to Mr. Ross one day: "Here is a given lens; if I take a plate of a given size—supposing I take the picture of the same size as the object itself—will the two foci agree ?" and he would not say "Yes." I work very much in copying and reproducing, and I have this fact constantly brought home to me, that if I enlarge with Harrison's lenses, it varies a certain given distance for portraits; if I make an image of the same size, it varies very considerably; the more I enlarge the greater the diversity.

Mr. Watson: With Mr. Ross's lens I cannot get so sharp a picture in a yellow light as a white one.

Mr. Shadbolt: M. Claudet, I believe, always employs a lens that differs in its chemical and visual form.

Mr. Malone: He affirms the proposition to be a general one.

Mr. Shadbolt: The practice seemed to me to go upon a lens not absolutely corrected, and a lens not having its chemical focus brought up to its visual one, is equivalent to an uncorrected lens. If that be the case, the amount of variation will differ greatly. Mr. Hughes has hit the question, without being aware of it. If we take a couple of prisms, one being of a larger angle than the other—that of flint glass and this of crown glass—you have an exact equivalent of the lenses; a ray of light falling on them is refracted by both in opposite directions, so that a certain amount of deviation from the right line remains; but the sizes to which the spectrum is *pulled out* by a thick wedge of one, and a thin wedge of the other, are equal. I can make nothing more or less of it, look at it as long as one will.

Mr. Malone: I must observe that Mr. Shadbolt *will* assume that M. Claudet affirms this proposition, because he uses lenses not corrected. Now, M. Claudet uses all lenses, even the new Petzval lens; therefore, you must treat the proposition as one that is true, though I neither affirm nor deny it.

The cordial thanks of the meeting were then awarded to Mr. Reeves Tracr.

The Chairman called attention to the various specimens produced by the oxymel process, and by Fothergill's dry process. There were also some specimens produced by Mr. Fox Talbot's new modified method—he has written to the Secretary saying that the specimens are mere essays to give some idea of the nature of the invention. Mr. Malone has also some specimens.

Mr. Malone: In consequence of the publication of Mr. Fox Talbot's specification of the modification of his former patented process of engraving, I thought it would be interesting to bring some specimens which had some basis to start from. They are by M. Poitevin, of Paris, and I think it must be admitted that they form quite a new era in the art. These specimens of M. Poitevin's will bear comparison with any results which have been produced in any part of the world. They are photo-lithographs, produced by a mixture of bichromate of potass and gelatine, or of bichromate of potass and white of egg. The object to be copied is placed upon a stone so prepared, and it acts in such a manner that the surface shall be so altered that afterwards, upon applying water, it shall take on to certain parts, as upon the ordinary lithographic stone, while other parts of the surface appear to be altered in such a manner that it will receive the printer's ink, when you have simply to lay the paper upon it and pass it through the ordinary lithographic press, and thus print it without any engraving or loss of time, and have the result at once. It will be seen that this is an object that can be carried out upon a large scale. *Here* is a picture of the designer's drawing, copied by the ordinary photographic process, then transferred to the stone and printed off. By this method the original designer's touch is more clearly conveyed than if this drawing were placed in the hands of another artist to put upon the stone, which is a very important matter. *Here* is a specimen which has been untouched; it is a photo-lithograph of a bone, reproduced by the photo-lithographic process in such a manner as to be easily mistaken for the ordinary lithographic process, it being in colored ink. This process has been patented in this country, but some of the particulars have been kept secret. In this case I endeavored to learn as much as I could from M. Poitevin. He referred me to M. Ed. Becquerel, and M. Becquerel explained to me that M. Poitevin was not a man of means, and he considered that he was justified in concealing it. He said he was acquainted with all the process, and assured me that it was exceedingly simple and occupied only a few minutes. Still we have the fact that the stone is prepared with bichromate of potass and gelatine. This certainly seems to me to be a process of very great promise. It has been suggested that the light oxidizes the gelatine in such a manner as to give rise to a resinous substance. I thought that the chromium combined with the gelatine. Dr. Franklin informs me that he thinks a resinous substance is formed which resists the water on the stone, but allows the adhesion of the printer's ink.

The Chairman: Here is a process handed up to me, which I will read. "The method I find quite easy is as follows: I make a solution of gum arabic in water about as thick as molasses; with this I grind on a glass, or in a mortar, a sufficient quantity of calcined lamp black, ivory black, or other pigment. When the mixture is thorough, I add in the dark an equal part by measure of a saturated solution of bichromate of potash in honey, diluted with an equal quantity of water. The whole is now to be carefully mixed by stirring or grinding. This intimate mixture is a point of the greatest consequence. The paper I prefer is the highly albumenized. This mixture is laid on by floating, or with a large flat brush. Dry in the dark. The printing is performed in the usual way, only using about half the time for ammonio-nitrate paper. After exposure, the print is soaked ten minutes or more in water, and then exposed under a stream of water until the whites are fully brought out." I should be very glad if this matter could be brought before the Society upon another occasion, and it would give an opportunity for being thought of previously. I am sure I know gentlemen who can say a great deal about it, and propably may throw a good deal of light upon the subject, which will be more likely to terminate well for the interests of photograpy than the present desultory remarks.

It is suggested that the subject be brought before the Society at the next meeting. The Secretary will be happy to receive any papers, and Mr. Malone suggests that any person acquainted with any carbon process may be asked to assist us.

The meeting then adjourned.

From the Liv. and Man. Photographic Journal.

NORTH LONDON PHOTOGRAPHIC ASSOCIATION.

At an ordinary monthly meeting held at Myddleton Hall, Islington, on the 27th Oct., 1858, Mr. W. Hislop in the chair, the minutes of the previous meeting having been confirmed, the following gentlemen were duly elected members—Messrs. J. Spencer and G. Hilditch.

A paper was then read by the Secretary, explaining the use of an apparatus, exhibited by Mr. Legg, for changing plates in the open air, a description of which will be found at page 337 of this number.

Mr Babber read a paper "*On the causes of failure in the Oxymel Process,*" and exhibited specimens: a discussion then took place. (This paper will be found at page 336.)

Dr. Ryley explained his modification of the collodio-albumen process, Negatives taken by the process were shown by Dr. Ryley and Mr. W. Morley: a discussion then ensued in which many members took part.

Mr. Bingham exhibited a box for prepared plates for continental travelling, a portion of the lid and bottom being made to turn back and having yellow glass on the inside of each aperture.

Mr. Hislop exhibited a stereoscopic camera with double lenses and spring movement for instantaneous pictures.

Mr. D. W. Hill exhibited some pictures from Port Natal.

The Chairman stated that in consequence of the *Photographic Journal* being about to be published twice a month, the committee regretted that the finances of the Association would not allow them to distribute that journal fortnightly, they had therefore determined to supply the members with the *Liverpool and Manchester Photographic Journal* instead, and trusted that the arrangement would meet with the approbation of the meeting. The proposition was unanimously accepted.

Votes of thanks were passed to Mr. Barber and Dr. Ryley, and also the gentlemen who had exhibited apparatus, &c.

At the next meeting, to be held on the 24th instant, papers will be read by Mr. Dawson "*On the Causes of Fading in Positive Prints,*" and by Mr. Hislop "*On the Gelatine Process.*"

From Photographic Notes.

PHOTO-GLYPHIC ENGRAVING.

NEW PROCESS OF WILLIAM H. FOX TALBOT, ESQ., OF LACOCK ABBEY, WILTSHIRE.

Patent, dated 21*st of April*, 1858.

"The process described in this Specification, to which I have given the name of Photo-Glyphic Engraving, is performed in the following manner :—In this invention I employ plates of steel, copper, or zinc, such as are commonly used by engravers. Before using a plate, its surface should be well cleaned. It should then be rubbed with a linen cloth dipped in a mixture of caustic soda and whiting, in order to remove any remaining trace of greasiness. The plate is then to be rubbed dry with another linen cloth. This process is then to be repeated, after which the plate is in general sufficiently clean.

"In order to engrave a plate, I first cover it with a substance which is sensitive to light. This is prepared as follows : About a quarter-of-an-ounce of gelatine is dissolved in eight or ten ounces of water by the aid of heat. To this solution is added about one ounce, by measure, of a saturated solution of bi-chromate of potash in water, and the mixture is strained through a linen cloth. The best sort of gelatine for the purpose is that used by cooks and confectioners, and commonly sold under the name of gelatine. In default of this, isinglass may be used, but it does not answer so well. Some specimens of isinglass have an acidity which slightly corrodes and injures the metal plates. If this accident occurs, ammonia should be added to the mixture, which will be found to correct it. This mixture of gelatine and bi-chromate of potash keeps good for several months, owing to the antiseptic and preserving power of the bi-chromate. It remains liquid and ready for use at any time during the summer months, but in cold weather it becomes a jelly and has to be warmed before using it. It should be kept in a cupboard or dark place. The proportions given above are convenient, but they may be considerably varied without injuring the result. The engraving process should be carried on in a partially darkened room, and is performed as follows :

"A little of this prepared gelatine is poured on the plate to be engraved, which is then held vertical, and the superfluous liquid allowed to drain off at one of the corners of the plate. It is then held in a horizontal position over a spirit lamp, which soon dries the gelatine, which is left as a thin film of a pale yellow color, covering the metallic surface, and generally bordered with several narrow bands of prismatic colors. These colors are of use to the operator by enabling him to judge of the thinness of the film. When it is very thin, the prismatic colors are seen over the whole surface of the plate. Such plates often make excellent engravings, nevertheless it is perhaps safer to use gelatine films, which are a little thicker. Experience alone can guide the operator to the best result. The object to be engraved is then laid on the metal plate and screwed down upon it in a photographic copying frame. Such objects may be either material substances, as lace, the leaves of plants, &c., or they may be engravings, or writings, or photographs, &c., &c.

"The plate bearing the object upon it is then to be placed in the sunshine for a space of time varying from one to several minutes according to circumstances. Or else it may be placed in common daylight, but of course for a longer time. As in other photographic processes the judgment of the operator is here called into play, and his experience guides him as to the proper time of exposure to the light. When the frame is withdrawn from the light and the object removed from the plate, a faint image is seen upon it, the yellow color of the gelatine having turned brown wherever the light has acted. This process, as far as I have yet described it, is in all essential respects identical with that which I described in the Specification of my former Patent for 'Improvements in Engraving,' bearing date the 29th October, 1852. The novelty of the present invention consists in the improved method by which the photographic image obtained in the manner above described, is engraved upon the metal plate. The first of these improvements is as follows :—I formerly supposed that it was necessary to wash the plate bearing the photographic image in water, or in a mixture of water and alcohol, which dissolves only those portions of the gelatine on which the light has not acted. And I believe that all other persons who have employed this method of engraving, by means of gelatine and bi-chromate of potash, have followed the same method, viz., that of washing the photographic image. But, however carefully this process is conducted, it is frequently found, when the plate is again dry, that a slight disturbance of the image has occurred, which of course is injurious to the beauty of the result. And I have now ascertained that it is not at all necessary to wash the photographic image. On the contrary, much more beautiful engravings are obtained upon plates which have not been washed, because the more delicate lines and details of the picture have not been at all disturbed. The process which I now employ is as follows : When the plate bearing the photographic image is removed from the copying frame, I spread over its surface, carefully and very evenly, a little finely powdered gum copal (in default of which common resin may be employed). It is much easier to spread this resinous powder evenly upon the surface of the gelatine, than it is to do so upon the naked surface of a metal plate. The chief error has to guard against is, that of putting on too much of the powder ; the best results are obtained by using a very thin layer of it, provided it is uniformly distributed. If too much of the powder is laid on, it impedes the action of the etching liquid. When the plate has been thus very thinly powdered with copal, it is held horizontally over a spirit lamp, in order to melt the copal. This requires a considerable heat. It might be supposed that this heating of the plate after the formation of a delicate photographic image upon it, would disturb and injure that image, but it has no such effect. The melting of the copal is known by its change of color. The plate should then be withdrawn from the lamp and suffered to cool. This process may be called the laying an aquatint ground upon the gelatine, and I believe it to be a new process. In the common mode of laying an aquatint ground, the resinous particles are laid upon the naked surface of the metal before the engraving is commenced. The gelatine being thus covered with a layer of copal, disseminated uniformly and in minute particles, the etching liquid is to be poured on. This is prepared as follows :—Muriatic acid, otherwise called hydro-chloric acid, is saturated with per-oxide of iron, as much as it will dissolve with the aid of heat. After straining the solution to remove impurities, it is evaporated till it is considerably reduced in volume, and is then poured off into bottles of a convenient capacity. As it cools, it solidifies into a brown semi-crystalline mass. The bottles are then well corked up and kept for use.

"I shall call this preparation of iron by the name of per-chloride of iron in the present Specification, as I believe it to be identical with the substance described by chemical authors under that name. For example, see *Turner's Chemistry*, 5th edition, p. 537, and by others called per-muriate of iron ; for example, see *Brande's Manual of Chemistry*, 2nd edition, vol. 2, p. 117. It is a substance very attractive of moisture. When a little of it is taken from a bottle in the form of a dry powder, and laid upon a plate, it quickly deliquesces, absorbing the atmospheric moisture. In solution in water, it forms a yellow liquid in small thicknesses, but chesnut brown in greater thicknesses. In order to render its mode of action in Photo-Glyphic engraving more intelligible, I will first state that it can be very usefully employed in common etching, that is to say, that if a plate of copper, steel, or zinc, is covered with an etching ground, and lines are traced on it with a needle's point so as to form any artistic subjects, then, if the solution of per-chloride of iron is poured on, it quickly effects an etching and does this without disengaging bubbles of gas or causing any smell, for which reason it is much more convenient to use than aquafortis, and also because it does not injure the operator's hands or his clothes, if spilt upon them. It may be employed of various strengths for common etching, but requires peculiar management for Photo-Glyphic engraving.

And as the success of that mode of engraving chiefly turns upon this point, it should be well attended to.

"Water dissolves an extraordinary quantity of per-chloride of iron, sometimes evolving much heat during the solution. I find that the following is a convenient way of proceeding:

"A bottle (No. 1) is filled with a saturated solution of per-chloride of iron in water. A bottle (No. 2) with a mixture consisting of five or six parts of the saturated solution, and one part of water; and a bottle (No. 3) with a weaker liquid, consisting of equal parts of water and of the saturated solution. Before attempting an engraving of importance, it is almost essential to make preliminary trials, in order to ascertain that these liquids are of the proper strength. These trials I shall therefore now proceed to point out. I have already explained how the photographic image is made on the surface of the gelatine, and covered with a thin layer of copal or resin, which is then melted by holding the plate over a lamp. When the plate has become perfectly cold, it is ready for the etching process, which is performed as follows:

"A small quantity of the solution in bottle No. 2, namely, that consisting of five or six parts of saturated solution to one of water, is poured upon the plate, and spread with a camel's hair brush evenly all over it. It is not necessary to make a wall of wax round the plate, because the quantity of liquid is so small that it has not a tendency to run off the plate. The liquid penetrates the gelatine wherever the light has not acted on it, but it refuses to penetrate those parts upon which the light has sufficiently acted. It is upon this remarkable fact that the art of Photo-Glyphic engraving is mainly founded. In about a minute the etching is seen to begin, which is known by the parts etched turning dark brown, or black, and then it spreads over the whole plate, the details of the picture appearing with great rapidity in every quarter of it. It is not desirable that this rapidity should be too great, for in that case it is necessary to stop the process before the etching has acquired sufficient depth, (which requires an action of some minutes' duration). If therefore the etching on trial is found to proceed too rapidly, the strength of the liquid in bottle No. 2 must be altered (by adding some of the saturated solution to it), before it is employed for another engraving. But if, on the contrary, the etching fails to occur after the lapse of some minutes, or if it begins, but proceeds too slowly, this is a sign that the liquid in bottle No. 2 is too strong and too nearly approaching saturation. To correct this a little water must be added to it before it is employed for another engraving. But in doing this, the operator must take notice that a very minute quantity of water added after, makes a great difference, and causes the liquid to etch very rapidly. He will therefore be careful in adding water, and not do so too freely. When the proper strength of the solution in bottle No. 2 has thus been adjusted, which generally requires three or four experimental trials, it can be employed with security. Supposing, then, that it has been ascertained to be of the right strength, the etching is commenced as above-mentioned, and proceeds till all the details of the picture have become visible, and present a satisfactory appearance to the eye of the operator, which generally occurs in two or three minutes, the operator stirring the liquid all the time with a camel's hair brush, and thus slightly rubbing the surface of the gelatine, which has a good effect. When it seems likely that the etching will improve no farther, it must be stopped. This is done by wiping off the liquid with cotton wool, and then rapidly pouring a stream of cold water over the plate, which carries off all the remainder of it. The plate is then wiped with a clean linen cloth, and then rubbed with soft whiting and water to remove the gelatine. The etching is then found to be completed.

"I will now describe another etching process, very slightly differing from the former, which I often use. When the plate is ready for etching, pour upon it a small quantity of the liquid No. 1 (saturated solution). This should be allowed to rest upon the plate for two minutes. It has no very apparent effect, but it acts usefully in hardening the gelatine. It is then poured off from the plate, and a sufficient quantity of solution No. 2 is poured on. This effects the etching in the manner before described, and if this appears to be quite satisfactory, nothing further is required to be done. But it often happens that certain faint portions of the engraving, such as distant mountains or buildings in a landscape, refuse to appear, and as the engraving would be imperfect without them, I recommend the operator in that case to take some of the weak liquid, No. 3, in a little saucer, and without pouring off the liquid No. 2, which is etching the picture, to touch with a camel's hair brush, dipped in liquid No. 3, those points of the picture where he wishes for an increased effect. This simple process often causes the wished-for details to appear, and that sometimes with great rapidity, so that caution is required in the operator in using this weak solution No. 2, especially lest the etching liquid should penetrate to the parts which ought to remain white. But in skilful hands its employment cannot fail to be advantageous, for it brings out soft and faint shadings, which improve the engraving and which would otherwise probably be lost. Experience is requisite in this as in most other delicate operations connected with photography, but I have endeavored clearly to explain the leading principles of this new process of engraving according to the mode which I have hitherto found the most successful.

"With respect to the second invention mentioned in my provisional Specification, in which the electrotype process is employed, I have found that it gives less successful results than that which I have fully described above, and I have therefore omitted it from this Specification, and make no claim with respect to it.

"In conclusion, I would remark that besides the process of Photo-Glyphic engraving, considered as a whole, being new, I believe the following points also to be new, viz:

"First—The etching a photographic image formed upon a surface of gelatine and bi-chromate of potash without first disturbing that surface by washing it with water or alcohol.

"Second—The laying an aquatint ground of resin or copal upon a surface of gelatine, and not, as usual, upon the naked metallic surface of the plate.

"Third—After forming a photographic image on gelatine the heating it strongly over a spirit lamp or otherwise.

"Fourth—The use and employment of per-chloride of iron as an etching liquid for the production of Photo-Glyphic engravings.

"Fifth—The use and employment of the same as a substitute for aquafortis in common etching."

It may be interesting to our readers to compare Mr. Talbot's present patent with his former one, dated October 29th, 1852, the Specification of which is as follows:

"The following is my method of engraving steel plates:—I take a good steel plate, prepared as it usually is for the use of engravers; and, first, I dip it for a minute or two into vinegar acidulated with a little sulphuric acid, then wash it and wipe it quite clean and dry. Then I prepare a solution of gelatine or common isinglass in water. It should be made of moderate strength, such as when cold coagulates into a firm jelly. Having warmed this solution, and strained it through a linen cloth, I add to it about half its volume of a saturated solution of bi-chromate of potash in cold water, and stir the mixture well. This mixture is to be kept moderately warm while in use to prevent its coagulation; and since this warmth causes it gradually to part with its water, and grow thicker or more viscid, therefore it is necessary that the operator should from time to time add so much water as he judges necessary to replace what has been lost. The steel plate, being first slightly warmed, I pour some of the prepared gelatine upon it, and with a glass rod, held horizontally, I spread it over the whole plate. I then incline the plate, and pour off the superfluous gelatine. I then place it on a stand, which should be kept as nearly horizontal as possible to prevent the gelatine from flowing to one side of plate. I then place a spirit lamp beneath the plate, and warm it gently till the gelatine is dry. This process should not be performed in very strong daylight, because the prepared gelatine would be injured by the light. The film of prepared gelatine, when properly dried upon the steel, has an uniform bright yellow color, and a smooth surface. If too much bi-chromate is employed in proportion to the gelatine, the surface of the dried film appears clouded in various parts, owing to the formation of minute crystals. This defect is easily remedied by adding some more fresh gelatine to the mixture. After a little practice the operator will have no difficulty in obtaining a uniform film.—When the steel plate has been in this manner coated with a regular film of prepared gelatine, it is ready to receive a photographic image of the object which is intended to be engraved. I will suppose, in the first place, that the object is capable of being applied in close contact with the surface of the prepared steel plate; for example, a piece of lace, or the leaf of a plant. I place the object upon the steel plate: then a sheet of glass is laid over it, and screwed into close contact with it, which is best done by means of what is commonly called a photographic copying frame. The plate is then to be exposed to the sun's rays for a certain time, varying according to circumstances, from half-a-minute to five minutes, or more, until the operator judges that a sufficiently strong image has been produced. The effect of the sun's rays is to turn the color of the plate from yellow to brown, but the parts shaded or protected by the object of course retain their original yellow; the result is therefore the formation of a yellow image of the object upon a ground of a brown color. The plate is then taken out of the frame, and the object being removed from it, it is seen whether a good image has been obtained. In that case the operator proceeds as follows: The plate is taken and dipped into cold water for one or two minutes, which removes all the bi-chromate of potash, and the greater part of the gelatine also, from the parts of the plate on which the sun's rays have not acted, while on the contrary it removes but little from those parts which have been fully exposed to the sunshine; the consequence of this is that the image is whitened. The plate is then removed from the water, and dipped into alcohol for one minute. It is then removed, and placed in a vertical position in some warm place, and in the course of a few minutes it becomes entirely dry. This completes the photographic part of the process; and the plate is, generally speaking, now seen to be impressed with a white image of the object, often very perfect and beautiful, placed upon a ground of a brown or brownish-yellow color.

"It now remains to etch the photographic image thus obtained. For that purpose I take some bi-chloride of platina, containing a little free acid, and dissolve it in cold water. I then add to four parts of this saturated solution one part of water. This part of the process requires attention, for if the quantity of water is in a material degree either too great or too little, the etching process is liable to failure. The best way is to proceed experimentally by adding water gradually to a considerable quantity of the saturated solution, and making trial of the results until they become satisfactory. When this is attained the solution is to be kept in a well stoppered bottle for immediate use at any time. A solution of the proper strength having been carefully prepared, and tested as above-mentioned, the etching process is executed as follows:—The plate is laid horizontally on a table, and a small portion of the platina solution is poured upon it, and quickly diffused and spread over the whole plate with a camel's hair brush. It is hardly necessary to surround the plate with a wall of wax, as practised by engravers, in the usual mode of etching copper plates, although this may be done if preferred. But the liquid does not often flow off the plate, in consequence of the small quantity of it which is used. If a greater depth of it were poured on, it would from its great opacity, prevent the operator from discerning the effects produced by it upon the plate of metal. The platina solution then being poured on the plate it produces no effervescing or escape of gas, but in the course of a minute or two the whole photographic image of the object which existed upon the steel plate is seen to blacken, and when this change is complete there is seen a very distinct and regular black image of the object. The operator watches until it has a satisfactory appearance to his eye, and looks finished, or as perfect as he judges it likely to become, which generally happens in one or two minutes. When he thinks it is finished, or not likely to be further improved or developed, he inclines the steel plate gently, and pours off the platina solution by one corner of the plate into a bottle placed, to receive it; the surface of the plate is then dried with blotting paper, and then a stream of water, or, what is better, a strong solution of salt in water, is poured over the plate, which carries off the remainder of the platina solution. The plate is then rubbed with a wet sponge, or linen cloth, which, in a short time, detaches and removes the film of gelatine from the steel, and enables the operator to see the etching which has been obtained. The plate ought then to be coated with wax, because a newly prepared etching is very easily oxydated or rusted by the atmospheric air. Impressions can be printed off from the steel plate thus engraved in the mode usually employed by copper-plate and steel-plate printers.

"When the etched parts are both broad and uniform, as in the case, for instance, when the object is an opaque leaf of a plant, although the etching holds the ink pretty well, yet when printed off the effect is not always satisfactory. I proceed therefore to explain a useful modification of theprocess, in order to do which I must observe that when the object placed on the steel plate to be engraved is a piece of black crape or gauze, an engraving of it is obtained in the way above-mentioned, which truly depicts the object, representing every thread in its proper place by a corresponding engraved line; but when two or three thicknesses of this gauze are employed instead of one, and are placed obliquely to each other at various angles, then the resulting engravings offers a mass of lines intersecting each other in different directions which cover the whole plate, and which, when printed off upon paper, produce a result which, to an eye at a little distance, appears like a uniform shading Now let us suppose that we have in this way covered a prepared steel plate with two or three folds of black crape or gauze, and placed it in the sunshine. When taken out of the sunshine and the crape removed, let the broad leaf of a plant, or some other object of irregular outline, be placed upon the centre of the plate, and then let the plate be replaced in the sunshine for three or four minutes. When it is removed for the second time, and the object detached, it will be seen that the light of the sun, acting upon the parts of the plate exterior to the object, has wholly obliterated the previous effect produced by the gauze, and has converted that part of the plate to a uniform brown color, while the central part of the plate offers the image of the leaf, upon which the crowded intersecting lines produced by the gauze are still seen. The plate is now to be etched as previously described, and the result is, that an etching of a leaf is produced covered with engraved lines, which lines are entirely wanting on the rest of the plate. When this is printed off, the impressions offer the appearance of a leaf nearly uniformly shaded. But in order to obtain greater perfection in this respect, it is only necessary either to manufacture on purpose some pieces of more delicately woven fabrics, or to cover a sheet of glass by any convenient method with fine opaque lines, to intercept the light, or with a powder adhering to the glass, consisting of distinct opaque particles, and very uniformly diffused over the surface. These things, which I believe have not been heretofore used in the fine arts, I would denominate photographic screens or veils.

"Another method is to cover the steel plate with an aquatint ground, consisting of particles of resin, before coating it with the gelatine; but in that case the dipping of the plate into alcohol, which occurs in the foregoing description of my process, must be omitted; and moreover, a fresh aquatint ground requires to be laid upon every plate; whereas a single veil, such as I have above described, serves for any number of plates in succession. The method of engraving which I have here described as applied to steel plates is also applicable to plates of zinc. Lithographic stones are also readily engraved by the same process.

"When the object to be engraved is not of a nature to be placed in contact with the steel plate, it is necessary first to form a negative photographic image of it on paper or on glass by the usual methods employed in photography; then to make from this negative photograph a positive copy, either upon glass or upon paper of good uniform texture and moderately transpawhen it will take an image of the object, as above described. The prepared steel plate may also be placed in the focus of a camera, and the camera directed to the object, but as the *film* of prepared gelatine is not very sensitive to *feeble* lights this process in general would occupy a considerable time.

"I have stated that I employ in this process a solution of gelatine mixed with bi-chromate of potash, but I do not confine myself to the use of gelatine. Other substances may be used, especially albumen or white of egg, and gum arabic or mixtures of these and other analogous substances in various proportions. But notwithstanding that I have found some of these mixtures to afford good results, yet on the whole I think it answers best to employ only gelatine mixed with the bi-chromate of potash; and throughout this Specification I have used for brevity the term "gelatine," to denote a solution of isinglass in water, carefully strained and made as free from impurities as possible. And I have used the terms positive and negative as they are usually employed in the science ot photography. I have described the solution of platina which seems to me the best, but I do not confine myself to this etching liquid. Other liquids may be employed capable of etching surfaces of metal or stone, provided they possess the essential quality of not penetrating the film of prepared gelatine which cover the portions of the surface not to be etched.

"The processes described in this Specification which I claim to be new inventions, are—

"First—The producing or obtaining etchings or engravings by photographic and chemical means alone upon plates of steel.

"Second—The method described of covering surfaces of metal or stone with a coating of gelatine, rendered sensitive to the action of the light by being mixed with a solution of bi-chromate of potash or other liquid which possesses photographic properties, and which unites freely with gelatine, producing, when the gelatine is dried, a coating sensitive to light, and which by the action of the solar rays upon it becomes either less soluble in water than before, or altogether insoluble in that liquid.

"Third—The removal by the action of water of the more soluble parts of the photographic image, for the purpose of rendering them permeable to an etching liquid.

"Fourth—The employing a chemical liquid for the purpose of etching the surface upon which the photographic image has been formed, as above-mentioned, which liquid possesses the requisite etching property, but has not the property of penetrating the coating of gelatine which covers and protects the portions of the surface not intended to be etched.

"And, whereas, in reciting these claims, I use for brevity the word "gelatine," and I have already stated that albumen and gum possess analogous properties; I would therefore be understood to include them in my claim as being capable of replacing the gelatine in the above described process.

"Fifth—The employing an apparatus for partially intercepting the sun's rays, which in my present Specification I have called a photographic screen or veil, for the purpose of producing a change or alteration in the final character of the etching."

TO TRANSFER THE COLLODION FILM

Sir,—First cut your leather or cloth a little larger than your glass positive, lay it face upwards on a table; then take about half an ounce of spirit of wine, and add four ounces five drops of nitrate acid; shake it up and it is fit for use. Take the positive, after being dried by the fire or otherwise, and pour the above mixture on as for collodion; and when, still wet, lay it on the leather or cloth face to face, gently squeezing out the air bubbles, and keep them in close contact either in the printing frame or in a book, or any convenient place, until the spirit of wine is dry, which may be half an hour or so; then take out and separate the glass from the leather or cloth, and the film will be so fixed to the black surface that you cannot even scratch it with your finger nails. It may be well to use a collodion a little thicker than usual in cotton for transfers. The above is a certain, cheap, and easy method of manipulation.

Oct. 21, 1858. John Ostell.

From Liv. and Man. Photographic Journal.

ON THE CAUSES OF FAILURE IN THE OXYMEL PROCESS.

BY MR. BARBER.

In noticing some causes of failure in the oxymel process, I must mention that the plan I adopt, and which I think is generally followed, is to use three vertical baths, one for the nitrate of silver, another for washing, and the other for oxymel. It is in the last only I proceed to trace the failure, and give the remedy, for I will assume the collodion and exciting bath to be in a fit state for giving excellent pictures, and disappointment to wait only upon immersion id the oxymel.

After a lengthened experience in this very facile process I find there are two conditions of the oxymel which will account for most of the failures connected with it. *In one case it contains iron.* The plate upon development has a rusty foggy appearance; the intensity may be increased to almost any amount, but the picture remains as it were buried beneath it. For some time during last summer every negative I took became clouded in this way, and from experiments I made relative thereto I became convinced it was due to the presence of iron; and whether it emanated from impurity in the charcoal used for bleaching the honey, or was contained in the gutta percha of the nitrate bath, I failed to ascertain; most likely in the latter, as I discovered an excrescence of metallic silver on one part of it, proving the presence of one of the baser metals. By changing the bath and abolishing the use of charcoal I got over this difficulty. Unfortunately I have not preserved one of these plates. I say unfortunately, because I think in giving others the benefit of your experience, you materially assist in showing the stumbling blocks in the road. The old adage, "a knowledge of disease is half its cure," applies with full force to photography.

The ordinary source of iron in oxymel arises from making it in an iron boiler, or one imperfectly tinned. My method of procedure is this: Having first mixed some chalk with water, add it to the honey and boil. It is then turned out into a deep vessel, and, when cold, poured off from the grosser sediment, again heated, and clarified with white of eggs; it will then run rapidly and bright through a strainer or paper filter, after which it is converted into oxymel by adding acetic acid.

Almost every sample of honey gives an acid re-action to test paper, derived, in the first instance, probably from the fumes of sulphur used for the destruction of the bees. The object for adding the chalk is to neutralise this, and prevent its attacking the apparatus in which it is made; it is also of great service in brightening the product. I am not certain that the presence of either tin, lead, or copper, would be of much consequence; but the slightest trace of iron is so highly detrimental, that I would not even trust this plan of making it in a state of purity were it to come in contact with that metal in any stage of its manufacture.

In the other case, the oxymel bath contains nitric acid, and as I have also failed from this cause, I will describe how it occurred. In the spring of this year I took a few pictures quite equal to any I expect to obtain from a preservative process. After having suspended my photographic operations for three or four months, I tried a picture with the same oxymel, but found I could get no density, only a plate with unmistakeable nitric acid symptoms, and the way it got there was this. In spite of the washing, some nitrate of silver will find its way into the oxymel bath, and it being the property of nitrate of silver, in contact with light and organic matter, to become reduced, it was evident this operation had been going on here, for the honey had become much darkened in color, consequently an equivalent of nitric acid must, at the same time, have been liberated, or entered into some other molecular arrangements productive of the same effect. I neutralised this by dissolving some chalk in acetic acid, adding the resulting acetate of lime, which completely righted it. Probably acetate of magnesia would be a better addition, it being a more deliquescent salt. Any alkaline acetate may be employed for the purpose, the rent; and, lastly, to put this positive copy in close contact with the steel plate, and then to place the plate in the sun's rays, nitric acid, of course, unites with the base, setting free the acetic acid. I produce two pictures, one taken before and the other after the addition.

An objection has been made to the employment of honey as a preservative agent, because it contains a crystallizable sugar, consequently crystals might form upon the plate by keeping. So they will; but the plates must be kept at least two or three months before they form, so that this appears to me a very much overstrained objection, and of no practical importance. Theoretically speaking, amorphous cane sugar, in its well-known form of barley sugar, would be the proper thing to use.

One more objection, and I have done: the minute spots caused by dust. They are of no consequence, as all who have printed their pictures can testify.

CONTRIVANCE FOR CHANGING PREPARED PLATES IN OPEN DAYLIGHT.

BY M. S. LEGG.

It consists of a kind of bag, about three feet square, intended to be laid upon a table or even upon the ground, made chiefly of black twilled cotton cloth, but the upper portion is composed of a particular kind of oil silk, of a deep yellow color, such as is used in tropical climates for surgical purposes ; the lower portion of the bag is double, so that when the box containing the prepared plates is introduced at one end it must be pushed on to the other, and then passed over the inner portion of the bag before it can be placed under the oiled silk, this is sufficiently transparent to admit of seeing any operation that may be necessary, and yet the plate is protected from the action of the actinic rays ; the hands are to be introduced through short sleeves at the sides, and there is sufficent room within the bag to allow the back of a whole plate camera and box containing the prepared plates to be placed in it and manipulated without difficulty. The bag being composed of thin and flexible materials may be folded into a small space when not in use.

PHOTO-LITHOGRAPHY.

SPECIFICATION OF J. A. CUTTING AND J. H. BRADFORD.

" This Invention has for its object the production of a Photographic picture upon the surface of a lithographic stone, from which impressions may be taken by the ordinary process of lithographic printing, by which we are enabled to greatly multiply the results of photography, and to avoid the tedious and expensive process of drawing upon the stone by hand, as at present practised. In the ordinary process of lithographic printing the surface of the stone, after the drawing is completed, is washed or coated with a solution of gum arabic in acidulated water. The gum thus applied enters into a close union with the surface of the stone, or adheres with great tenacity thereto, so that it cannot readily be removed by washing, and thus protects it from absorbing the ink employed in the printing process. In the process of Photo-Lithography it is found, however, that the gum arabic adheres so closely to the stone as not to be readily removed by the washing from those portions not fixed by the light. On this account, in the experiments heretofore made in Photo-Lithography, it has been found impracticable to employ this gum, and a solution of gelatine has been used in its stead. Stone thus prepared, however, yield but few impressions, and are of comparatively small value in the arts. To remedy this difficulty is the object of this invention, which consists in the employment of gum arabic which has been deprived of its power of intimate union with the stone, at the same time that it is rendered capable of becoming fixed or insoluble by the operation of light. When a stone, treated with the above prepared gum, is subsequently submitted to the action of a solution of soap, the unlighted portions of the gum are readily and expeditiously removed, while the lighted portions are not injuriously affected thereby, at the same time that the soap performs its well-known duty of forming the insoluble soap upon the stone to produce the body or printing surface. The stone, after being prepared in a manner which will be more fully explained hereafter, has the following solution applied to its surface:—Water, one quart, gum arabic, 4 oz. ; sugar, 160 grains ; bi-chromate potassa, 160 grains ; the sugar retarding the immediate fixing of the gum upon the stone, and the chromic salt causing it to become more firmly fixed or much less soluble on exposure to the light. The stone thus prepared is preserved in the dark until required, and when the coating is dried it may be exposed in the camera a suitable length of time to fix the gum upon those parts of the picture where the lights are to appear, or it may be covered by the print or picture to be reproduced and exposed to the light. After it is thus " lighted," the stone is washed with a solution of soap, which attacks the stone, removing the coating and fixing itself (or an insoluble soap formed by the mutual decomposition of the stone and the soap employed) upon the surface in place of the coating removed. Where the gummed surface has been entirely protected from the light, the gum is easily removed, and the soap has free access to the stone, and the consequence is a thorough union of the soap with its surface ; where, on the contrary, the lights were strong, the gum having been rendered much more insoluble, is protected from the action of the soap, and is nor effected by it ; and at all intermediate points the effect of the soap upon the stone is inversely proportionate to the extent to which the gum was fixed by the light. The most delicate grades and tints of light and shade may thus be produced upon the stone, true to nature as the photographic picture itself. The stone having been thoroughly washed with clean water and dried, now receives a coating of ink from the roller, which, uniting with the soap already deposited thereon, serves to give additional body to the picture, and shortly after the stone is ready for the printer ; the portions which have been protected by the undissolved or "lighted" gum when wet resisting ink. Previous to the commencement of the above described process the stone is to be prepared, and this preparation will vary according to the nature of the picture or subject to be produced. If it be a manuscript, a lithograph, line engraving or any plan or line drawing without gradations of light or shadow, running the one into the other, a polished surface may be employed. This will not answer, however, so well for portraits, landscapes, and a great variety of other pictures in which the variations of shade blend the one into the other ; in such cases it becomes necessary to give the stone a roughened surface, or, in the language of the workman, the stone is "grained." Into such a surface the chromated solution of gum sinks deeper, and is then removed more or less according as it has been fixed by the light, and thus the required variations of intensity and the gradations of light and shadow are produced. Where a polished stone is employed the chromated gum lies upon the surface, and it is found that the variations of light and shadow cannot be produced with that nicety necessary to make a perfect graduated picture such as a portrait that shall be easily printed.

" In preparing the chromated solution the proportions of the ingredients given above are by no means rigid, though they are those which we have found to answer the purpose. The sugar we have found also may be replaced by other substances, such as molasses, acetic acid, or various acetates not decomposable by the bi chromate of potassa. I do not, therefore, confine myself to the proportions given above, nor even to the use of the exact substances named, when there are equivalents for them which may be used in their stead without departing from the essence of this invention. And in place of removing the unlighted portions of the coating by means of the direct application of soap, they may be washed off with water, acetic acid, or their equivalents ; oils, resins, or printing inks being applied after the stone has been dried for the purpose of forming the required insoluble soap in the stone ; such a process is the entire equivalent of the one above described, although it is neither so expeditious nor so efficient. The quality of the soap employed is not rigid, though those containing a proportion of resin will in general give a better result. The strength of the saponaceous solution is not material; ½ lb. of soap to six quarts of water has been found to answer the purpose. Heretofore this process has been spoken of as applied to lithographic stones, but there are other substances which may be employed in lieu of the stone to which it may be applied, one of which is zinc, which has been heretofore used by printers as a substitute for stone; in the use of this metal an insoluble soap of zinc is formed instead of one of lime.

"Having now set forth the nature of this invention, and explained the manner of carrying the same into effect, we wish it to be understood, that under the above-recited Letters Patent, we claim the employment of gum arabic, deprived of its power of intimate union with the stone by means of sugar or its equivalent, as set forth, and in combination with the above we claim the use of soap, as set forth, for the purpose of readily removing the unlighted portions of gum and of forming the printing surface, as described."

From Photographic Notes.

PHOTOGRAPHIC ENGRAVING.

The reader will find on another page of the present number, the Specification of Mr. Fox Talbot's new patented process of Photo-Glyphic Engraving, as well as that of the former patent taken out by him in 1852. As this new process is now exciting much attention, and as several leading London Journals have spoken of it as one of great promise, it becomes important to consider what are the real capabilities of *any* process of Photographic Engraving, when compared with the now advanced processes of Photo-Lithography and Carbon-Printing.

The most perfect photograph that it is possible to produce by any known process is the Daguerreotype upon a silvered copper plate. Let us then imagine that this can be etched by purely chemical means, and that a plate can be produced in which the sunk parts correspond in depth to the intensity of the shadows of the picture. But first observe that in making this assumption we are also assuming that the means have been discovered of biting into the plate in the direction of its thickness by a solvent which does not at the same time bite into it laterally, and undermine the lights of the picture; which discovery remains yet to be made, and would be one of immense practical value. Well then, if we stride in imagination over a great difficulty, and imagine a perfect photograph, etched by a perfect process, we obtain a plate in which the sunk parts correspond in depth to the shadows of the picture, while the high lights remain intact, so that the plate would exhibit hollows gradually shelving up towards the surface according to the modulation of the shades of the picture. But of what use would such a plate be? We answer, NONE. Proofs drawn from it would exhibit nothing but blacks and whites, and would be totally deficient in half-tones. Wherever a hollow existed, that hollow would be filled with ink, and would print uniformly black, no matter how it varied in depth, or how exquisitely graduated in depth its shelving sides might be. A Photo-Glyphic Engraving would therefore be useless unless it resembled in an essential particular all other engraved plates—that is to say, unless it possessed a GRAIN,—a something which the pure photograph does *not* possess. All engravings, whether line, or mezzotint, or aquatint, exhibit lines, or spots, or a grain; and a Photo-Glyphic engraving, or Photo-Galvanograph, or any kind of proof drawn from a plate engraved by photography, must also of necessity exhibit a grain; so that to obtain a PURE photograph in Carbon from such plates is an absolute impossibility, and the only subjects which could be copied truthfully by such methods of engraving, when perfected, are those which are composed entirely of lines, or dots, or black and white patches.—such as prints, or printed matter, or manuscript; natural lights and shadows could not be faithfully represented by such means. The reader will therefore perceive why Mr. Fox Talbot, in his new process, introduces the aquatint ground, and why Herr Pretsch, in his process of Photo-Galvanography, introduces the means of obtaining a grain.

It is evident therefore that all processes of Photographic Engraving are of necessity imperfect, and must be limited in their application when the absolute truthfulness of photography is required; and in addition to the serious defect under which they lie, it must be borne in mind that printing from engraved plates is a much more difficult, tedious, and costly operation, than printing from engraved wood blocks; and that the latter can be printed along with ordinary type, which the former cannot,—so that when the assistance of an artist is required to doctor an imperfect plate it would be better for him to cut at once from a photograph upon a wood block.

All these things being carefully weighed and considered it does not appear to us that the processes of Photographic Engraving, containing as they do an unavoidable error of principle, are by any means of equal promise with the processes of Photo-Lithography, Carbon-Printing, and Photo-Xylography; and we believe that the future of Photography in Carbon lies in the perfecting of the two former of these processes, while if the latter could be so far improved as to enable the wood-engraver to cut the *finest* work from a collodion positive upon a wood block, the utility of that process would be immense.

We do not therefore hail with so much enthusiasm as some of our contemporaries Mr. Talbot's new process, nor do we perceive in it the elements of any great practical utility. For certain purposes however it may be found useful, and should this prove to be the case we shall not fail to call attention from time to time to what is doing in this direction. Two or three years ago we should have been more sanguine of the success of this process than we are at present, but the ill-success of the operations of the Photo-Galvanographic Company has impressed us with the conviction that photographs with a grain will never be appreciated by the public. If we are to depart from pure photography why not at once hand over photographs upon wood to the wood-engraver, to be worked up into artistic pictures, and printed along with ordinary type. In Photo-Lithograpy grain is not an indispensable necessity, and if the printing press is to be employed in the multiplication of pure photographs, these must be photo-lithographs and not photoglyphs.

We have given at page 268, the Specification of a patent recently taken out in England by Mr. William Newton, for the process of Photo-Lithography which is now being so extensively and successfully employed in America by Messrs. Cutting and Bradford, of Boston, U.S. This process differs in an important particular from that of M. Poitevin, (which is also patented in England). The Specification of M. Poitevin's patent runs thus:—

"I print photographically with ink of a greasy nature on paper, lithographic stone, metal, glass, or other suitable material, in the following manner:—I apply upon the surface which is to receive the design one or more layers or films of a mixture of equal parts of a concentrated solution of albumen, fibrine, gum arabic, gelatine, or similar organic substance, and a concentrated solution of a chromate or bi-chromate of potash, or of any base which does not precipitate the organic matter of the first solution. This single or compound layer or film is then dried if the photographic impression is to be produced by contact; or it may be used in a moist state when the photographic impression is to be produced in the camera obscura. In producing the impression by contact, the surface is covered with a photographic negative picture, or an engraving, or other transparent or partially transparent object, or screen, and then exposed to light, as in the ordinary photographic process. After a sufficient exposure, if the surface has become dry or has been used in a dry state, it is moistened with water by means of a sponge, and, while moist, the greasy ink or matter is applied to the surface by a ball or dabber, or by a roller or press, or otherwise, and it will be found to adhere to those parts only which have been affected by light Thus, if the screen employed be a negative, having the lights and darks reversed, the print will be a positive, with the lights and darks correct; and, if the screen be a positive, the print will be a negative. The print may be retained on the surface on which it is first produced, or it may be transferred or printed upon paper or other suitable material, and the operation repeated. I thus obtain a design upon lithographic stone, or other suitable material, from which I am enabled to multiply impressions by the method of lithographic printing by inking the moistened surface with a greasy ink."

In M. Poitevin's process the blacks of the proof are produced by the ink from the roller adhering to those parts where light *has* acted, while in the process of Messrs. Cutting and Bradford the blacks are produced by the ink adhering to those parts of the stone where light has *not* acted. This difference between the two processes is very important, and, so far as we have seen, the American Photo-Lithographs are the best.

The following extract is from a recent number of the "Building News":—

"M. Negre has lately communicated to the Academy of Sciences in Paris a method for engraving metals by the action of the sun, which, by the subsequent aid of the electro-typing process, promises to render the art of engraving on copper and steel plates obsolete. He first coats a metal plate with a sensitive varnish, composed of gelatine and bi-chromate of potass, or of asphaltum dissolved in spirits or in benzoin, and then submits it to the action of light through a negative *cliche* reversed, or through an ordinary positive proof, accordingly as it may be desired to obtain an engraving for copper-plate printing or for printing with letter-press. After the plate has been sufficiently exposed to the sun's rays those portions of the sensitive varnish are removed by a solvent, composed of oil of naptha, or of petroleum, benzoin, or spirits, when the varnish consists of asphaltum, and by means of water, when it is composed of gelatine or gum. The plate will then exhibit a re-production of the photograph, by means of portions of its surface being left bare, and others coated with the insulating varnish. In this state, it is regarded as a matrix, so to speak, and a layer of metal, less oxydisable than that of the plate, is deposited by electro-galvanic agency upon the exposed portions. Thus, if the plate be of zinc, iron, or steel, the deposited metal is copper, silver, or gold; but if the plate be of copper, or its alloys, the deposit is gold. Next, the heliographic image formed by the sensitive varnish acted on by the light, and which in the electro-galvanic process just described has served the office of an insulating mixture, is removed but the design is still preserved by contrast of the exposed surface of the plate and those of the deposited metal. Subsequently the design is bitten in, that is to say, the plate is covered with a diluted acid, which will corrode the metal off the plate where it is exposed, but which will not attack the deposited metal. If the plate be of zinc, iron, or steel, and the deposited metal of copper or silver, sulphuric acid is employed, and nitric acid if the plate be of copper or silver and the deposited metal gold. Or the plate may be corroded by being used as an anode, submitted to the action of a galvanic battery in a neutral solution of a salt of the same, or of a similar metal. How far plates so prepared may be employed in copper-plate printing, is a point to be determined. In letter-press printing they would not succeed. We speak positively, and from experience. The acid used to bite the design corrodes laterally as well as downwards; the consequence is that as much greater depth is required for the whites than for the blacks in copper-plate printing, the reliefs are undermined, become rotten, and break in under the pressure necessary to be employed for letter-press printing."

What a man most needs is a friend to make him do what he is capable of doing.—Emerson.

"Disasters of Life," says a late writer, "like convulsions of the earth, lay bare the primary strata of human nature; they expose to us elements we might forget, or supposed to be transmuted by the alchemy of civilization. In this respect they are like those geological expositions, useful lessons and mementoes to the law maker."

In whatsoever house you enter, remain master of your eyes and your tongue.

From Photographic Notes.

BIRMINGHAM PHOTOGRAPHIC SOCIETY.

ANNUAL MEETING, OCTOBER 26, 1858.

The Vice-President, W. Howell, Esq., in the Chair.

The Minutes of the last meeting having been read and confirmed,

Mr. Davis, of Tamworth, was balloted for and duly elected a member of the society.

Some slight alterations in Rules 2, 3 and 10, were then proposed and adopted.

The Secretary then read the following report of the state of the Society:

"Your Council, in thus bringing before you their Second Annual Report, have to congratulate you again upon the prosperous state of the Society.

"During the past year many highly interesting and instructive papers have been read, some by your own members, and others by various gentlemen, who have kindly consented to do so, at the request of your Council, and your Council take this opportunity of urging upon you the necessity of all contributing, as far as possible, to this branch of the Society's work.

"They also have to regret the thin attendance at many of the meetings, and to urge upon members the necessity of being present in greater numbers.

"Since your last annual meeting you have lost three members, one of whom has been removed from you by death, and two have tendered their resignation. Against this you have the addition of five new members, and your council earnestly entreat the co-operation of all to promote the addition to your members so necessary to the welfare of the Society.

"In the Autumn of last year, as you are aware, your Society sustained a heavy loss, in consequence of the comparative failure of its exhibition; your Council, however, have the pleasure to report, that owing to most of your members having kindly acceded to their request that they would for the then current year double their subscriptions, the difficulty is now removed, and your treasurer's report shows a balance in favor of the Society of £3 12s. 6d.

"Your Council have also to report that your Society intends early in March next, to open a Permanent Exhibition of Photographs at Aston Hall, in connection with the Aston Hall Company's Exhibition, and requests the help of all its members in aid of the formation of the same.

"As the room at Aston Hall, where this exhibition is proposed to be held, has been kindly lent, free of expense, by the Aston Hall Company, the expense to the Society will be merely nominal, thus enabling it to reap the benefits to be derived thereby by a moderate cost.

"Your library has during the past year been increased by the kind donation of several books, by several gentlemen; and it has been considered advisable that in future the books, journals, &c., contained therein, shall be kept at the secretary's office, from whom any book may be obtained on application.

"Your Council regret to say that the contributions to the Album have not been so numerous as they could wish, and they sincerely hope and request that during the year which is now commencing, each member will contribute his share towards filling its pages.

"At this meeting you will have to elect your officers for the ensuing year, as also new Members of Council, in place of those who, according to your rule, annually retire, but who are, however, eligible for re-election."

The thanks of the meeting were then given to the President, Vice-President, Treasurer, and Secretary, and the following gentlemen were elected as Council for the ensuing year:

PRESIDENT.

Sir Francis E. Scott, Bart.

VICE-PRESIDENTS.

George Shaw, Esq., F.G.S. W. Howell, Esq., L.R.C.P.

COUNCIL.

Mr. C. J. Phillips,	Mr. Holyoake,
" J. T. Brown,	" Bourne,
" T. Morris,	" Ball,
" J. O. C. Phillips,	" Hart.

Mr. Osborn then called attention to the subscription list for the purchase of the Pouncy process. Several of the members at once put down their names.

A discussion then ensued upon Mr. Sutton's paper, published in the *Notes* of Oct 1st.

Mr. Osborn, in opening the discussion, said that he proposed to take the principal points of the paper *seriatim*, and would commence with the mounting of the lens. He was decidedly of opinion that the central diaphram between the aperture and the lens in the tube of the landscape lens was a great improvement, as also the annulus round the outer surface of the lens itself; by this means they would get rid of a great deal of reflected light, and render the picture much sharper and clearer. In the portrait combination the centre diaphram was now generally used.

Mr. Howell asked if Mr. Rejlander did not, on a previous occasion, recommend the use of old velvet for the lining of lenses.

Mr. Osborn replied that it was for the lining of cameras.

Mr. Holyoake said that he had tried the experiment of having inner diaphrams in the lens tube, but he could not perceive any advantage.

Mr. Howell said many writers seemed to be opposed to the use of a small diaphram, as affecting the beauty of the picture, by forcing the rays through a small aperture.

Mr. Morris said he had had lenses to alter several times, the complaint being that a white spot in the positive and a dark spot in the negative were formed, owing to reflected light in the lens.

The discussion then turned upon the other points suggested by Mr. Sutton's paper, with regard to the focussing on the film.

Mr. Osborn suggested the use of a revolving disc, containing two pieces of yellow glass and two apertures; this to be fastened behind the lens; it would then be applicable for instantaneous pictures.

From the Liv. and Man. Photographic Journal.

NEW METHOD OF PREVENTING THE FADING OF PHOTOGRAPHS.

At the late meeting of the British Association for the Advancement of Science, at Leeds, a letter was read from Mr. W. C. McCraw, of Edingburgh, to Sir D. Brewster, "*On a New Means of Preventing the Fading of Photographs.*" To accomplish this object, Mr. McCraw had adopted the following formula:—

"1. Take the white of eggs and add about 25 per cent. of a saturated solution of common salt (to be well beaten up and allowed to subside). Float the paper on the albumen for thirty seconds, and hang up to dry.

"2. Make a saturated solution of bichromate of potassa, to which has been added 25 per cent. of Beaufoy's acetic acid. Float the paper on this solution for an instant, and when dry it is fit for use. This must be done in the dark room

"3. Expose under a negative in a pressure frame in the ordinary manner, until the picture is sufficiently printed in all its details; but not over printed, as is usual with the old process. This requires not more than half the ordinary time.

"4. Immerse the picture in a vessel of water in the darkened room. The undecomposed bichromate and albumen then readily leave the light and half-tints of the picture; change the water frequently, until it comes from the prints pure and clear.

"5. Immerse the pictures now in a saturated solution of proto-sulphate of iron in cold water for five minutes, and again rinse well in water.

"6. Immerse the pictures again in a saturated solution of gallic acid in cold water, and the color will immediately begin to change to a fine purple black. Allow the pictures to remain in this until the deep shadows show no appearance of the yellow bichromate. Repeat the rinsing.

"7. Immerse finally in the following mixture:

Pyrogallic acid	2 grains.
Water	1 ounce.
Beaufoy's acetic acid	1 ounce.
Saturated solution of acetate of lead	2 drachms.

This mixture brightens up the pictures marvellously—restoring the lights that may have been partially lost in the previous part of the process—deepening the shadows, and bringing out the detail. Rinse finally in water, and the pictures are complete when dried and mounted.

"The advantages of this process may be briefly stated as follows:—First, as to its economy; bichromate of potassa at 2d. per ounce is substituted for nitrate of silver at 5s. per ounce. Secondly, photographs in this way can be produced with greater rapidity than by the old mode. Thirdly, the pictures being composed of the same materials which form the constituent parts of marking ink, it may be fairly inferred that they will last as long as the paper on which they are printed."

ON "FOCUSSING" THE CAMERA.

BY THE EDITOR.

We fancy the title of this paper will call forth no small amount of astonishment and disdain amongst many of our readers. What can be said upon such a subject that is not already well known to photographers? To some photographers perhaps—but to others, shall we ventured to say to many, possibly to most, that they have still somewhat to learn upon this subject, simple as it appears.

These remarks have been called forth principally from our having been witness to some rather ludicrous efforts on the part of a brother operator to obtain a sharp focus without the requisite conditions being present. The case to which we allude was one where the intention was to produce in the camera a copy of an engraving slightly enlarged, but the greatest distance possible between the subject and the ground glass was *less than four times* the length of the principal focus of the lens in use, consequently there was no point at which the lens was capable of adjustment that would allow of the conjugate foci being included within the prescribed limits. Now, had our friend been blessed with a little optical knowledge, he would have been spared the trouble and mortification he experienced. This little incident led us to reflect upon certain other circumstances we had at various times noticed in connexion with the subject, and we came to the conclusion that a little public ventilation of it might very probably not prove unprofitable.

In examining a number of photographs it rarely happens that we do not find some amongst them that are altogether or partially indistinct from want of due attention to the correct focussing in the camera; such inattention giving rise to a peculiar indistinctness of outline, or haziness of detail. It is true that in certain exceptional cases, this defect is not altogether remediable over the whole surface, but it very rarely happens that some amount of mitigation cannot be applied.

We know that it is very much the fashion with some artists to decry what they call the *painful* amount of detail visible in photography, and stigmatise it as hard and unpleasant; as a remedy for the evil they propose to take pictures that are a little *out of focus*. This will certainly remove the *harshness*, though we cannot at all agree in attributing the defect complained of, frequently with some justice, to the clearness of definition, but rather to other errors of manipulation.

We are then advocates not only for "sharp" focussing, bu t for doing this with the utmost possible distinctness attainable over the whole field of view. If the subjects to be delineated be pretty well in one plane, the accomplishment of it is not difficult ; but if the planes in which they are situated be tolerably distant from one another, it then becomes of importance to bring all our optical information to bear, so as to effect our object with the least possible inconvenience. There are many photographers who perform the operation of focussing upon the ground glass plate with the unassisted vision, others use some kind of lens as a help, and a few--who well know the great value of such an aid—avail themselves of the assistance of an optical adjunct called a Ramsden's or positive eye-piece. We wish to induce the more general use of this instrument amongst our photographic brethren, as calculated materially to improve their productions, for we have very rarely found, however, well a subject may have been focussed *without* it, that it has been so perfectly done as to be incapable of still further improvement with it. As there is also another highly useful purpose to which this piece of apparatus may be applied, we have considerable hopes in the probable influence of our persuasion.

A Ramsden's eyepiece consists of a tube furnished with two plano-convex lenses placed one at each end, with their convex sides towards one another, at a distance equal to *half the sum of their principal foci*. The foci of the two lessens should bear a proportion to one another of about two to three, that with the longer focus being next the eye, and the shorter, which should also be of the larger diameter, next the ground glass. For photographic purposes the eyepiece should be mounted in a carrying tube with a screw adjustment, much in the style of the old fashioned botanical microscope, and also furnished with a collar so as to clamp the eyepiece in a fixed position when once it has been properly adjusted to the ground glass upon which it is intended to be used. When in use the carrying tube is to be placed in absolute contact with the focussing screen, and its action, in addition to its giving a highly magnified view of the image, is such as to render such parts as are not in correct focus still more indistinct than they appear without its aid—this is owing to the eyepiece restricting the vision to planes but very slightly removed from that of the roughened surface of the focussing screen—and thus operating as a test to distinguish whether the focal adjustment is absolutely upon it, or only very near it ; for it must not be forgotten that an image formed by a lens can be seen more or less distinctly *through* the ground glass, particularly if it approximates to the position of the latter, as is evinced in the interesing experiments of M. Claudet, and which fact led to the invention of his stercomonoscope.

A plano-convex lens of about one inch focus, measured from the plane surface, and one inch and a quarter in diameter, and a similar lens of one-and-a-half inch focus and about five-eighths of an inch diameter, are mounted in brass and fitted into the two ends of an inner tube with their plane surfaces one-and-a-quarter in. (that is $\frac{1 \times 1\frac{1}{2}}{2}$) apart, their convex surfaces being opposed to one another. The inner tube, into which the lenses are inserted, is furnished on its upper *exterior* surface with a coarse screw which works in a corresponding screw cut in the upper *inner* surface of the outer tube. There is also a screw cut on the upper exterior surface of the outer tube upon which a collar, with milled edges, works.

In the outer tube are three longitudinal slits, and the screw in the inside of the collar being slightly conical, as the latter is screwed down it draws together the three segments of the outer tube, pinching it so tightly upon the inner one as to prevent its being afterwards screwed further in or out.

To adjust the eyepiece for the camera, first unscrew the collar ; place the lower end of the outer tube upon the smooth surface of the ground glass focussing screen, and having previously made a mark with a lead pencil upon the ground surface, hold both together up towards the light, and, with the eye applied to the smaller lens turn round the inner tube to the right or left as may be requisite until the pencil line, highly magnified, is seen with the utmost possible amount of distinctness. When this is satisfactorily accomplished the collar is to be screwed perfectly tight, and the eyepiece is then in proper condition for use, nor will it require again adjusting except it be for use with some other focussing screen, the thickness of which differs materially from that upon which it was first adjusted.

The proper employment of the Ramsden's eyepiece with the camera is as follows, viz : First arrange your subject, and focus roughly in the ordinary way ; then consider what you have delineated upon the screen, and determine in your mind which are those parts that are most essential to be rendered with the greatest amount of definition. Apply the eyepiece flat upon the ground glass to the most important part, and correct your focus while viewing it through the eyepiece (it is rarely indeed that some correction is not found requisite) ; remove the eyepiece and inspect the whole to ascertain that some other important part is not thrown too much out of focus ; if it be, a compromise must be made between the two, giving most distinctness to the most important, and *vice versa ;* but if no compromise will admit of both parts being moderately sharp, then a smaller aperture of the camera lens must be employed.

In a case of this kind, where a certain amount of compromise is imperative, it is exceedingly difficult, not to say impossible, without such aid, to apportion the relative proportions of distinctness that should be allowed to the respective parts of a composition ; hence the *painful hardness* sometimes complained of, because the wrong parts get more than their share of definition at the expense of those parts which can not only bear it, but require it. By the judicious use of an eyepiece in focussing, this error, is, or can be, entirely avoided.

That which is true of all the parts will also hold good as a whole ; consequently, in delineating a subject nearly all in one plane, it is much easier to get a sharp picture over the whole field by the use of the eyepiece than without it. In portraiture, for instance, the eyes of the sitter are the special points of greatest importance, and here it renders good service.

We stated, in an earlier part of this article, that the Ramsden's eyepiece could be applied to another useful photographic purpose, which we now propose to indicate.

As it is by no means cumbersome, a landscape photographer will do well always to carry it in his pocket, as it often happens that during a ramble he sees a subject that he determines upon taking ; but on again seeking the spot, laden with all his apparatus, he sometimes finds, to his intense disgust, that there is no single point from which he can get the whole within the limits of his picture. The application of the eyepiece to the determination of a question of this kind is one of the simplest. If it be held out *at arm's length* towards any object, so as to look through it, but with the lens next the observer, that is, in a contrary position to that in which it is ordinarily employed, a miniature picture of the whole subject will be plainly depicted, but embracing *a larger angle of picture* than the camera will include.

In order to prepare it, so as to be constantly ready for this use, it is only necessary to set up your camera in front of any subject, and having adjusted it, note what portions of it are included within the limits of the focussing glass ; then, by fitting a piece of brown or other dark coloured paper upon the plane surface of the lower lens, a rectangular opening may be cut from the centre which will admit of an *equal angle of picture being viewed* thereby. The eyepiece will then always be ready for employment in this way, without its being in the least injured for its ordinary purpose ; and if you have several cameras, any of which include different limits, a change in the piece of paper renders it applicable to either.

We have so frequently found the advantage of its use in this way, that we should procure one for this purpose alone did we not already possess the article ; but we regard it in this light a luxury—in the other (for focussing), as an indispensable requisite.

From the Liverpool Photographic Journal.

NORTH LONDON PHOTOGRAPHIC ASSOCIATION.

At the ordinary monthly meeting, held at Myddleton Hall, Islington, on the 29th September, George Shadbolt, Esq., Vice-President, in the chair, the minutes of the previous meeting having been confirmed, the Chairman stated that the presentation photograph (a view of Rochester Bridge, &c., by Mr. R. Howlett) was ready for distribution to members, and those present received their copies accordingly.

The following gentlemen were duly elected members:—Messrs. H. Simpson—Harding, F. Smith, T. Fenn,—Brodrick, A. Wetherby, D. J. Stuart.

The Vice-President then requested Mr. Hislop to take the chair while he read a paper "*On Focussing in the Camera*" (for which see page 240), and exhibited and explained the uses of a Ramsden's eyepiece for focussing, &c., upon which a discussion ensued.

The Vice-President then read a paper which he had received for publication in the *Liverpool and Manchester Photographic Journal*, from Mr. Thomas Gulliver, of Swansea, "*On Working Wet Collodion in the Field*," and stated that it being necessarily excluded for want of space from the forthcoming No. (1st instant) he was not willing to allow it to lie altogether fallow for a fortnight as it contained what he regarded as a valuable suggestion on out-of-door manipulation. (For paper see page 319 Oct. No.)

A discussion, in which Messrs. Hislop, Barber, Shadbolt, and others took part then ensued, relative to the advantages of commencing a development of collodion negatives with solutions of the salts of iron, and strengthening the deposit by a subsequent application of gallic or pyrogallic acid. It was the general opinion of those who had experience in this practice, that by adopting it a shorter exposure in the camera suffices than when pyrogallic acid alone is used to develope with.

A vote of thanks was accorded to the Vice-President.

Portable stereoscopic cameras and stands of amateur construction were exhibited by Messrs. Shave and Bingham, also glass positive pictures by Mr. Lander.

Notice being given that promises of papers for future meetings would be received, Mr. Barber volunteered to read one "*On the Causes of failure in the Oxymel Process*," at the next meeting, on the 27th October, and the meeting adjourned.

From Liv. and Man. Photographic Journal.

STEREOGRAPHY.

BY T. L. MERRITT.

In the *Liverpool and Manchester Photographic Journal* for the 1st. of October there was a paper on the stereoscope by Mr. Ross, of New York, and I felt somewhat surprised that it was allowed to appear without comment, as one portion of it was incorrect. He said, "we must make the distance (between the cameras) precisely *proportioned* to the distance between the eyes, and neither more or less." Now, if he had said precisely the distance the eyes are apart, and neither more or less, he would have been right, for no other space can be correct, and the error will be in the ratio of the departure from that space. He then said that the space between the eyes is exactly four times the focal length from the lens of the eye to the retina; and continues, "A binocular view may, therefore, be enunciated thus: it is a combination of two monocular views, formed by a pair of equifocal lenses (the eyes) taken from two stations situated horizontally apart, at a distance equal to four times the focal length of the lens employed. Hence the formula is when F is the focal length, and D the horizontal distance of the stations apart, $D=4F$." Subsequently, "This formula will apply to lenses of any focal length whatever, so that lenses of short foci may be used for very *near* objects, and as such lenses will give to distant objects too minute a character, lenses of longer foci should be used for the latter." He then tells us that he uses for stereoscopic purposes, lenses twelve inches focal length, so that the space between cameras should be four feet, when in operation. This, I without the least hesitation, assert, would produce monstrous and absurb results, which I will prove to be the case,

Let the object to be taken be a long building, with a white band along the top, and another along the base, and let the building be divided into equal portions by perpendicular lines, also white (I say white, simply that the results may be more obvious), and at the centre let there be an abutment four inches in front, and projecting fifty feet from the face of the building, and let the operator be at a station opposite the middle of this building. This, taken in accordance with the formula of Mr. Ross, would present the following anomalies:—the lines at the top and at the bottom would be lines vanishing at the wrong sides of the picture—supposing they could vanish at all; but which Mr. Ross, being 'professionally conversant with perspective," knows, as well as I do, *could not be the case.* Then there would be the *two sides*, as well as the front, of the abutment seen, which, to any one placed opposite the middle of this abutment, could not be perceived at all; and the equal parts between the perpendiculars would become less and less as they approached the middle; and these appearances, taken altogether, produce results that I can only designate as I have already done. It appears to me that all which *ought to be required* in the stereoscope, is such a whole as that produced by *natural vision*, which a variation in point of view of two and a half inches will always effect. The result would be just as much of solidity as in natural vision, and, therefore, in true taste, all that is false must be otherwise.

I shall merely add, that if gentlemen, before they write on this subject, would be at the pains to reduce their theories to practice (as I always do), they would not jump to such erroneous conclusions.

[Unless our memory plays us some trick, the contributor of the preceding paper is the same gentleman with whom we had a controversy some few years back, published in *Notes and Queries.* We do not feel bound to make comments upon every article with which we are favored, even if we differ in opinion with the views expressed by the respective authors, as we do to a very considerable extent with those both of Mr. Ross and Mr. Merritt.

We think it scarcely necessary upon *every* occasion to state and re-state our own notions so pertinaciously, but are content to let *all parties* have a fair hearing, as comment has, however, been invited, we take the opportunity of pointing out what we consider correct principles in connexion with the subject before us.

We entirely agree with Mr. Merritt, that, if the object of the operator be to produce an *exact transcript* of that which the eyes perceive, *no departure* in the points of view for the respective stereographs, from those enjoyed by the eyes can be permitted; but, coupled with this condition must be taken also the fact that the said stereographs must be examined through lenses that allow of the eyes of the observer being placed at a distance from the pictures *exactly equal to the focal length of the lenses employed for their delineation*, otherwise each picture *subtends an angle of vision* differing from nature.

We, however, totally dissent from the dictum that "all that ought to be required in the stereoscope is such a whole as that produced by natural vision." We do not see why any person's taste, or want of taste, is to be *arbitrarily* limited by any other person; but, furthermore, we consider that it is sometimes highly useful to be able to produce the effect of a *small model* of a subject as can be readily accomplished.

We are not exactly prepared to admit the correctness of the assertion that certain lines "would vanish at the wrong side of the picture—*supposing they could vanish at all*," but which "could not be the case." If they *could not vanish at all*, it is clear that they *could not vanish at the wrong side of the picture.* We are always ready to facilitate discussion, but trust that our contributors and correspondents will be in mind the excellent motto, "*suaviter in modo, fortiter in re.*"—Ed.]

From Fitzgibbon's Bullentin.

HOW TO TAKE CHEAP AMBROTYPES.

[In a pamphlet recently published by Mr. Fitzgibbon of St. Louis, he gives the following capital directions for making *cheap* Ambrotypes. The hit is palpable.—Ed.]

"Take a piece of window glass, a broken pane will do, cut it up to the size you want it with a pair of scissors or shears; this can easily be done by holding the same piece of window glass and scissors or shears in the water (Mississippi water will do,) and it will cut like butter; then wipe it dry. And pour on the same piece of glass a decoction of ether, alcohol and cotton, all mixed together, which can be done by shaking it in a bottle; this compound, to give it a chemical name, might be called collodion, then put your piece of glass with the self same collodion on—for no other will do—into a bath; I don't mean a shower bath, or a warm bath, but a bath that is made out of silver, that you can get at any drug store—that is, if you have not a supply yourself in your own pocket—that is the reason it is called a silver bath, because there is silver in it. While it is getting bathed in this silver bath prepare your machine, which can easily be done by getting a burning or magnifying glass, either will do, and to save expense, get a long cigar box, cut a hole in one end of it, and force your magnifier into it. When this is all done, put into your machine (I mean your cigar box, which, for artistic effect, you might call *camera obscura*,) the silvered-over plate. Then sit yourself, family and friends, or take them standing in a good straight, staring, upright position, right in front of the machine. Let old Sol shine in upon the chemical refraction of the reflection, and it will make the image called an ambrotype, brilliant with all the hues of the rainbow indelibly impressed upon it. Jerk it out quick, being careful in this part of the manipulation not to let reflected light shine upon it, natural light maybe won't hurt it, then have in right good order some rusty nails, tenpenny will do, or old spikes that can be purchased cheap at second-hand stores, on which you pour some common vinegar, which must not cost over fifteen cents a gallon. I almost forgot to say, you must add also some water, else you might make it too sour a picture. This chemical is called "developer," and if it don't develope your picture, why, I am no artist. Next and last chemical process is the fixing of the picture, or the holding of it fast on to the plate; that is a secret worth knowing. It is one thing to get the picture, but entirely another thing to keep it. Well then, you must do this in the usual careful manner, with hipo, have you never had the hipo, reader? If you have, I will say no more about it; if not, why pour on your hipo, and the picture stands right out a shining monument to your artistical genius, so permanent that fire, water, acid, chemicals, steam power, or the power of all human nature cannot obliterate it.

N. B.—I almost forgot to say this picture is not entirely perfect without two coats of varnish, one before and one behind; any kind of black varnish will do behind, and any kind of white varnish will do before, being careful all the time not to put it on too strong, for its nature is such that it might contract or expand, and you might contract and expand with it, and then your picture would get spoiled. After this you preserve your picture in a preserver or box or case it up just as it pleases your fancy. Now, all of this can be done at a trifling expense.

I caution the public against the imposition of these would-be itinerants, who charge the extravagant price of twenty-five cents or fifty cents and a case or box thrown in. Only think of that! to be boxed for that amount. Why, the operator will tell you the cases are worth more than the picture, which no doubt is true. Now, as one that has been initiated and daguerreotyped into the art of face-making, I merely advise all persons to be on the look out when these cheap, would-be style artists are about. To show the enormous profit these men make several hundred per cent. I have, at a great deal of trouble and calculation, found out the cost of taking cheap pictures. The principal material, window glass, costs about a quarter of a cent, chemicals a quarter do., paper case or box one and a half cents, the preserver and mats one and a quarter cents, labor not worth anything, whole cost three and a quarter cents. Now is it not an outrage to charge twenty-five or fifty cents, as the case may be, on the credulity of the customers for that which costs next to nothing. Why, those worthies in time will be as rich as Crœsus if they receive that patronage they so richly deserve.

P. S.—As this valuable information is given without price, the writer urges on the community to take their own picture and save the above expense. It is as easy as eating, if you only follow the instructions here laid down, and by setting an example to the balance of mankind and the human family in general, unborn generations will bless you forever.

From Photographic Notes.

IS VISION A PHOTOGRAPHIC PROCESS?

The following is an extract from a letter from a distinguished professional photographer, with whose permission we insert it under an anonymous signature:—

"You remember the story of the photograph of a man being discovered on the retina of an ox's eye, the said photograph being a portrait of the man who had slain him, the action of the chemicals in the ox's eye having been suddenly arrested by the stroke which killed him. Well, I have been assured that the story is all humbug; but I am not satisfied, because there are still several things in the phenomena of vision that cannot well be explained without supposing the story to be all true. For instance, if you touch any hard object with your finger, the nerves of that finger convey the sensation of touch to the mind instantaneously, but if the eye is suddenly directed to any object, although the image of this object is instantly thrown by the lenses of the eye upon the retina, it takes a quite perceptible portion of a second for the optic nerve to convey the sensation of the image to the mind.

"When you look steadily at a brilliant red setting sun for a few seconds and then shut your eyes or look in an opposite direction, you still see the image of the sun, but of a greenish color instead of red, and if there should happen to be any bright golden clouds near the sun their images will still be quite perceptible on shutting the eyes, but instead of golden yellow they will then appear purple. If you look steadily at the sun for a couple of seconds, and then let your eyes wander over the neighboring clouds for a few seconds, you will find, on shutting your eyes, that several images of the sun have been impressed upon the retina.

"Now may it not be quite possible that the images which the lenses of the eye throw upon the retina are actual photographs after all, and that these images of the sun are so intensely solarized, so to speak, as to require a longer time than usual to obliterate them? Of course they are not black and white photographs, they have all the glory that color can give them; and when we have copied our achromatic lenses from the construction of the eye, and lately made a self-contracting diaphragm in imitation of the iris, may it not be possible, by a still more careful study of the eye in a chemical point of view, to make the crowning glorious discovery of photography in colors! What I particularly wish to know is this, has any competent person made any careful experiments or tested the fluids of the eye chemically, so as to be qualified to give a flat denial to the 'ox-eye' story?

"When we weep, we know that the 'salt, salt tears do flow,' and the aqueous humor looks as if it contained iodine; and there may be more things in it than have yet been dreamed of.

"When a Daguerreotype plate is made sensitive by holding it above iodine and bromine, and exposed in a camera to the image of some object until it has been sufficiently acted upon, this image may be developed by holding the plate above the fumes of mercury; but if, after it has been exposed in the camera, and before it has been developed, it is taken into the dark room, and held for a second or less above the fumes of bromine again, the latent image that was upon the plate is obliterated, and its surface is ready to receive a new impression.

We can believe from this that it is quite possible to obliterate an image from the retina of the eye and have the surface ready sensitized in a small fraction of a second.

Again, would not this theory throw some light upon Daltonism or color-blindness? You cannot fancy a lens giving perfect definition as to *form* upon the ground glass of a camera, and at the same time transposing the reds into greens, and the yellows into purples; but from some disarrangement in the proportions of the chemicals you can easily conceive how a photograph might be so changed. If it is a fact therefore, that every time we direct our eyes at an object, that object is photographed in colors on the retina. Color blindness is merely some derangement in the proportions of the fluids used in obtaining such photographs.

If I mistake not, the people who are afflicted with color-blindness, do know greens from reds, and yellows from purples, when they see them; but they do not see them, if, through some derangement of a local nature, the greens are transformed into reds upon the retina of their eyes. There are also some things in somnambulism that might be capable of explanation by this theory; such as why a person walking in his sleep does not perceive external objects although his eyes are wide open; and it may be to give time to the chemicals to be concocted or strengthened that we close our eyeballs and shut out external objects when we go to sleep. "Photo-Chrome."

From New York Daily Times.

PICTURES ON BROADWAY.

There are always pictures enough in Broadway for those who have eyes to see them; pictures which few painters take the trouble to put upon their canvas, and fewer *connoisseurs* to enjoy, as they pass in panoramic succession before their eyes; pictures of the varied human life of the Nineteenth Century; comedies of New York life, pregnant as the wonderful color dramas of Hogarth; bits of sentiment, as touching as Edward Frere ever imagined—quaint, stirring, saddening— a kaleidoscopic succession of appeals through the eye to all that feels, judges and enjoys within us.

But it is not of these pictures that we are now thinking. These will never make themselves felt till some artist shall arise bold enough to attempt and vigorous enough to acheive their apotheosis in art. We remember now no such thing as an effort in this direction save some clever pencil sketches of Broadway scenes by Mr. Hoppin, one of which "made a success" at our Exhibition two years ago. Perhaps something may come of this good beginning before next May, but it has not yet appeared. Meanwhile let us see what our print-shops have to show us.

Mr. Schaus, to whom Art in this City is under divers obligations, lent his rooms awhile to the owner of a noble picture claiming to come from the easel of Peter Paul Rubens. What number of the works attributed to him Peter Paul Rubens did really paint, it would not be easy to say. Their name is legion; but the man was a miracle of force, and doubtless carried the patience of genius, with its velocity, in that strong forearm and broad brow of his. His own portraits of himself may stand as types of combined physical and mental energy. As a draughtsman the modern critics *pooh-pooh* him: but he drew with his brush, if we may be pardoned the phrase, and there is a certain truth of form in his marvelous coloring which it were wiser for his critics to study than to carp at. All his finest works, too, bear the evidence of extreme rapidity of handling, not, be it understood, in any bungling or triviality of treatment, but in the purity and precision of tone which they exhibit. Wherever he hesitated and went back over his canvas, as in the draperies of his famous "War and Peace," in the British Gallery, the traces of his uncertainty are plain in the thickness and muddiness of the tints. That a painter of the power of which Rubens wielded should have achieved three or four times the extent of work which another man, of equal genius, but less *sap*, as the French would say, might have mastered, is easily credible. And we are not bound to suppose that his army of scholars did really execute any great proportion of the famous pictures which, in all the finest galleries of Europe, hold up Peter Paul Rubens to the mingle delight and despair of all who affect the palette and the brush. The master's own touch in the treament of carnations is unmistakable—the pellucid pearl-grays of his shadows upon flesh are his own, and no one's else. His warm love of flesh and blood was a passion which his scholars may well have partaken, but his power of reproducing its richest combinations was a gift of genius not to be communicated.

In the conception of the picture which has just left Mr. Schaus' rooms, to find, if it may, somewhere else, a purchaser willing to invest $18,000 in its fame and its beauty, there is nothing inconsistant with the claims which are made for it. In the whole range of Rubens' works, we remember but one, the "Mother and Child in the garland of Roses," at Munich, which can be called truly religious and refined in character. His Holy Families and Madonnas are, in general, the most prosperous and burgomasterish of beings; creatures by no means

> "Too wise or good.
> For human nature's daily food"—

of the earth, earthy, and prophesying more of cakes and ale than of fasts, penance and repentance. Such was the "Magdalen" put before us by Mr. Schaus—a disheveled, tearful, well-developed, well-dressed young lady, of a good Flemish family, who has either been detected in some unpardonable impropriety, or forbidden to join some very attractive party. But such as she is, she is painted with wonderful power and skill. A figure in the background of a sort of shadowy duenna, and a bit of broken-China sky, are less commendable, and seem to have been either left unfinished in the original picture, or to have been cruelly dealt with by some merciless "restorer." Unequal as the execution is, however, of this fine canvas, it well deserves study, and we should regret that it has left our City, if it were of the slightest use to indulge that feeling.

We shall not be called upon, we hope, to think of indulging it in regard to another picture which we found sitting modestly by the side of the great Flemish splendor. This was a charming little cabinet picture by Guillemin—the subject, a miser, a provincial miser too, you see he is, one of those Grandets of the lowest order whom Balzac alone could have painted in words; the treatment exquisite in simplicity, fidelity finish and feeling. Our art-loving public had already made acquaintance with this fine artist, in the Belmont Gallery; they will delight to renew that acquaintance in this little masterpiece. Mr. Gambart to whom we owe our French Exhibition of last year, has sent this picture with some others from the best French easels to Mr. Schaus. We ought to take care that Mr. Schaus is not allowed to send them back to Mr. Gambart.

All our efforts, we suppose, would fail to retain that other and larger French picture, in which our ladies have been taking so much pleasure at Goupil's. Winterhalter's "Empress with her Ladies of Honor" belongs to Europe and not to America, and as one of its ornaments was carried away from an American family, we must reconcile ourselves to parting with the whole group. Clever the painting certainly is—the grouping well managed. Winterhalter has a passion for groupings. His first success—"The Party of the Decameron," and his best picture—"Florinda,"—are groupings both, and of both we find *souvenirs* in this taubleau of the Court of Compiègne. An astute flatterer he is too, this painter of princesses. When you look at these lovely ladies, these stars about their moon, it never occurs to you too bserve that Nature, in heaping her gifts upon the head of the fair Eugenie forgot to support with one hand the beauteous lady's rounded chin. In other, less courtly, words, you are not aware of the fact that the face of the Empress is a trifle longer than comports with absolute perfection. This conformation, which the old physiognomist tells us "prognosticates misfortune," has too much to do with the character of the Empress' face to be softened away. Winterhalter has therefore sacrificed the stars to the moon, and added just a thought to the length of the sweet faces of all these charming

Countesses, and Marchionesses, these Princesses of the bouquet and the hunting-button.

No such liberties was Mr. Baker called upon to take with the models who gave him his tpyes for his picture of the "Roman Corso," of which Messrs. Stevens & Williams exhibit to us both the original and the fine etching now in progress. The picture is effective, certainly, though still crude in tone and very unequal in color. The group on the extreme right, however, of a picturesque peasant managing a fiery, maddened brute of a horse is fine—one of the best bits of life and movement that we have seen for some time. The drawing is masterly, nor do we limit this praise to this group The whole scenee, too, is animated, and gives one a very just idea of that uproar of horses and men and spurs and fireworks, of brute fury and human frenzy, with which the Carnival race of the Corso concludes. Nor should our readers forget that in going to see this interesting picture they will have the opportunity of seeing also what that most valuable invention, *chromo-lithography*, has been able to make of Church's noble painting of "Niagara." Of this work and of other specimens of the "minor arts" we shall take another and early occasion to speak.

Meantime let us take a look at the leading Photographic Establishments of Broadway. All the world knowns that "in the good old times when George the Third was King," and for a long time afterwards, the taking of a portrait was a serious matter, as much for the party taking as for the party taken. There never was an elderly lady, for example, who desired to live on canvas after she should have died in the natural way, but family consultations had to be held to resolve the important question,—who should be the artist? This point having been settled, a deputation had to wait on the selected Portrait Painter to inquire when his engagements would permit him to "take" the old lady, and to arrange the periods for several sittings. These, too, were most solemn occasions. The same dress must be worn at every visit to the studio—the same jewelry must be put on—and, harder this than all, the same expression of countenance must be assumed. If twenty thousand twinges of the gout were tearing like twenty thousand tigers at the old lady's great toe, the old lady must still wear the same smile at the last sitting which she wore at the first;—and properly too,—the gout was clearly no fault of the artist. The sittings having extended over a period of six or eight weeks, the old lady was at last relieved from the trouble of coming any more until after three or four months, at the end of which time, on the receipt of a manifesto from the artist, the family party again organized,—this time at the studio,—to pass judgment upon the portrait. Then came the artist's turn. If he had made the old lady suffer the torture of smiling by the hour, in spite of herself,—never mind; the hour of her revenge was come. The critics were in conclave. Even the old lady in the flesh could now pass judgment on the old lady on the canvas. Everybody had something to say against the picture, and each critic took his own department with which to find fault. Perhaps two or three would, metaphorically, take hold of the nose—another would be down on the mouth—the next would tackle the chin—still another would take to pieces the elbows,—and all who had any eye to a place in the old lady's will would declare that the picture made her look older than she was. If the artist was a great man, these remarks would be made, comparitively speaking *sotto voce*, and he would not care much about them. But if he were only "a rising man," —poor fellow ! He would probably argue the point feebly over every feature, but would, nevertheless, end by pretending to agree "to some extent" with every member of the company, and by promising to retouch the objectionable features. If he were a wise man, he kept it three or four months longer in his studio without touching it, and sent it home, when the family circle being again congregated, each member of it would congratulate himself on his having made that fortunate suggestion, the likeness being now a speaking one. A portrait, by the way, is "a speaking one" when it looks as though it would speak if it could—if it cannot it is, nevertheless, a speaking likeness—*lucus a non*. When, on the other hand, the artist was a fool,—speaking after the manner of the profane,—he would adopt the various suggestions of the family, and, as a matter of course, he spoilt the picture.

The same rule precisely applied to the miniature portraits on ivory after the La Creevy manner, in which the artists literally threw themselves at the complexion of their subjects, and made everybody crimson about the cheeks and light pink over all the rest of the face. We knew an India merchant once who was painted in this way. The old fellow was as yellow as a double eagle of the most recent coinage, but the lady artist looked upon him literally in another light, and painted him with a good deal of vermillion. The old chap liked it.

Then there came into vogue another branch of art which was extremely popular because it was cheap. Artists—of course they were "artists"—came from England, inoculated some thousand or two Yankees, and in a brief space of time the United States flooded by gentlemen armed with black paper and scissors, who cut out your profile, beginning with the hair of your head and ending with the heels of your boots, at rates varying from one dollar—at which, if we remember rightly, they commenced—down to one shilling, at which they left off, when persons who had lost their arms undertaking to cut profiles with their toes, the art became degraded into a show and was ultimately abandoned. We sometimes see, even at this day, in various parts of the interior, some of these black paper profiles in ebony frames. They have the advantage of serving through long generations, since one of them will resemble the last scion of the family about as well as it did the original individual who was so verdant as to pay for it.

In our day, however, we have acted on the principle of Moliere's doctor, who studied Hippocrates' chapter on hearts, "*Nous avons change tout cela.*" When we want a portrait taken in this age of Jefferson Davis, we go, like old Peruvians, to the Temple of the Sun. We brush our hair, sit down in a chair of state—with or without a couple of knobs like petrified oysters behind the head to hold it in position—call up a smirk, look into the muzzle of a camera obscura, taking care not to wink, and in a matter of twenty seconds they have us and can reproduce us a million times if they please or if we choose to pay for it. Complaints as to the correctness of the likeness, if made at all, must be made to a Great Body who would care nothing about them. The sun is the artist, and you can get no redress in that quarter.

Photography, or the art of "writing by light," cannot be called a new discovery. The fact that objects could be copied, by means of rays of light, on metal chemically prepared, was known long before the present century. Nothing practical, however, resulted from this knowledge until the year 1802, when Wedgwood & Davy, two Englishmen, applied it to artistic purposes. But even their efforts were unproductive of more than an initiation into the first of a series of mysteries which it was left to Daguerre, Talbot, Archer, and others of a later day to comprehend and take practical advantage of. All sorts of "types" have since been introduced, from the Daguerreotype, which was the first, to the Ivorytype, which is the latest.

This art of writing by light, which is a very different thing from light writing, is one of the great features without which the "elephant" of our city would not be at all complete. There are, at the smallest estimate, two hundred "galleries," so called, in Broadway, the Bowery, and the several avenues, where, on an average, about 50 pictures are daily taken at prices varying from 25 cents up to $750 each. These employ Daguerreotype materials of domestic manufacture to an amount which we have found it impossible to estimate clearly, but which is on all hands agreed to be over $3,000,000 per annum—besides the cost of Photographic paper and certain chemicals which are imported from England and France.

Of course, at some of the minor galleries, where excellence is not so much of a consideration as cheapness, the pictures are less remarkable for beauty than for a certain glassiness of eye, and pitch-and-tarriness of expression, which mar their effect in an artistic point of view, though they may be bearable under pecuniary considerations. But, in the best galleries of this City photographic portraits have been produced that have not been equaled in Europe. European photographers attribute this fact to our climate.

The prevalence of "blue light" is the theme of their most elaborate theories. But so far as photographic excellence depends upon atmospheric influences, the palm must be given to India, where pictures have been produced of yet unapproached intensity in the effects of light and shade.

Photography has become so great an institution in this City that it builds "marble halls" for itself. GURNEY has just opened, at No 707 Broadway, a sort of Photographic palace, which he has erected for the purposes of his business, and with a special view to its requirements. Discarding the practice of sending customers up three or four flights of stairs to an operating room which the sun can get at, he receives them in the ground-floor—shows them his pictures, cases, and so forth, takes their orders and passes them forward to his main gallery, on the floor above, from which they enter upon a ladies' dressing-room on one side, and an operating room on the other. This latter aparment is provided with side-lights and roof-lights, so that in the event of having a customer more "wrinkly" than usual—in which case the roof-lights are insufficient—Gurney usually smoothes down the creases with the side light, and somewhat rejuvenates him by the process. When the operating rooms below are full, which would seem to be a common occurrence at this establishment, there are others on the next floor, which are, however, mainly devoted to the artists, who are there, in great force, to finish the photographs. These are taken of all sizes, from the "locket miniature" to the "life"—sometimes containing only the face, at others, giving the bust also, and not uncommonly the whole form, of the size of life. These last pictures are very costly, but they are also very beautiful. They are characterized by all the delicacy of tint and shade which distinguish the oil painting, since indeed they undergo in all respects the same operations, save as regards the features portrayed, which are taken by the sun, and therefore must perforce be as correctly delineated as they would be in a mirror—and much more so than they are likely to be when drawn by the hand. This remark applies equally to the smaller sizes, and to those which are colored in *aquarelle* or in *pastel*. Mr. Gurney exhibits in his main gallery, with becoming pride, the medal awarded to him by the French *Palais a'Industrie* for the best picture there exhibited in 1855.—the great silver pitcher called the "Anthony Prize," which he obtained here on similar grounds, —and several medals awarded to him by the American Institute.

Of the various "types" which are more or less advertised, Gurney confines his operations to the Daguerreotype and the Photograph. He objects to the Ambrotype that it is not durable, which is another proof of the way in which even doctors will disagree, since Brady declares the Ambrotype to be the most durable picture made. The Hallotype is made at Gurney's when ordered, but is not a favorite with him. The differences between these kind of work are, that the Photograph is thrown on the canvas or paper and afterwards colored ;—the Hallotype is colored by transparent painting put on from behind ;—and the Ambrotype is taken on one piece of glass and covered by another, the atmosphere being excluded by a balsamic cement, which secures the surfaces to each other.

Gurney's rooms are not only the most easily accesssible in the City, but are handsome and pleasant by reason of the much light which, in the construction of the building, he has taken care to provide. He has added to the long array of pictures in his own line of art which grace his walls, a row of oil-paintings by various native masters. He does this ostensibly by way of adding to the other attractions of his gallery, but our opinion is that the artful fellow has hung the oil-paintings up to show, by contrast, the superiority of the Photographic article. Nevertheless, there are, among some very poor productions and some other very fair ones, a rural water scene by Williams, of Philadelphia, and two marine pictures by Lane, of Boston, which it is good to go to Gurney's and see.

BRADY also has some admirable photographic pictures in his galleries, of which, like Gurney, he has two on Broadway, and if he has not quite such elegant or commodious rooms in his up-town quarters as Gurney has in his, there is quite as much in his gallery at the corner of Bleecker street and Broadway, and at his down-town establishment, where he keeps his principal collection of splendid portraits, to amuse you, and quite as polite persons to talk to you as there are at Gurney's, which is saying a great deal. There is a delicacy of work about some of Brady's miniatures, which is as peculiar in its way as the bold and powerful finish of Gurney's larger photographs is in that branch of the art. At Brady's, the last new invention, called the "Ivorytype," which is said to surpass everything in the way of writing by light that has yet been effected, has just come out.

There is no place in New York where one can better amuse himself than at either of these galleries—Brady's is full of pictures of historical characters and pretty women—Gurney's is equally well furnished in both particulars, and either place will give a better idea than perhaps any of our readers now have of the immense progress which has been made during the past ten years, in the art to which these galleries are devoted.

FAIR OF FRANKLIN INSTITUTE.—HELIOGRAPHIC DEPARTMENT.

Philadelphia, 20th Nov., 1858.

DEAR SNELLING :

As a Historic indication of the progress of the Heliographic Art in this city, I have thought, that a brief notice of the photographs, &c., exhibited at the recent fair of the Franklin Institute, might perhaps be acceptable to most of your intelligent readers.

The first collection, according to the order in which we found the specimens on exhibition, was by Mr. Richards. As, through a deviation, by the managers, from the established rules of the Institute, he had been deprived of sufficient space on the wall for displaying a large collection of his various styles of the art, —such as portraits, views, copies of paintings, drawings, engravings, &c.—he was limited to a few of whole or ¼ size portraits, and a small number of beautiful copies of engravings and drawings.

These were all plain and clean, unretouched photographs.

The portraits were representations of some of our well-known and long-popular artists. Most of them were happy in *pose* and arrangement--felicitous in light and shadow—and life-like in expression.

They received the *first premium*—a Silver Medal—which, as "modern rumor" says, seemed to surprise not only the public and his competitors, but even Mr. Richards himself, all things considered—and was a curious exemplification of the management of the Institute and of the decisions of the judges on this art.

Next in order was Mr. Walter Dinmore's collection of nearly one hundred pictures. Among these were thirty or forty specimens of truly beautiful portraits, plain, clean and not retouched—of all sizes and of all ages, from the care-worn visage, wrinkled grand-parent ot many years, down to the infant of a few weeks only.

Dr. Langdell, one of the best practical photographers in this country, has charge of Mr. Dinmore's photographic department.

His large cabinet and imperial size portraits, finished in India ink, are rare and exquisitely finished specimens of the art. As *likenesses*, too, they are all, that could be desired—bold, easy and graceful, at the same time, that they are faithful, life-like and spirited.

The pictures, in colors, were all true to nature. There was, especially, one of a bride, robed in white, which was very remarkable. The face had all the glow and beauty of *actual life*. It was, in a word, a wonderful specimen of the art, and did great credit to the artist.

There were others, of from 7 by 9 inches to half-lite size, beautifully colored—faithful to nature—round, forcible and highly artistic in every point of view—with an *expression* in every face so *life-like*, as to seem almost to speak the thoughts of the person portrayed.

Dinmore's was the largest, and in our opinion, the best collection of photographs in the exhibition ; but owing to a little *jarring* between the Superintendent and the Depositor, in consequence of the former's *unfairness* and very free use of a "little brief authority ;" this mean, pitiful spite was, probably, gratified by having this fine collection passed by without notice—as we learned it actually was in the report at the close of the Exhibition—to the great astonishment of the public.

Next came a few specimens of photo-lithography by J. Rehn —a new development of the Sun-painting art, admirably suited to illustrate books, at moderate cost, with truthful microscopic pictures, and works of science with drawings, &c. These specimens are, we think, the best yet produced in this, or probably any other country.

Next in order was Willard's collection of photographs, ambrotypes, &c. Some of the plain photographs were very good —much like Dinmore's in color, tone and richness ; and one large specimen of the ivory-type was *among* the best, if not the very best, in the Exhibition.

Broadbent & Co. exhibited a few specimens of plain photagraphs, and a few finished with India ink, which were all creditable—though not in our view, equal to Dinmore's, especially those in India ink—for which they were honored with a first premium, a Silver Medal—to their own surprise, says report.

The Ivory-type is a species of Hallotype , but a hundred fold more beautiful and pleasing. This new style of finishing photographs was introduced to the public by a Mr. Wenderoth of this city, who is a good artist, and is now a partner in business with Mr. Broadbent.

This style of finishing pictures is, doubtless, an off-shoot of the old Grecian mode of painting ; in the hands of a good artist I believe it to be simple and easily managed ; it looks more like a miniature upon ivory—whence its name—than any other style ; while it has all the fineness and truthfulness of the most exquisite daguerreotype, with the life-like flesh-tints super-added. When finished with skill and care, in detail, they are very beautiful, and popular with our public. Doubtless, too, they are unchangeable ; and if executed honestly and faithfully by a good artist, will become very profitable.

This firm—Broadbent & Co.—have attempted the *process* of making these pictures a *secret* ; but specimens, equally fine with theirs, are now produced by Winters, a miniature artist, now at Havana, Cuba, and at Dinmore's gallery , at McClees's gallery, and by others in this city.

Broadbent & Co. had several good specimens in the Exhibition, in competition with a Mr. Williams, an old artist ; but neither of them received any notice from the judges, though both collections had beautiful specimens, which were admired by the visitors universally—because (Report says,) these styles of photographs are thought, by old artists, in oil, &c., to interfere very much with *their* legitimate calling, portrait, miniature, &c. In fact, the photograph, in this and other modes, are now very popular and give *general* satisfaction by their life-like fidelity and beauty, while the old-style work, sketched solely by eye and hand, although it may be a masterly achievement, must be considered an imperfect and faint semblance of "the human face divine," when compared with a felicitous skilfully finished production of the Heliographic art, such as are now to be had in a few of our leading establishments.

Portraitists of the Old School, as we have been informed, were the judges to decide on the merits of the photographs on exhibition this year, and, doubtless, embraced this opportunity to rap photography on the head—perhaps hoping thereby to further their own individual interests.

We, however, believe the prejucies of the legitimate artists against the Heliographic Art to be fast giving way, and one by one they are gradually conceding the possibilities and advantages of the camera in portraiture, when handled with judgment and skill. And, as we have repeatedly intimated, when every Heliographic gallery shall have an artist by nature, skill, and judgment to attend to the *pose* of every sitter and arrange drapery and light and shadow, and by his genial soul-stirring manners bring out and fix on his plate the happy, thought-speaking expression, which never fails of pleasing.

Neither McClees, nor Germon, nor George S. Cook contributed specimens of their beautiful work to grace the Franklin Institute Exhibition this season.

McClees and Germon, I believe, considered themselves unfairly and unkindly treated by this same Superintendent, five or six years ago, and have never favored the Institution with their beautiful specimens since. Some of those specimens are exceedingly meritorious—finely finished in oil and water colors, India ink and free crayon styles, by skillful artists.

That widely known and far-famed Root Gallery, corner of Chestnut and Fifth streets, in this city, from which issued thousands of matchless Heliographic specimens, since it was sold to Mr. Cook, and has been under his care, has unfortunately sunk almost to a level with the third-class "picture shops." Mr. Cook has been obliged to surrender the whole of this establishment, in consequence of his other business, to the supervision of others, and hence, these disastrous results. Yet, the location is a good one, and the great number of excellent portraits which went out from this well known "Root Gallery," in years gone by, still brings many strangers and some citizens, who value and desire to obtain a superior Heliographic portrait, to this once popular "Root Gallery."

Under good management—a little tact, energy, industry and skill, we still believe it could be made a respectable and profitable business stand for the practice of the Heliographic Art.

Your's, &c.,

JUNIUS.

From the Liv. and Man. Photographic Journal.

HINTS ON THE PERSERVATION OF SENSITIVE PAPERS.

Sir :—For your very prompt and polite reply to my last queries, I beg you will accept my best acknowledgements. I send you the following suggestions or hints on the preservation of sensitive papers for insertion in the columns of your periodical, if deemed of sufficient value.

Every one who has had much experience in photographic printing, and in manipulating waxed paper, knows the great difficulty of preserving the papers unimpaired for any length of time. A few hours in summer suffice to destroy the beautiful silvery white of the very best albumenized paper, and to reduce the sensitiveness of waxed paper to a minimum, besides seriously influencing the subsequent development of the picture. By adopting the following method these evils may be in a great measure remedied or removed. Take a well made pressure frame of the ordinary description with cross bars and screws, and over the window of the frame fit accurately (so that it may exclude all light) a lid of wood. A *whole* back I prefer to a hinged one. The interior of the frame to be lined with cloth. Procure six or eight sheets of the best patent plate glass, the size of the pressure frame, and your "Preserving Box" is complete. Before proceeding to charge the box with sensitive papers, wash thoroughly the glass of the pressure frame and the sheets of patent plate, and give them a good polishing. As soon as your sensitive paper is *dry* (if dried by artificial heat so much the better in the case of albumenized paper) place each piece between the glass plates, commencing with the glass of the pressure frame and so on ; slip in the back of the frame and screw down firmly. If the weather be very sultry, keeping the "Preserving Box" submerged in cold water will be found very serviceable. This may be readily accomplished by procuring a long Macintosh bag, like a pillow case into which the "Preserving Box', will slip freely, place the box in the bag, tie the neck tightly, and attaching an adequate weight of lead, &c, to the bottom of the bag, sink it in a water butt, keeping the neck of the bag at the rim of the butt. Waxed paper may be thus preserved for days.—I am, yours &c.

Eccles, October 7th, 1858. GEORGE HAYDEN.

From the Liv. and Man. Photographic Journal.

ON THE PRODUCTION OF NATURAL COLORS BY LIGHT.

BY M. E. BECQUEREL.

The method is this: take a silvered plate, well polished, and cover it at the back by varnish, so as to leave only the silver surface to conduct electricity, and to be attacked only by the chlorine; then attach this plate by means of a bent copper wire to the positive pole of one or two cells of a voltaic pile, and attach to the negative pole a wire or a strip of platinum; then plunge the silver plate and the platinum into a mixture of eight parts of water and one of hydrochloric acid, both by measure. The chemical action of the electric current gives hydrogen upon the platinum, and chlorine upon the silver at the positive pole. The silver is attacked, and becomes greyish violet in color; its tint deepens, and after some minutes of action the plate becomes as black as though covered with lamp-black. When the plate is prepared, it suffices to polish it slightly with cotton or leather, to remove a sort of veil which covers the surface; and then immediately use it to produce color by the action of light. This mode of preparation yields the best chloride for obtaining the picture of the spectrum with all its tints; under certain conditions it may also be used in the camera-obscura.

It is very remarkable that the sensitive surface here spoken of is impressionable between the same limits of refrangibility as the retina, and it is the only one having this property. If we project the solar spectrum upon a plate prepared as directed, we begin to see an action manifest itself in the yellow and green; then there follows action on the one side towards the red, and on the other to the violet; *the action is most energetic where we find the maximum of light.* In the red part the surface takes a red tint; in the yellow a yellow; in the green a tint of green; the blues are very fine, and the violet resembles that of the spectrum.

If we isolate a bundle of red rays and cause it to act, we observe, when the action begins that the surface turns red; and on continuing the action the tint remains; however, by prolonged action the surface is completely changed, and nothing but metallic silver remains where the light has fallen.

If we operate with a bundle of blue rays a similar effect is produced; the blue tint obtained deepens by degrees, and at last, at a certain limit, the appearance of metallic silver alone remains. It is the same for every group of rays which is capable of reproducing itself, and at last all seem to give metallic silver.

These effects show, then, that it is not by an action analagous to the well-known case of the colors of thin plates, that the surface reproduces the colors of the light, but by virtue of a special action which causes this curious substance of which we are speaking, to have the faculty of diffusing only rays of the same refrangibility as those which have acted chemically upon it.

I will now speak of the probable composition of this sensitive substance: although I cannot give with certainty its composition, I am led to believe that it is *violet sub-chloride of silver* that is to say a chloride of silver having one equivalent of chlorine less than the white chloride. I may, in support of this hypothesis, adduce the fact, that in treating this chloride by the usual solvents for the white chloride, such as ammonia, hyposulphite of soda, &c., they dissolve out white chloride, always leaving behind metallic silver.

The sub-chloride of silver is the only body chemically sensitive which enjoys as yet the remarkable property of reproducing the tints of the luminous rays. The iodides, bromides, &c., give no color, and even if the chloride is mixed with one of these compounds, all coloration ceases. Further than this we may remark that the colors are obtained by the direct action of light without the employment of a developer.

I may add that I have obtained this curious substance upon the surface of paper, glass, porcelain, collodion, gelatine, &c.; but the effects have always been more difficult to obtain and less beautiful than upon the metallic plates.

The influence of the thickness of the sensitive coating upon the effects obtained is enormous; when the coat is thin enough the sensitiveness is greatest, though it is less sensitive than the ordinary bromo-iodized silver plate. It is almost as sensitive as Daguerre's simple iodised plate, but the effects of coloration are weak as the sensibility increases. In using a thicker coating the substance is less sensitive, but the colors produced are more defined, and as the coating increases in thickness the sensibility diminishes, but the colors are certainly finer.

There is a method of knowing with certainty the relative thickness of the coating, and of preparing it in the same manner. It consists in introducing into the voltaic circuit formed by the pile and the plate in the hydrochloric acid bath, an ordinary apparatus for the decomposition of water, placed in such a manner that the electric current which liberates chlorine upon the silver surface shall decompose water in the second vessel. Now, since electro-chemical decompositions take place in definite proportions there will be the same quantity of chlorine carried to the plate that we have of hydrogen liberated in the water apparatus: thus supposing that the *voltameter* indicates 5, 6, or 7 cubic centimetres of hydrogen, we shall be certain that there are as many cubic centimetres of chlorine fixed upon the surface of the silver plate.

By operating in this manner we can learn at any moment during the operation what is the exact quantity of chlorine we have put upon the surface of the plate.

I have learned that we must have, in order to arrive at a coating the thickness of which *corresponds to the third order of thin plates*, three cubic centimetres of chlorine for each square decimetre* of silver surface. Under these conditions we get very good reproductions of the colored prismatic image. But if we go on to six or seven cubic centimetres to the square decimetre, that is to the thickness which corresponds to the thin plates of the fourth order, we get our best colored results. It is there that we must stop to get good effects. To give some idea of the real thickness of this coating, I may say that with four cubic centimetres of chlorine to the square decimetre, the coating has about the $\frac{1}{1000}$ of a millimetre in thickness.

When a luminous spectrum is directed upon a surface of silver prepared with from six to seven cubic centimetres of chlorine to the square decimetre, the surface of which has a shade of color resembling wood, the proofs of which I now submit to the Society will show the effects obtained: the parts affected by the red of the spectrum is red and turns to a very deep red towards the least refrangible extremity, the yellow is scarcely visible; the green is very perceptible, the blue and the violet are superb, and present exactly the tints of the spectrum.

On the whole, the shades, though like those of the active luminous spectrum, are somewhat more dull, in consequence of the under color of the plate, which remains somewhat distinct. But as we shall see hereafter that we can modify the surface after its exit from the bath, and before its impression with the spectrum, in such a manner that the colors obtained will be much more beautiful.

In fact, this material, which might be called "mineral retina," is capable of undergoing very remarkable modifications, whether by the action of heat or by that of certain portions of light. In elevating the temperature of the chloride, but not sufficiently high to fuse it (from 150 to 200 degrees), the tint acquired after cooling is seen to be of a rosy hue. If the spectrum be made to act upon the substance thus modified, the effects are altogether different from what they were previously; the limits of action are very nearly the same, that is to say, are those of the visible spectrum, only the yellow and green, though pale, impress themselves clearly upon the bottom, which remains of a darker color; and if we carry on the action of the spectrum too far, we have for a final result a trace of white instead of the grey that we obtained before heating.

* The decimetre is about four inches. The metre being about forty inches, the centimetre is, of course, about the 1-100th part of the metre.

If we thus heat the plate beyond 150 degrees, the physical transformation of the material which takes place causes the greater part of the shades to disappear; but if we limit the heating to a slight elevation very much prolonged it is not the same : to effect this we place the plate in the interior of a copper box, which we introduce into a stove heated to from thirty to thirty-five degrees, or thereabouts, and keep up the temperature during four, five, or six days; then the colored prismatic impressions are very beautiful, as you may perceive. Not only the various shades of red, yellow, green, blue, and violet situated in the places acted upon by the spectral rays of the same color clearly come out from the foundation, which remains of a more sombre hue, but further, a bundle of white rays produce a white tint in the place upon which it acts.

The sub-chloride of silver suffers equally from the action of the extreme red rays of the solar spectrum, a physical modification as remarkable as by the action of heat, and permits of its having, by another means, beautifully colored reproductions of the solar spectrum. To obtain this result we place in a frame covered entirely with a deep red glass (colored by protoxide of copper), a plate so prepared that it comes out of the bath after being submitted to electrical action, and we expose the whole to the solar rays ; at the end of from fifteen to thirty minutes the plate becomes darker than before, and the same effect is produced that is manifested at the least refrangible extremity of the spectrum At the same time this coloration takes place the sensitive material gradually becomes modified, probably in the same manner as under the action of heat. In projecting the solar spectrum upon this surface it appears at the close of several minutes with all its shades admirably reproduced, even with the yellow and green parts very distinct, which before this operation would have been dark and scarcely indicated.

It is not necessary that the previous action of the red rays should be too prolonged, as the material would thus be rendered less sensitive.

A judgment of the different actions may be arrived at from the proofs now laid before the Society.

Colored impressions once obtained can only be preserved in darkness, but then they can be preserved indefinitely; if they are exposed to the diffused light of the sun they gradually alter, and finally disappear. It is very remarkable that it should only be, as one may say, in a transition state that the sensitive matter should possess the quality of reproducing the shades of the active luminous rays; thus, in parting from a particular physical condition, that portion of the substance not actually altered but verging towards the extreme limits of complete decomposition, manifests different physical conditions according as it is affected by this or that ray.

It results then from what I have just said, that the colored impressions which I present to you are continually changing, even while we look at them; if we preserve them in darkness they cease to alter. Only as the material is not very sensitive, above all if it is only acted upon by lamp-light, we may leave the proofs for several days under its influence without their disappearing. The effect produced by diffused light is such, that if we place a colored proof under a blue glass, for example, it will assume a blue tint, and will then become grey. It will be the same with glass of every other color; the final condition with regard to color, seems to be the same whatever may be the light which strikes the substance. It appears, then, that it is only when in an intermediate state, as I have already stated, that it presents color.

It is possible to obtain colored images in the camera, that is to say, paintings by light, as may be seen from the specimens that I present, and some of which go back for nearly ten years.

But there are reasons against these paintings being so distinct or having shades as brilliant as the luminous spectra; in fact, in the camera the images have colors more or less mingled with *white*, it is then requisite that the action of the white light should not change the shade of the predominating tints of the colored rays. Then, in order to obtain this result, it is necessary previously to submit the prepared plates to a reheating or to the action of red glass, and then the the lights are clearly obtained, but the yellow and green tints are not clear. If we do not reheat the plates the tints will come but the lights are grey. On the other hand, the material is but slightly sensitive, and several hours, even several days, may be required to produce these images; nevertheless, with precautions we can avoid a portion of these defects.

The proofs of the reproductions of colored images which are here will show what it is possible actually to obtain by aid of this sensitive material.

These last reproductions have occupied me but little as yet, for they only possess for me an interest purely scientific, and I have not thought that they can be usefully applied since the impressions exist only in darkness, and gradually change in the light. All the attempts hitherto made to obviate this alteration have been unsuccessful, and it is only in a transition state that the sensitive material, the veritable mineral retina, possesses the remarkable property of preserving the impressions of the active luminous rays. I ought even to add that the attempts made by some persons who have tried my process, and from whom I have had the information, are far from bein g as clear as these which I have presented to you, and which have been obtained by taking all the precautions above indicated.

Shall we find the means of preserving these images? Will the arts be able to enrich themselves by pictures painted by light? It is what one does not know how to affirm. I am bound to render you an account of the experiments in all their details, in order to make you acquainted with a material image in its way which permits of *painting with light*, and to enable you to reproduce readily the effects that I have obtained.

From the London Art Journal.

CHEMISTRY,

In its Relations to Art and Art Manufacture, Considered as a Branch of Education.

The most striking effect resulting from the Great Exhibition of 1851, is the strong expression of the necessity that exists for a more general diffusion of scientific knowledge amongst all classes of society. It is felt that any extensive improvements in our manufacturing arts must spring from an increased knowledge of the scientific principles involved; and therefore efforts have been made to introduce into our schools several branches of education which have not hitherto received attention in any of our scholastic systems. We neglected for a long period to cultivate even habits of observation; the young found their natural curiosity stood in the way of scholastic honors, and, consequently, they very sooon endeavored to learn the signs for ideas, to the absolute neglect of the ideas themselves. Now, being convinced of the folly of this, we rush into the opposite extreme, and endeavor to urge the most juvenile capacity up to the study of abstract science, disguised by the name industrial instruction. Infant schools begin to display pictures of pumps; the Nationals boast of their diagrams and apparatus; while the British urge their boys and girls onward in all the mysteries of physics and chemistry. Let it not be supposed that by these remarks these branches of knowledge are considered useless; far from it; they are regarded as the highest and most important exercises for the human mind. The study of the natural objects by which we are surrounded, tends to a more correct appreciation of man's position on the earth, and leads to a really "divine philosophy," which sees "good in everything." The study of natural philosophy in the more limited sense in which the term is usually employed, advances our *real* knowledge of the constitution of things, and of the powers by which their physical conditions are regulated. Although by an empirical system we may improve Art or manufacture, the process is a slow and uncertain one; whereas, by knowing the secret of causes producing visible effects, we become the owners of new forces which we can apply to useful ends, with a remarkable freedom from that uncertainty which attends the hap-hazard system of too many inventors. It is not, therefore, that we object to the introduction of science into our schools; but we fear that an indiscreet system of forcing is being tried, which will certainly produce weakness from over-excitement, and end in short-comings, which will prove on all sides disappointing.

The Government, in the establishment of a Department of Science, has done wisely; but we fear the connection of this department with that of Art is a mistake. Beyond all question, science may minister to Art in many ways; but the *cultivation* of Science and Art cannot go on together. The student of Art can never become really the student of Science; neither can the learner in the laboratory of the chemist become other than a merely mechanical recipient of those truths by which our standard of taste is to be refined, and our appreciation of the beautiful rendered more correct. The result of the experiment up to this moment proves the correctness of this.

Now, the principles of Art may properly find a place in the schools for our children; the eye may be taught at a very early age to value a straight or a curved line, and instructed in all that concerns the harmony of colors. This education cannot begin too early, as false impressions are only removed with difficulty. But with Science the case is far different; the mind must be correctly trained into habits of observation, which is the work of years, before it can properly appreciate the value of an experiment—before it can comprehend that water rises in a pump by the influence of the pressure of the external air, or understand that a stone falls to the earth from the air by the exercise of an unseen attracting power. The child may be made *to learn* from certain text books that action and reaction are equal, but *to know* the fact requires something more than the mere effort of memory. On these grounds we believe that the indiscreet introduction of Science into the primary schools will not have a satisfactory result. We fear, indeed, that the tendency of such studies on the plastic minds of the young will be to stultify them, and produce a generation of scientific babblers, guiltless of an original idea, and unable to produce a clear deduction from any of the thousand facts they have in memory.

Beyond this, another serious difficulty stands in the way of this kind of teaching—there are no teachers. These must be created. Let not the attempt be made with teachers, who, though they talk of scientific truths to the young, are themselves ignorant of the very alphabet of the science they pretend to teach. Let us not forget that what is wanting in knowledge, will be made up in pretension, and that we may expect the pedagogue of the old farce to become the reality of modern life.

A system for teaching the more advanced youth of our schools and young adults, in the elements of science cannot but be attended with the best possible advantages. Still, the difficulty of teachers stands in the way, and if at the present moment twenty schools throughout the country were to apply to the Department of Science for teachers in any one branch, say chemistry, these could not be supplied. It is imperative, therefore, that the first effort should be made in the direction of training a certain number of young men as teachers of such of the sciences as may have a practical application. The mass of our population have a full conviction that some improvement on the present state of education is necessary, but they do not see the direction in which the improvement should be attempted. Hence, they are casting about, some in one direction and some in another, all in uncertainty, and there is no onward movement, although there is a great deal of talk.

The great objects to be attained, in some way, and it does not appear to us so difficult, is the introduction of a more universal knowledge amongst our mechanics and artisans, and to establish a closer relation between the man of practice, and the man of science. There exists amongst us a strange contempt for "theory" as the expression is, and an over-estimation of the value of "facts" and practice." Now it is important that all should learn that scientific investigations are based on theory only as a prop to carry them from point to point, which is transformed into a fact when the evidence becomes sufficiently conclusive. Every theory must be based upon observed facts, and facts cannot be properly sought for without the guidance of some theory. There can be no real knowledge, says Bacon, which is not based upon observed facts. Every fact discovered has a practical value of the first importance, and we have retarded the advancement of Art, through man's ignorance of what he terms abstract Science. Numerous instances might be given of the practical value of the truths revealed by science, even when of apparently the most abstract character, but, in the present instance, we desire to confine our notice to chemistry.

(*To be continued.*)

Personal & Art Intelligence.

Time flies and we are at the close of another year, with results not very satisfactory, so far as we are *personally* concerned; but perhaps we have no right to complain, considering the depressed state of trade throughout the country during A. D. 1858, and that no branch of business has been under the ban to so great an extent as that of Photography. Yet, again, men on whom we had to lean, and who have promptly met their subscriptions during the whole eight years of the existence of the Photographic and Fine Art Journal have, for the first time, partaken of our labor, and drawn upon our time, without duly honoring *our* drafts, which though *small* to them have made a difference to us, in the aggregate, of hundreds of dollars, yea, we might say thousands—and *unjustly* suffered us to flounder along as best we could. In addition to this, a few—and thank Providence they are few—have endeavored to *destroy* us altogether by idle and false reports. They have failed, however—missed their calculations entirely—for we proved stronger than they imagined; and the Journal *has* lived through it all, and will come out with renewed strength, beauty and vigor. This our staunch friends and the public generally may count upon as a fixed fact. Thus much for ourselves. To the Photographic Artists two events have transpired, since our last, of momentous interest. The *perfection* of the *Carbon Printing Process*, of which we shall speak hereafter, and the decision of the *United States Court* in the patent case of

Tomlinson *against* Bogardus.—This suit, as our readers are aware, was instituted for an alleged infringement of what is known as the *Cutting Photograph and Ambrotype* patents; but all may not know that it involved a right of deeper interest to photography than the mere ambrotype picture; in short, that it strikes at the very base of the whole photographic structure, namely, the *employment* of the *bromides* in *any* formula of the *collodion* process. The "case" of Tomlinson against Bogardus was brought to trial before the Hon. Charles A. Ingersoll, Judge, and a Jury, of the U. S. Circuit Court for the Southern District of New York, during its present term, and decided in favor of the *patentees*.

This decision, as we said before, is of the greatest importance to all manufacturers and employers of the *collodion film*, and as it is now made to stand by the decision of Judge Ingersoll, all, except those under the patents, are prohibited from using bromine in any form as a sensitizer without the consent of the patentee; and any infraction of Mr. Cutting's rights involved within the patents, will subject the infractor to damages and costs.

With *this* decision before us we are compelled to admit that the patent stands confirmed, and of course we must choose, either to bow with as good a grace as possible, or incur the liabilities which the law imposes. We feel the embarrassment of our position, for we have heretofore opposed our influence and that of our Journal, to what we honestly believed, an injustice—to the Photographic Art, as well as to photographers—was perpetrated when the patents for the use of bromides were issued to Mr. Cutting; but our duty now calls upon us to announce the facts as they are established by one of the highest legal tribunals of the land, and the one whose exclusive province it is to pass upon the validity of patent grants, and in doing this we cannot go behind the judgment of the Court for speculations upon the probable causes for its decision.

It now becomes a question worthy of consideration whether the interests of photographers will not be best served by submitting to the decision of the court establishing these patents, and securing the privileges under them of pursuing the photographic art. May not the standing of the profession be improved, and a better compensation received for productions of the art? These important questions are to be decided by Photographers themselves; but their solution may depend upon the course pursued by the owners of the patents. They now have an opportunity of rendering great service to the interests of the art by that course which in our opinion would best secure their own, and that is to observe moderation in their demand, and discrimination in the wants of the public. And we may be induced to hope that past experience will not be lost upon the owners of these patents, and that a conciliatory course on their part will produce corresponding feelings in the entire photographic public.

We have conversed with many photographers on the subject since this decision and of course we have found nearly as many different opinions in regard to it. While some have condemned it and all concerned in the strongest terms, others have expressed themselves satisfied, in the hope that it will ultimately work good to the art, and the artists in America; and we must share that hope, and take consolation for our disappointment in the decision in that hope, particularly when we look around us and see so many *dabsters gathered within the portals of the Photographic Temple.*

The Carbon Printing Process we must consider one of the most valuable improvements made in the Photographic Art since its discovery. We have experimented on all the formulas that have been published, as well as various modifications of our own, with various degrees of success. Having subscribed for Mr. Pouncy's process, and obtained the right to publish it simultaneously with its appearance in England it has been forwarded to us, and probably will be published in our next issue. This process is *perfectly* successful; but strange to say it differs from one we have tried for the last four months, without decided success, only in the quantities of the ingredients. We have tried it with lampblack, neutral tint, Prussian blue, sepia, and burnt umber, and have produced as good results as could be obtained with the negatives used. With good negatives, sufficient time to devote to it, and strict adherence to the directions we are convinced the most beautiful results can be obtained. We shall publish this process in our December number, if permitted, in order that those of our subscribers who have paid us, and who may not continue with us next year, can have the benefit of it—but we shall withhold it from all those who are in arrears for amounts due. Those who get the December number will obtain this process at least three months in advance of any others. The manipulations of this process require not more than one-fourth the time in preparing the paper for use, and not more than *one-twenty-fourth* for the whole operation. The solutions can be prepared for a long time ahead, and can be kept in a liquid state, or made into cakes to be used as required in the same manner as ordinary water-colors. The preparation of the paper, printing, and finishing, will not occupy, in a *cloudy day*, over fifteen minutes. For painters use in painting or retouching, it must supersede every other method, and we are convinced it will be also applicable to the solar camera.

A few numbers back we published the proceedings of a meeting of Photographers at Albany; subsequently we were informed of sundry other proceedings which took place at that meeting, and took occasion to comment upon them in our September number. In reply to those comments we received a letter from the secretary of the meeting, from which we make the following extracts. The portions we omit are of entirely too personal, and border too closely on vulgarity and bad blood, to be admitted into our columns. In fact some portions are libelous.

Albany, Nov. 30, 1858.

H. H. Snelling:

Dear Sir—In your Journal for September, I notice an article under the head of "Personal and Art Intelligence," from the tone of which I find you are laboring under a great error in regard to what transpired at a meeting of the Photographic Artists of this city in March last, when resolutions of condolence were passed on the death of Mr. C. R. Meade, of N. Y.

You charge the artists at that meeting with "creating a terrible furor" and "raising a hubbub," because the resolutions directed their publication in the "Photographic and Fine Art Journal," and you make a desperate attempt at witticism in trying to describe the imaginary effect a bill for the insertion of the said resolutions would have if presented to the artists at their meeting, and as you appear to get warm on the subject you offer to bet your entire "*pile*," [this is *quoted*, and underscored as ours; but we made use of no such expression.—Ed.] on another equally ridiculous assertion.

I will now tell you what actually took place at that meeting in reference to the publishing those resolutions. As soon as the secretary read them, the question was asked by a person not posted in such matters: "What will be the expense of printing them?" His reason for making the inquiry, as he then stated, was so that the amount could be sent with the resolutions, and therefore save trouble.

The reply to his question was—"There will be no charge; those things are published gratuitously." This was all that was said in regard to your Journal, either directly or indirectly.

* * * * * * * * * * * * * * *

I consider you have done the photographic artists of this city a great injustice, and claim from you a published retraction of the vile slander upon them. Hoping you will consider this request nothing unreasonable, and that you will comply with it at your earliest convenience, is the wish of

Yours, &c.,

S. E. Parsons, Sec'y.

By Order, &c.

It will be perceived that this comes to us officially, "By order, &c." All we have to say in the matter is, that we regret it *if* we have done the Albany folk injustice, for that is far from our desire. We must, therefore, as our remarks were based upon information, simply permit one statement to counterbalance the other, remarking that we think Mr. Parsons goes a little too far when he gratuitously fixes upon a *single individual* (as he does in the omitted portions of his letter) as the informer, and applies the vilest kind of language to *that* person. Were we to show him that letter, or publish what has been omitted, he would have abundant material for an action for libel. Our remarks, which called this letter forth, were made on a collective body, free from personalities—which we always endeavor to avoid—and in self-defence, and it not being the first time, and from other sources, that we had heard of misstatements from the capital of the State, we felt under the necessity of taking some notice of what appeared to be a combined attempt to injure us. In this particular matter there is a question of veracity; but it is not between us and the Albany photographers, but between our informant and Mr. Parsons. This settled, we can *then* decide how far we have been unjust, and will as freely make the necessary "retraction"—if any to make—as we were to make the charge. So far as *we* are personally concerned we *owe* the Albany photographers *nothing* in *any sense* of the word; but they have our best wishes in their endeavors to sustain the position they claim for themselves.

The great Photographic event of the month in New York, was the opening of Mr. J. Gurney's "*New Photographic and Fine Art Gallery*," at No. 707 Broadway. As usual, Mr. Gurney prefaced the opening of his new rooms by a soiree, where joy and gladness, wine and wassail did abound. In this beautiful establishment Mr. Gurney has exhibited his well known and rightly appreciated taste, and for comfort and elegance it is not surpassed, perhaps, in the world. With a fine wide entrance hall, large, commodious, and well furnished reception and working rooms, neat little boudoirs, and excellent artists studios, the highest state of artistic taste can be displayed in the production of portraits. On the evening of the soiree we noticed many of the most notable men of New York. During the evening an unexpected episode, of the most pleasing kind, occurred, in the presentation of a massive gold-headed cane to Mr. Gurney by the attaches of his establishment.

THE Photographic artists of this country are fast walking into the literary (it is but one step from the artistic) ranks. We have, from time to time, noticed various papers published by photographers. We have now another before us, a very handsome little affair, called "*The Sunbeam*"—most appropriately—emanating from the establishment of MESSRS. BAILEY & SPURGIN, of Indianapolis, Ind. We must commend this kind of enterprise, as such publications will tend materially to the cultivation of true taste in art-matters among the people. Scatter them broadcast—*they will pay.*

MR. FITZGIBBON chooses the pamphlet form, and the facitious mood for the propagation and dissemination of his ideas on Art, and has sent us his *Bulletine*, from which we have made an extract into our pages. Fitz. is a sad dog, however, about keeping promises. He is very observant, wields a ready pen, and we should hear from him oftener; this he promised us, "once upon a time" we should do; but alas! and lack-a-day! Fitz!

C. W. DILL—You need give yourself no uneasiness—your fears are groundless, and you will find it out before another twelvemonth, if not sooner, we doubt not, however, if *all* were like *those* indicated by *your* letter your presentiments would be fulfilled.

W. H. DE SHONG—The Journal has been mailed to you on the issue of each number, and it is not our fault if you do not get them. It is not possible it could have failed in so many instances except by your own neglect. We have received no intimation from the postmaster at Memphis, where they were sent, that they were not taken from the office.

W. SAWYER—We have mailed you all the numbers as soon as issued, and you should have received them at the same time as your neighbors. We cannot duplicate numbers, paying postage also, as required by law. It is demanding too much of us.

THE following communications should have appeared before but were mislaid.

DAYTON, July 6th, 1858.

MR. SNELLING—

Dear Sir:—In all communications, I perceive the blow dealt at a disrespectful and dishonest tribe, begins to smart. I am glad of it; the acknowledgment at large is the first step to its remedy. Now what is the best plan; several suggestions have been made. We have already delivered Dayton from it by the following plan:—one of our establishments changed proprietors; the new one—formerly employed by a Cincinnati cheap and Sunday workman. Bills were out, saying: "New operator's pictures at one-half the usual price." The run commenced, and immediately we circulated 25,000 bills, saying that we took pictures at 25 cents—the new men's price was 50 cents. The story changed; the other's had to see crowds at our establishment and nobody at theirs. They began to be alarmed, and concluded to make also 25 cent pictures, and on Sunday too. A threat from an officer prevented the latter, and our intention to make 10 cent pictures stopped the former. All of them became discouraged, and called a meeting. There it was resolved to establish a standard price, at one dollar. Enclosed you will find a copy. This was our remedy, and this I advised the Cincinnati artists to do when 25 cent pictures were first introduced. If they had done so, if they set a room going, and charged but one dime or less, the company would soon have been cleared out or monopolized. If therefore a Society was formed, and branched out, it would soon count 500 members, or more. I, for my part, will contribute from $10 to $25 if the principle shall be to help the willing and respected one, and to trample down those who injure the business. The wood-sawyer asks 75 cents here for sawing a cord of wood; and if there is but one load in the market, and 50 sawyers, every one anxious to have the job, not one of them will say, "I will do it for 70 cents;" but dagnerreotypists will. They learn and teach the art for $3, and sell Union Cases, with the pictures, for $1, half-size for $1,50, and have from eight to ten operators in different places. If each only clears $5 a week it amounts to $50. An acquaintance told me a few days ago, "I shall stop the business, but must clear this year $5,000" What fools we are! This man gets in the cars and visits John to-day and Bill to-morrow, and collects the change and furnishes the stock; while I, for the love of the art, set to work with ten times as much energy as in anything I ever done before; here I sit, trying to eat the bread and butter and cheese, and while not aware, some dog comes along and lick's up the butter and cheese, and leaves the hard crust to break one's teeth with. I say arouse! ye drowsy fellows; send in your names to Snelling, call a convention, and let us see what can be done.

Very respectfully,

LOUIS SEEBOHM.

LARGE TELESCOPE.

FRIEND SNELLING—I have just completed my large telescope. The additional cost is $12, and equal to Pike's $250. My mode is this—I got two eye pieces, one terrestrial of 56 magnifying power, and one celestial of 3 and 400 power. I took the back lens of my five inch Voightlander camera tube, and placed a Teinok tube, 5½ feet long; on the other end I adjusted the eye-pieces. Any tinner can make it for $1,50. This is the whole story. A diaphram with small aperture must be placed in front of the lens, another one in a quarter of length of focus near the eye-piece. When I wish to use it I take it out of the camera, and to take pictures place it back again. Pike, in New York, sells eye-pieces at $5,00 each.

LOUIS SEEBOHM.

C. A. JOHNSON, Pittsburgh.—Your question in regard to *Ivorytype* will be found fully answered in the communication of "JUNIUS" on the "Fair of the Franklin Institute."

PHOTOGRAPHY IN A NUTSHELL.—Under this title, Mr. M. P. SIMONS, has dished up the Art in a pleasing, practical, and comprehensive style.

J. F., NICE.—The subscription price for the "*Carbon Process*," is about made up, and as we have ourselves subscribed for the purpose of giving it in the columns of our Journal, we shall probably print it simultaneous with its appearance in England.

OUR Illustration for this month is a Photo-lithograph of a Microscopical insect. Our December number will contain the balance of all the illustrations due with this volume.

B. F. POPKINS. The October number was mailed to your present address conformably to your request.

TO OUR SUBSCRIBERS.—In consequence of events already stated in our previous numbers, and others of a satisfactory nature of recent date, as well as to be enabled to effect our contemplated improvements, we shall not commence our TWELFTH VOLUME until March, 1859. We think this will be more satisfactory to our friends than any other course.

WE wish it understood that we invite all, both in America and Europe, to send us original articles on the art, for which we will pay at the rate of two dollars a column, printed matter. Hereafter money will not be wanting to make this the finest and best Photographic Journal in the world.

As the year is near its close, and a new volume commences in January, we would call attention to the fact that it is decidedly to the interest of photographers to subscribe to the "*Photographic and Fine Art Journal*," in preference to all others. Through it they have access to important matters that would cost them ten times as much through any other channel, there being no periodical published containing anything like the amount of reading, all of which is of the first class. *Hereafter we will pay two dollars per printed column for all original communications accepted by us.*

Photo-Lithographed by Cutting & Turner.

VOIGTLANDER Versus PETZVAL.

[*Communication from M. Voigtlander, to the Editor of Photographic Notes.*]

In my last letter, in answer to that of Professor Petzval, I promised to furnish such proofs as would put the matter regarding the new lens beyond any doubt, should Prof. Petzval continue to uphold his assertions concerning me In consequence of his last letter, contained in No. 59 of the Birmingham Photographic Society's Journal, I find myself forced to appear once more before the public, though I am happy to say, for the *last* time, (as far as this question is concerned), for, what there remains to be settled between Prof. Petzval and me, beyond this letter, must be done by law—a tribunal where neither rank nor title are falling in the balance—where sarcastic wit will be found deficient to serve as a substitute for honest truth, but where simple facts are deciding the question. Had I been able to foresee how far Prof. Petzval would go in his personal attacks against me, I should not have condescended taking any notice of them, but now I find myself much in the position of a man, who, having begun running down hill for instance, finds himself involuntarily forced to continue his course. Certainly, if this controversy about the lens could have taken place in Vienna, where we are both well known, I should have strictly adhered to the question itself, without considering it worth my while to pay any attention to his personal remarks; but in England, where neither his private life nor his character are known—where his name is looked upon as sufficient authority for comments, somewhat in prejudice to me, the case stands differently. I therefore must be permitted to show Professor Petzval in his true colors, especially after his fresh attempts to impair my character in his last letter, in spite of my having desired him to come forward manfully and openly to say aught he has to complain of.

Opposed as I am, to an adversary who is fighting under the device of dissimulation, all reserve and forbearance would be misplaced, though I am deeply regretting that this angry controversy has assumed so very personal a character. This fault, however, cannot be imputed to me, as I have become personal only in order to repulse the personal attacks of my opponent, and as *I have offered, as every body will remember, to decide the question in a more worthy manner, both to Prof. Petzval and to me*; therefore, if to be considered the aggressor in the literal sense of the word, in the true meaning of it, I can never be regarded as such.

Prof. Petzval, finding my letter remarkable in view of psychology, I may well apply the same remark to his, and perhaps with more justice, for he allows a curious and interesting insight into his character and principles when asking to what purpose all my assertions are made, having no interest for any body, whilst these assertions have no other tendency than to repulse and disprove those little pleasant accusations of his, as: "my having misused his name, my having practised deception upon the public by saying that such a lens was known to me,—my having spoken untruth," and so on. Can any honest man suppose me silently to submit to the accusations with perfect indifference to public opinion? Only a man like Prof. Petzval could suppose a thing,—a man so little master of his own tongue, so deficient in manners and instincts of good society, to such a degree, as to use publicly expressions so very offensive to every decent ear as to have drawn repeatedly public reprimand and censure upon him. What shall we say of a man who pays no regard to himself and his own assertions? At first he stated that my memorial was rejected by the Academy as an absurdity; and this being disproved by me, he says: "It is not necessary that a learned corporation should have done it since common sense does it," which means, properly interpreted: *well if my statement was false, never mind.* Is such proceeding honorable, or is it possible to discuss any point with a man who, in such a way, perverts and disowns his own words:

His endeavors to disarm my accusations of his having malignantly put the word "unsuccessful" instead of "not quite satisfactory," are past all belief. The former always means "without success," whilst the latter implies the contrary, at all events, "satisfactory to a certain degree." No sophistry whatever will give any other meaning to these words, and Prof. Petzval either considers his readers somewhat on a level with children or idiots, or we must piteously shrug our shoulders and consider him not in full possession of his mental powers, or influenced by a certain well-known propensity of his which, to designate nearer, decency and esteem for the public, does not permit me.

In like manner he construes my words regarding his camera, which, certainly after having seen the drawing of it, I do not consider any more as "ingenious" but on the contrary, as deficient in the highest degree, and not at all practical, and inconsistent with the rules of mechanics. With regard to that camera, can any thing be more absurd than his coming to the conclusion that I could possibly not have known the lens, as I did not know the camera, which, according to his version, was indispensable. I have since made upwards of four hundred orthoscopic lenses; the most wonderful things have been done with them without that "indispensable" camera. Prof Petzval's observations regarding "the common workman" furnish a further proof what an adept he is in the honorable art of malignantly preverting the meaning of words. When I made use of that expression it was in speaking of those persons who were calumniating me; therefore the expression was used in the sense, these people would attach to it. I certainly find no dishonor in being a workman; I have been such from my childhood, and am now working all day and finishing every article that leaves my establishment, and am not afraid of dirtying my hands as Prof. Petzval is pleased to ruminate by his sarcastic remark about "kid-gloves." If Prof. Petzval does not consider me to be a good glass-grinder, he is, of course, quite welcome to any opinion he may form of me; yet I am astonished that, disposed as he is against me, he does not hesitate to attack in such a way a man whose works have been considered for more than twenty-three years, both by men of science, and the public at large, as certainly not ranking amongst the last. I wonder he does not despise having recouse to "dodgery" only adopted by the most common trades-people to lower a competition, for by his commercial connexion with Mr. Dietzler he certainly has put himself on that level with me. It seems to have escaped the logical reasoning of the learned Professor, that he is giving himself, by this, a very unflattering testimonial; for how could he continue to remain in connexion with me for so long a time, when having never found me to be a good glass-grinder?

Prof. Petzval will oblige me by perusing the Journal of the Photographic Society of Scotland, No. 68: he will find there the Report of the Committee appointed to examine both his lens and mine. One of the passages of that report runs as follows:

"Whether the Petzval or the Voigtlander lens is the best is a question the Committee have not been able to decide, as both are excellent." According to Prof. Petzval, that verdict decides the whole question between us he says: "The question at issue is, does he manufacture good lenses or bad ones? when good, they are valuable, even supposing he had fallen in with them but yesterday." I dare say that report may puzzle Prof. Petzval, for how is the stated excellency of my lenses to be explained, as I am not a good glass-grinder as I have not had the assistance of his formulas, but have only been *forging* orthoscopic lenses? In what way have I been able to produce lenses equal to his? I must, either have had other means, such as furnished by himself eighteen years ago, or the merits of his lens cannot be so very great, if an unskilful glass-grinder like me can produce as good ones; there seems to me to be no other alternative.

Prof. Petzval being so very fond of appealing to the common sense of his readers, in want of more convincing proofs of somewhat vague statements, I beg to ask him what does common sense say to his assertion, that I am not working according to his calculation, and that I am consequently misusing his name? There would be some sense in it, if only a short time ago I had used his name in my list of prices; but I have done so from the very moment I sold my first lens, after which I continued for some years in connexion with Prof. Petzval, and constructed my 2-ins. and 3-ins. lenses. Why did he not remonstrate at that time against my calling these lenses made according to his calculation? To do now, *after the lapse of seventeen years*, is more than ridiculous. To show how common sense judges in that matter, I beg to state here some remarks of Mr. Horn, the Editor of the Photographic Journal, in Prague, who received a letter from Mr. Dietzler, written by Prof. Petzval (for I know his pen too well as to mistake it) containing his well known statements, in language so inconsiderate, as to cause Mr. Horn, according to his own statement, to give only an extract of this letter in No 5 vol. 10, of the above-mentioned Journal, and afterwards to comment in the following manner:

"Prof. Petzval, after having spoken himself, in his pamphlet about dioptical researches, of his new lens, as made by Voigtlander and known by the name of the Voigtlander lens, comes now to state, in an indirect manner, that all the lenses made by Voigtlander during the last fourteen years are not to be considered as made according to his calculations; nevertheless the learned Professor has silently accepted, during the last seventeen years, all the tribute of the world, purporting that the Voigtlander lens was made according to his calculation." *How is this mystification of the whole photographic world to be understood?* Mr. Horn further says: "As Mr. Voigtlander publicly declares himself to be in possession of the formula and drawing of this lens, as received from Prof. Petzval since the last 17 years, I, as well as every non-preoccupied person, must be astonished that Prof. Petzval *does not proceed against such audacity, the above statements being supposed not to be true*," to which I will add, particularly after his having obtained a patent, in spite of which I have openly sold my orthoscopic lenses in Austria and other countries.

Prof. Petzval is perfectly right in stating that as soon as the store of glass is exhausted, a new calculation of the curvatures must be made by means of the tabulas; he is likewise right in maintaining that I never received those tabulas from him, *but I never pretended to have received them;* but I have received the formulas for the first lenses, and, therefore, as long as I am working such glass, *perfectly identical* with the glass employed at first, and as long as I preserve, at the same time, *the primitive curvatures*, so long my lenses must be considered as made *according to the first calculation.* The great success of my lenses and the difficulty in getting crown-glass in sufficient quantity from the same source, soon caused me to apply to Mr. Bontemps, at Messrs. Chance, Brothers & Co., in Birmingham. The glass was analysed, and Mr. Bontemps succeeded so well in making crown-glass of the same quality, that I could exchange a lens made of that glass for one made of the former crown-glass, even in an achromatic object-glass allowing a magnifying power of thirty times;—any photographer may convince himself of this by taking a very old lens of mine, and one of my last numbers of the same size, when he will find, by alternately exchanging the four glasses of these two lenses, that the effect of them is not at all impaired.

Whether, under these circumstances, my lenses are not to be called made according to the calculation of Prof. Petzval; of this I dare say every one will now be able to judge.

Prof. Petzval may raise another objection referring to his observations in one of his pamphlets, viz: that opticians have committed a mistake in thinking, that, by augmenting aperture and focus in the same proportion, they will be able to construct large lenses of the same perfection. I simply reply to that remark that he ought to have raised that objection, when yet in connexion with him, I constructed my large lenses, and I must moreover deny, to a certain extent, Prof. Petzval's assertion being correct and refer to that end to his own description of the new lens deposited at the Patent Office at Vienna, in which he states that this lens may be made in any size, if only the proportions of the drawing are strictly observed, and refer to his own 3-inch lens, for a proof of my refutation. That lens being twice as large as the first lens, being made 17 years later, and of quite different materials, every one should, therefore, consider that lens as being differently constructed with other curvatures: *thot this is not the case*, I shall show when returning, in the sequel, to the same subject. Indeed, aperture, distances, and curvatures in this lens are, within a slight difference only in one of the latter, perfectly indentical with those in my 3-inches lens; a fact which shows what *prominent* and *indespensable part* these so often-mentioned tabulas have acted in the construction of this lens.

Prof. Petzval comes to the very logical conclusion that, as I confessed myself to be in no way connected with him now, I have spoken untruth in announcing my lenses to be made according to his calculation. I must leave it to clearer heads than mine to find out in what connexion the fact of our being separated now stands to all the facts before that time, and how the first can exclude the latter. His further statement about my having published, in Leipzig, a pamphlet, in which I confess *never to have received from him any tabulas or fromulas*, I must declare to be a direct *fiction* and *invention* of his, inasmuch as I *never published any paper* in Leipzig, only my circular about the orthoscopic lenses and my list of prices were inserted in a work on photography appearing there, but no allusion whatever was made in the first regarding his formulas or tabulas, not even his name was mentioned therein. It is certainly a difficult task to contend with a man, who, *repeatedly*, has taken refuge to direct *untruth*. Such an attempt may perhaps, be considered as foolish as—"fighting a windmill," or as vain as "carrying water into the tub of the Danaids."

Considering all circumstances well, I cannot understand what objection Prof. Petzval can raise against my using his name in my list of prices. The case would stand differently, if he could prove that my position was no more the same, that I had lessened in my zeal to keep up my reputation. Against this, I think, the number of my lenses I am still selling at the original prices, will forcibly speak, whilst the following lines I received from Prof. Schrotter, Secretary of the same Academy, of which Prof. Petzval forms one of the members, will show that my position is not such as to throw any dishonor upon any one in connexion with me:

"Sir,—I beg to return to you, with many thanks, the four photographs you have been so kind as to forward to the Academy; they have been inspected by all the Members present with great interest, and I cannot but congratulate you upon the progress manifested by these excellent photographs.

"Yours truly,

"To Mr. Voigtlander." "Schrotter.

I am inclined to believe that the virtuous wrath of the learned professor about that misuse of his name be less originating from an *excess of virtue*, but may rather be traced to a more *trival* and *obvious* cause, viz.: finding my competition rather impeding the sale of his new lenses.

Prof. Petzval, in speaking of my want of gratitude towards him, calls himself the founder of my prosperity and position in life. The former I am willing to grant to a certain extent; the latter I must decidedly deny, as my position in the scientific world had been already founded before I had the honor of making Prof. Petzval's acquaintance. No. 576 of the Astronomical News of Mr. Schuhmacher, in Altona, contains a report of my telescopes which had been made in the year 1838, as I could easily prove by my correspondence with the illustrious Prof. Gauss of the year 1839; a correspondence which might show to the world, that, already at that time, I was not exactly the man, such as Prof. Petzval gives himself the trouble of representing me. It forms one of the features of Professor Petzval's tactics, never to speak out his opinion openly, but to content himself only to throw out such hints, by which my character appears impaired, leaving the unpleasant task to me in order to repulse these aggressions; to enter into such discussions as may bring down upon me the accusation of entering into particulars almost too private for publication. This consideration, however, cannot induce me to abstain from showing to the reader in what way and how far Prof. Petzval has to complain of any want of gratitude on my part, which he certainly wished to insinuate.

When Prof Petzval gave me full permission to make the lens known, I immediately foresaw the immense success attendant upon it, and I therefore, hesitated to accept that permission forthwith, without stipulating any terms and requested him to propose any commercial arrangement. I had well done to state my proposition in as delicate terms as possible, for I was nearly shown the door, Prof Petzval exclaiming almost in anger: "If you make a fortune "with that lens, you are welcome to it, but how can you sup- "pose *I, an imperial, Professor, would enter into any commercial* "*arrangements?* I am paid by government and my productions "must therefore be public property. To take a patent (as like- "wise proposed) would be against *my principles*" I therefore accepted the lens and began manufacturing it in large numbers. Some months afterwards, the behavior of Prof. Petzval towards me, became much changed: he threw out hints purporting his friends finding out one thing and another. After vain conjectures about the cause of this very strange conduct, a thought striking me, I enclosed £200 in a letter to Prof. Petzval in which I begged him to accept the enclosed amount not as an equivalent of the services he had render to me, but as a token of my gratitude, and that he would suffer me to renew, from time to time, and in like manner, my acknowledgements of his services. The *success* of this experiment was a *perfect one.* I was again well received by him and all went on as smoothly as before, and we continued constructing all those various instruments, I have already been mentioning in my former letters. There is no harm in confessing, that, at the time I began to manufacture these lenses, my means were limited, my business rather small. Every man of business will understand, that, to enlarge the business all at once, to buy materials in large quantities, great outlays were unavoidable, while, at first, the returns were only slowly coming in. By these circumstances my means had been exhausted, (even those £200 above alluded to had been borrowed from a friend of mine) so that I was not for some time afterwards, in the position to offer to Prof. Petzval another material proof of my gratitude. Whether owing to his impatience or to some other cause, the fact was, that in the midst of all the work we did together, he became again so very strange in his behavior towards me, that *I discontinued* my visits and I declare that it is *untrue* that *he has discarded me.* There is no blame whatever lying upon me concerning the rupture of our connection, and should we be put man to man, I have no doubt he would show the same want of *moral courage* and act the same part as he did, when, on a former occasion which I have already mentioned, he was obliged to *disown* those scandalous expressions he used regarding me.

Leaving my gratitude quite out of the question, every one must perceive that my own interest was calling forcibly on me to remain on friendly terms with him as long as possible, as by his productions a rich harvest seemed to be in store for me, but I preferred sacrificing my pecuniary interest to my honor as I could no longer put up with his strange conduct. Considering all the facts mentioned above, can it be regarded as my fault if Prof. Petzval has not shared my success to any extent he would have liked? *Could I do more than offering him to participate in it?*

As an instance of my honest intentions in my dealings with him, I will yet mention the fact, that I once offered him £5,000 (of course not to be paid down at once) for a microscope of his contrivance, on condition it possessed the qualities which he had been describing to me in very glowing colors; a microscope, which, may it be said *en passant*, has up to this moment never enlightened the world.

I do not hesitate to acknowledge, that I am greatly indebted to him; but should not some part of my success be due to my own exertions and to my energy? For how is it that all those opticians, with whom Prof. Petzval connected himself did not obtain the same success in spite of the mighty sound of Prof. Petzval's name?

To show in what light our respective merits, relative to that lens, were regarded in Vienna, I may as well state the words of an eminent man of science, upon meeting me in Paris and presenting me to another gentleman:—"Here is the man to whom "the world owes that lens, for though calculated by Prof. Petz- "val, we should never have had it, without Mr. Voigtlander." There is indeed, much truth in that observation, when comparing what had been done during the comparatively short time of my connexion with Prof. Petzval, and all the time ensuing *nothing at all*, except the wonderful revival of on old lens.

After having shown that it was Prof. Petzval who had deprived me of the means of proving my gratitude to him to a further extent, I will now elucidate the question from another side, remarkable in point of psychology; the man who first refused receiving any renumeration for the lens, accepts afterwards money for it, and in spite of this circumstance by which any *honorable man* would have felt himself *morally bound*, he hands the same lens over to a second and even a third party, and though finding it at first *inconsistent with his principles* to take a patent for the said lens, *adopts*, after a lapse of seventeen years, that very same measure, not for a new lens, but for an old one, made 17 years ago, and, instead of making use of his patent-right against the very man, who pretends having made that lens together with him a long time ago, he contents himself *writing* long letters instead of *acting*. These are very curious incidents, showing, at all events, of how *pliable* a nature, the principles of the learned professor must be, and how *accommodating* to circumstances.

Squaring now our account, I cannot refrain from asking Prof. Petzval in what way he thinks to have come up to his promise and engaged word, which he gave respecting the following point:—

When the first pages of Prof. Petzval's pamphlet were printed and shown to me by him, I found, to my astonishment, my name mentioned in no other way than as the manufacturer of the lens made according to his calculation. I could not help expressing my surprise at his not having stated how far I had partaken in the scientific part of the construction of the lens, and what assistance I had lent him. He appeared much moved by my observation, apologized for having perfectly overlooked that, and offered to make up for his forgetfulness in an appendix, he would write on purpose, the last pages of his pamphlet being yet under the press. I however did not accept his offer, as no doubt, he would have ample opportunity of making up for his present neglect in another work, but I have till now been looking forward in vain for the acquittal of his promise if else he does not consider his present mode of acting towards me as such. Whatever may have been his views regarding me, he ought not to have suffered himself to be influenced by them so far as to become *guilty of a breach of promise*; a man like him of such *immense* (?) merits might easily have spared a small portion of them, and, whilst doing justice to me and himself would certainly not have been the loser by it. To the supposition of Prof. Petzval, that, perhaps I consider myself entitled to put his name on my list of prices on no other account than because others are doing so, I can only retort, that, to put me who have been connected with him for years, on a level with those who have never stood in any relation to him, surpasses, indeed certain limits prescribed by *decency* and *honor*, and saves me the trouble of saying one word more about it. I shall certainly acquiesce in Prof. Petzval's desire to discontinue using his name in my list of prices, as our feelings are but coincident on that point, but I shall only do so after a certain time, to show that I am doing so, not because I consider him authorized to exact a thing in direct opposition to truth and facts, but because I am pleased to do so.

Prof. Petzval's observation purporting that he should not like any body believing him to have found the association with me disagreeable, because he did not consider me to be sufficient a "gentleman" for him, is very ingenious and remarkable from a man, who, in the eyes of many a respectable person, has long since lost every claim and pretension to that title.

Prof. Petzval compares me to the bellows-treader, assigning to himself the part of the organist, in speaking of our respective merits concerning the lens. No doubt, my merits are *very* inferior to his, yet, I must say, that the metaphor would have come nearer to the mark, if he had compared me to the organ builder, inasmuch as, only by my supplying the first requisite elements, his calculation could be carried out.

What part Prof. Petzval is in the habit of assigning to the opticians with whom he enters into negotiations, may be seen from the following statements :—Shortly after our separation, he connected himself with a philosophical instrument maker, but this connexion had no result and was soon broken up again. In the year 1844 he entered into relations with an optician of the name of Waibel, who, unsuspicious and not versed in these matters was made to sign an agreement which left him entirely at the mercy of Prof. Petzval, who, not satisfied with Mr. Waibel having exhausted all his means, under the pretence of his not having come up to the terms of the contract, called upon him for the payment of a *fine of* £800 stipulated in the agreement for such an event. The case brought for decision before an umpire, (fixed upon in the contract in case of disagreement) where Prof. Petzval's statement was proved to be *false* by one *of his own letters*, produced by Mr. Waibel, whereupon the latter was not only *released* from all his obligations to Prof. Petzval, but the contract itself was *annulled*.

Another incident may show in what way Prof. Petzval is "taxing" the public and what we have to think of his accusation that I am the inventor of the "chemical focus" and this pretension that all the lenses made according to his calculation were exempt of it. A five-inch lens, made by Mr. Dietzler, is offered now to me at Vienna in exchange for and part of payment of one of my 5-inch lenses. I am informed that this lens was sold by Prof. Petzval at £25, (my price being £70), warranted to have no chemical focus, *by his word of honor and written promise in two letters of his*, whilst this lens has *a considerable chemical focus*, as I am informed. Should Prof. Petzval like to be served with a proof of this, as well as of all the particulars I have been mentioning, he is welcome to it every moment. After having given himself so much trouble to prove that all his lenses have no chemical focus, he speaks in his last pamphlet on his new lens as an object-glass for a telescope, page 15, of a method of achromatizing a lens, for the purpose of *avoiding as much as possible the separation of the two foci*, the optical and the chemical one. In the same pamphlet he mentions as something new that he examines all his photographic lenses by combining them with an eye-piece and by using them in the way like a telescope ; whilst from the first moment I made the lenses, I tested them in this manner, which was seen and much approved of by Prof. Petzval. This method, therefore, appertains to me and not him, as I shall prove in the sequel. I do, however, not look upon this invention as a great achievement ; on the contrary, only as upon one, as every optician could make by dozens ; but I cannot find it honorable of Prof. Petzval to boast with the idea of another. Having, however, seen that Prof. Petzval does not hesitate to practice *plagiarism* by borrowing from men like Laplace and Euler their fomulas, and by passing them off for his own, (as I shall shew in the sequel), I have perhaps, no right to complain if the learned professor descends to so humble a person as I am for a supply of his inventions. All these are facts which *I am prepared to prove* every moment and which show with what sort of a man we have to deal.

Having given, now, what I consider a very good likeness of Prof. Petzval as a man, in the general sense of the word, I shall also beg leave to analyse him as a man of science, less because he has challenged and authorized me by the attacks to do so; but more, because some persons may believe that I ought to have spared a man who, surrounded by his friends, whose esteem he is enjoying, is to be considered as one of the pillars of science. In his first essay on dioptical researches, Prof. Petzval explains that all optical instruments must undergo a complete change in consequence of his new theory, and promises to publish from time to time, in proportion as the practical execution of these instruments should advance, the results of his researches. How has this promise been realized ? After silence of many years, at last, now and then, a report to the Imperial Academy in Vienna appeared, containing nothing at all of any scientific import, in fact, little more than general reflections and promises of "wonderful things" which were to come perhaps in another ten years, at all events, offering no aquivalent for a patience of fourteen or fifteen years ; the whole put forth in a language little fit for a scientific corporation, but rather conveyed in expressions a tutor might use towards his pupils, while at other times, the somewhat excited imagination of the learned professor takes such a flight that common sense can hardly follow him. There are some blind followers who are encircling him like satellites, but the greatest number of men of science in Vienna and all Germany know perfectly well what they have to think of Prof. Petzval, and when speaking some time ago of his works, one of our first astronomers in Germany observed, that in all Prof. Petzval had hitherto published he found *nothing* remarkable but a *presumption* surpassing all limits of modesty, the inseparable companion of true merit.

We must indeed be astonished at Prof. Petzval's want of tact in causing a meeting of photographers in London to be enlightened by a lecture on his wonderful discoveries, and it was certainly common sense which induced one of the gentlemen present to call out : "What have we got to do with all this?"

Let Prof. Petzval produce a good instrument instead of sounding the trumpet in this way ; and the learned professor may pardon me, if I find great analogy between his mode of proceeding and the custom of a party of rope-dancers who, mounted on horseback, sounding trumpets, and waving color, are passing thro' town, loudly proclaiming what wonderful feats they are going to perform the coming days.

As I should not like any body believing me to use against my adversary any such weapons which were not furnished to me by facts, and as it may at the same time, serve the readers as a key to the behavior of Prof. Petzval against me, I beg leave to quote here a controversy between Prof. Spitzer, contained in the Austrian papers, viz., "The Pres," No. 284, and "The Austrian Gazette," Nos. 473 and 558, to which I refer the reader for full particulars, which to reproduce here would lead to far ; I shall therefore confine myself to quote some passages from Prof. Spitzer's reply to Prof. Petzval's critical memoirs on a mathematical work of the former, contained in the Zeitschrift fut Mathematick and Physick," edited by Professor Schloemitch and Dr. Witzschel, 3rd year, Vol IV. "I am giving up at once all hopes and every intention of convincing thereby Prof. Petzval ; for how can I hope (even if I were disposed) to accomplish a proof to convince Prof Petzval, as it is impossible to me to urge him to the acknowledgement of the fact that a method which has been published more than *three quarters of a century ago*, and which may be found printed almost with the *same letters* and *symbols* in the memoirs of the French Academy of 1782, page 47, belongs to Laplace and not to him ; for upon my attempt of doing so, he says : Nevertheless I call this method my own, as at least for the time being, it has not yet been proved to belong to another man, as Laplace for instance."

. . . .

"Prof. Petzval thinks that this remains to be proved, at least for the present ; well then, let him consult the memoirs of the French Academy of the year 1782, and he will find there, page 47, the same method with the same letters and symbols, not only applied to the differential equations in general but in particular to the differential equations, which he solves miraculously enough, and as if it were by some *funny chance* after Laplace's method and notations.

. . . .

"As Prof. Petzval has read my work from beginning to end, he must, of course, have seen the last page of it ; but then, it appears to me incomprehensible how he can repeat such *untruths* so many times.

. . . .

' I will, in order not to tire the reader, conclude by saying that I do not hesitate to submit my productions to the opinion of mathematicians, for which I am always thankful even in case it should be unfavorable but just; however against a critique, *untrue* and *calumniating*, where faults are imputed to me which I never committed, and where my discoveries are taken from me and assigned to others, *I must raise a solemn protest*."

To this I will add that Prof. Spetzer's memorial was accepted by the Academy, in spite of Prof. Petzval's proposal to reject it, he having been appointed to report to the Academy about that work, and in one of the meetings of the Academy, Prof. Petzval, after having been hammering away upon Prof. Spetzer without mercy for more than an hour, during which time the assembly amused themselves by looking at photographs without listening to him, worked himself at last into such an excitement, as to throw the glove to Prof. von Ettingshausen, and to all those who dared to be of Prof. Spetzer's opinion. Should some persons observe, that all this has little to do with the question at issue, I beg to rejoin, that I am only writing for those persons who take sufficient interest in this affair, and though I allow these allegations to be only of secondary importance in my controversy with Prof. Petzval, yet, as I have once entered upon this certainly unpleasant task to depict a man like Prof. Petzval, I must carry it through, and the above-mentioned facts will, no doubt, come to the point, as they show that a man, who must suffer himself to be *accused publicly* by another man of science of having spoken *untruth* and of having *calumniated* him, may feel still less scruple to act in a like manner towards me, whom he perhaps considers to hold an inferior station in life.

I shall, however, proceed now to the question itself by proving not only that: 1st, in contradiction to the assertion of Prof. Petzval, a lens for taking landscapes was really made by me 18 years ago according to his calculation, but likewise by showing, 2d, this lens to be the same as the lens in question in our controversy.

Prof. von Ettingshausen, after his return from Paris in 1840, where he had been in direct intercourse with Daguerre himself, was considered, at that time, as the representative of this new art in Vienna, and, anxious to bring it to the highest degree of perfection, he desired Prof. Petzval to investigate why the lenses used by Daguerre had a stop, and whether he could not contrive better lenses. Prof. Petzval entered into the question, and the result of his investigation was a lens for landscapes and another for portraits; in fact, a compound lens consisting of three achromatic lenses constructed exactly in the way of his present lens; only the two systems were mounted separately instead of being united in one body.

It will be seen from this statement that the very desire of Prof. von Ettingshausen to get a better lens for landscapes, occasioned the existence of a lens for landscapes even before one for portraits was desired.

I have already hinted as my intention that the case between Prof. Petzval and me must be brought before a forum, where I shall not fail to call upon Prof. von Ettingshausen to certify, upon his oath, all my statements, and I have good reason to believe that this gentleman will remember all the particulars concerning this subject. I am also happy to say that I am able to furnish by the subjoined letter from Mr. Martin, custos of the imperial polytechnic library in Vienna, the most *decisive* and *convincing proof* of all my assertions.

"VIENNA, Oct. 18, 1858.

"DEAR SIR—You desire from me some information on three points relating to the time when we were in scientific connexion with one another.

"Soon after Daguerre's invention, I tested the efficiency of the first apparatuses, made by you according to Prof. Petzval's calculation, One of these apparatuses a double achromatic lens, intended for taking likenesses, showed already upon the first trials the inconvenience that, when the focus was adjusted upon the eyes of the person, whose likeness was to be taken, that the ear-flaps appeared sharply marked, whereas the eyes appeared delineated with less precision. At first this phenomenon was attributed to a wrong position of the ground-glass relatively to the Daguerrean plate; but afterwards, upon closer examination, the same inconvenience was likewise met with in other apparatuses, *and it was scientifically proved to be owing to the difference in the foci of the optical and chemical rays of light.*

"The second point relates to the method of testing your lenses, and I recollect that, *from the first moment, you used to combine them with an eye-piece, and test them in the way an object glass for a telescope is tried.*

"The third point concerns the testing of a combination of lenses, *calculated by Prof. Petzval for the purpose of taking landscapes*, which I undertook *nearly at the same time*

"This combination of lenses was to produce a plane image and a large range, and the image was to fill up the whole surface of a normal Daguerrian plate. The aperture of this combination was about $1\frac{1}{2}$ in., and the focal distance 10 ins. or thereabout. The image obtained by this combination was very precise indeed, but affected by two inconveniencies: 1st—there was not scope enough when setting to the point on the ground-glass to adjust the difference in precision between the fore and back-ground, and the slightest change in the relative position of the ground glass and the plate occasioned unprecise images. 2d—The images of the objects to be represented (houses) were too small in comparison to the image. In the image of a large place, a great part of the surface of the plate was taken up by the ground and the sky, while the buildings occupied, proportionally, but a small streak of it. In consequence of these inconveniences, and, perhaps, also from other reasons, this combination of lenses was, at that time, laid aside, and has been, for ought I know, no more used till now.

"This is the averment of the three points, which you solicit from me, and which I think I have no right to withhold from you. As you intimated that, perhaps, certain circumstances may induce you to summon me as a witness in a legal way, I preferred summing up, in a concise manner and by writing, what is still alive in my recollection and whatever I am able to answer for. As to the shape of the lenses, their curvatures and the arrangement of the whole combination, I don't know at all anything positive.

"It appears to follow from your request, that you intend implicating me, with regard to my statements, into your controversy with Prof. Petzval. I confess candidly that every public proceeding against the said Prof., whom I esteem on account of his scientific productions, would be the more disagreeable to me as I am convinced that if Prof. Petzval's declarations should not be in perfect unison with mine, this may be ascribed to the pardonable circumstance *that Prof. Petzval may have forgotten the facts mentioned in my letter*, in consequence of the multiplicity of analogous pursuits in which he has been engaged during the long interval of eighteen years, or thereabout, between the present and that time.

"Yours truly,

"MARTIN."

"To Mr. VOIGTLANDER."

I cannot but find it very honorable on the part of Mr. Martin, that he tries to find out an excuse for Prof. Petzval, with whom he stands somewhat in private intercourse, but I am sorry to say that I do not consider it possible Prof. Petzval should have forgotten such important facts, especially after my having recalled all the particulars to his mind.

It will be found that the letter of Mr. Martin confirms my statements about three different points: 1st—"The existence of the chemical focus in the very first lens for portraits;" 2d—"my having tested the lenses from the first moment, in the way Prof. Petzval describes as his own and new method;" 3d—"my having made a lens for landscapes at the same time when making another for portraits." It will be found afterwards that the description of the lens by Mr. Martin coincides exactly with the lens stated in the document of Prof. Petzval; that the lens was not found quite satisfactory was only owing, as I stated already, to the circumstance that *no stops* were used; let the new lens, as presented now, be used without them, and the same inconvenience regarding objects in different distances will be encountered. I have now to prove that this lens is no other than the so-called new lens of Prof. Petzval, although at all events in consequence of the most positive statements of Mr. Martin, Prof Petzval must be found guilty of having shamefully spoken untruth in denying my having worked according to his calculations, any other lens than the one for taking portraits. The following is a legalized copy and translation of a drawing and description of two systems of lenses with their curvatures, handed over to me by Prof. Petzval, eighteen years ago. A similar legalized document I have placed into the hands of my agents in London, Messrs. George Knight & Co, for the inspection of every one, to whom I have likewise forwarded the Journal containing the controversy between Prof. Spitzer and Prof. Petzval.

First double lens, consisting of a double-convex lens of crown glass, and a double-concave lens of flint glass.

$r_1=36{,}4''' = 3''\ 0{,}4'''$ $r_2=-28{,}5'''=-2''\ 4{,}5'''=r_3$ $r_4=300'''\ 25'''$

$r_1=3{,}00'''$ $r_2=-\ 2,\ 3$ $r_4=\ 25''$

The dispersing lens of compensation, consisting of a double-concave lens of crown glass and a convexo-concave lens of flint glass.

$r_1=-86{,}4'''=-7''\ 2{,}4'''$ $r_2=50{,}8'''=4''\ 2{,}8'''$ $r_3=-126{,}3'''=-10''\ 6{,}3'''$ $r_4=-3{,}69'''=-3''\ 0{,}9'$

$r_1=-7.11''$ $r_2=4.32''$ $r_3=-9{,}03''$ $r_4=-3.11''$

The converging lens of compensation, consisting of a convexo-concave lens of flint glass, and a double-convex lens of crown glass.

$r_1=72{,}1,''=6''\ 0{,}1'''$ $r_2=25{,}3'''=2''\ 1{,}3''$ $r_3=31{,}3'''=2''\ 7{,}3''$ $r_4=-102{,}8'''=-8''\ 6{,}8''$

We certify this to be a copy of a drawing and a literal translation of a German document, presented to us by M. Voigtlander.

Dr. Aug. Elhde, *Prof. of Mathematics and Natural Philosophy, at the Collegium Carolinum.*

Dr. Herman Scheffler.

These signatures verified,
Brunswick, Nov 12, 1858.

William Huch, Public Notary.

It will be observed that, with regard to the first lens, the numbers marked by pencil are but a reduction in inches and decimal parts of an inch of the numbers noted in the first columns, which are expressed in twelfth parts of inches, with regard to the second lens, the two columns of numbers do not coincide, but each of them are denoting different curvatures, of which I shall speak in the sequel.

By multiplying all dimensions and curvatures as given in that document by 2, we get three lenses of 3 ins. aperture, forming two systems of lenses with the following curvatures :

FIRST LENS.

$r_1=6''$ $r_2=r_3=-4{\cdot}74''$ $r_4=50''$

SECOND LENS.

$r_1=-14{\cdot}22''$ $r_2=8{\cdot}64''$ $r_3=-18''06$ $r_4=-17{\cdot}133''$

THIRD LENS.

$r_1=12{\cdot}166''$ $r_2=4{\cdot}216''$ $r_3=5{\cdot}216$ $r_4=-17{\cdot}133''$

The 3 ins. lens of Prof. Petzval, as presented by him to the public, is constructed in the same way, and consists of the same two systems of lenses, perfectly identical in principle with those in the above document and only with some insignificant differences in some of the curvatures. Taking at first only the first and second lenses into consideration, as forming the combination for landscapes, whilst the first and third lenses form a combination for portraits, of which I shall speak afterwards, I beg to state that I have verified this new lens of Prof. Petzval and found the aperture of the second lens only two-thirds of that of the first, whilst in the drawing they are equal. The curvatures are as follows :

$r_1=-14{\cdot}445''$ $r_2=8.5''$ $r_3=-21''$ $r_4=-6.143''$

In comparing these curvatures with those above, we find the following differences :

$\triangle r_1=0{\cdot}225''$ $\triangle r_2=0{\cdot}14''$ $=2.94''_3$ $r_4=0\ 077''$

$\triangle r$ denoting the difference.

With regard to the aperture of the two lenses, I cannot allow this to have any influence upon the principle or nature of the lenses, and it can be of no importance at all, because Prof. Petzval himself, by applying a number of stops to the second lens, alters that aperture each time he changes the stop; therefore the aperture of the second lens is variable, while that of the first lens is constant. The same thing it is with those little differences in the curvatures, for it is obvious that if such differences could gain for the lens the name of a new lens, each time other materials were used, different curvatures according to the tabulas must be obtained, and therefore as many so-called new lenses might be presented to the public as different materials were employed, while all these lenses ought to be regarded as of the same principle and resulting from the same theory. Every optician knows that even in an object glass, which demands a great deal more care, there are some curvatures which are very delicate, while others are not so. He knows that the inner curvatures, having more influence upon the spherical aberration, must strictly be worked according to the dimensions furnished by the calculation, whilst with regard to the exterior curvatures, which are bearing more upon the chromatical aberration, a certain scope is allowed to him, variations in the exterior curvatures being, even to a certain extent, founded upon theory, as the achromatism of a lens can never be obtained perfectly, there always remaining a secondary spectrum. The calculator is therefore at liberty to consider exactly such colors as will suit his purpose, and according to his choice, he will get, with the same materials and upon the same theory, some of the curvatures different, whilst others will remain the same.

I further beg to insert here the description of the new lens by Prof. Petzval, deposited at the Patent Office in Vienna.

The new lens consists of two achromatic lenses of which the first as well as the second one are again compounds of two parts, viz: a lens of crown glass and another of flint glass. The lens of crown glass of the first compound is a double-convex one, the less convex side being turned outside, while the more convex side fits exactly in the inner part of a lens of flint glass both being cemented, this lens of flint glass is double-concave, the second curvature being very little concave, so that the compound is very nearly plano-convex, but in fact being considerably convex towards the outside, with a slightly concave part inside. The exact form is seen by means of the drawing.

"The second achromatic compound, consisting of a lens of crown glass and another of flint glass with an aperture somewhat smaller than that of the first lens, is placed from this first lens at a distance varying from one-twelfth to one-sixteenth of the focal length of this first lens, according to the purpose the lens is to serve for. The lens of crown glass is double-concave, the most concave curvature being turned towards the interior of the apparatus; the second lens of flint glass is a meniscus, turning the convex part towards the interior of the camera, in the position and dimension seen in the drawing.

"The dimensions of the lens are forming no prominent part of the invention, as they may be executed on any dimensions provided the similarity be already observed, and as they will all give most perfect pictures if executed in such a way.

"JOSEPH PETZVAL, Professor.

In this description there is no question about apertures and curvatures, only the principle is mentioned. This being the same in both the lenses, allowed by Prof. Petzval himself, therefore, according to his own declaration, his lens cannot be called for. To show what little influence those little differences can have upon the practical effect of the lenses, I beg leave to adduce here a curious incident, Upon finishing and testing a certain number of my 2 ins. Orthoscopic lenses, I found that two of these lenses gave, in the usual position of the ground glass, no picture at all, but that the picture was a pretty good one at a considerably greater focal distance. I examined thereupon the different curvatures of the lenses, fancying that some mistake had been committed in the working of the lenses, and upon finding all the curvatures correct, I ascertained the weight of the lenses and discovered that the meniscus lens, instead of being made of flint glass, was made of crown glass. If such a difference could have no great influence upon the nature of the picture, what can then those differences in the curvatures signify ?—indeed, the second lens is a very insensitive one in comparison to the first lens; for if in this first lens, for instance, the flint glass lens was exchanged for another, also of flint glass, but of different density, the effect is entirely lost, and the whole picture is found covered with colors. I have forwarded one of these meniscuses, made of crown glass instead of flint glass, to Messrs. George Knight & Co., and every photographer will oblige me by making the trial himself. That any little differences in the curvatures have no influence upon the quality of the lens, may be seen from the report of the committee in Scotland, who pronounced my lenses to be of the same excellency as those of Prof Petzval; yet my lenses are not worked according to the curvatures stated in the document of Prof. Petzval, neither are they like the curvatures of the new lens made by Mr. Dietzler, of course, all this regard to the second lens, the first one being in every case the same. The curvatures of my second lens are as follows :

r=—15"	r=8·5"	r=—22"	r=—6"
1	2	3	4

There are no considerable differences in the curvatures; still Prof. Petzval pretends in his last letter that I have copied his lens so well as to leave a difference of 3 inches between two of the curvatures, which clearly shows that Prof. Petzval is writing about things without having given himself, previously, the trouble of *ascertaining the facts* My being able to ascertain in the curvature of a lens to some thousandth of an inch will prove whether I am obliged to have recourse to so clumsy a method as Prof. Petzval supposes me to have employed in copying his lens, should the formulas received from him not have saved me that trouble.

Having shown that, in spite of those differences of the curvatures as really existed in both the lenses, the one, now presented as new, cannot be considered as such. A most extraordinary discovery I only made a few days ago will prove the perfect identity of both the lenses. Prof. Petzval having entrusted to me the numbers marked by pencil as those according to which the curvatures were to be done, I had of course no occasion whatever to ascertain whether these numbers were coinciding with those of the first columns, particularly after knowing that to be the case regarding the first lens; what was then my surprise at finding, *now*, that the two columns of numbers denoted *different curvatures.* Reducing the first column into inches and decimal parts of an inch and multiplying the numbers we get by two, we obtain the following curvatures :

r=—14·4"	r=8·466"	r=—21·049"	4=—6·15"
1	2	3	4

the curvatures of the new lens being, as we have seen :

r=—14·445"	r=8·5	r=—21	r=—6·143
1	2	3	4

we get therefore,

Dr=0·048"	Dr=0 034"	Dr=0·049	Dr=0 07
1	2	3	4

which proves these two lenses to be perfectly identical, for I should think the most scrupulous person must allow those differences only arising from the execution of the lenses, *and the proof is thereby established that Prof. Petzval in spite of his having caused me to execute the lens with different curvatures, has already, at that time, communicated to me the very same curvature according to which his present lens is worked; it is proved that he has spoken untruth and practised deception upon the public when presenting his lens as the result of a new calculation.* I am quite at a loss to guess what may have induced Prof. Petzval to practice such mysticism upon himself, me, and all those persons in expectation of the new lens for landscapes, when already at that time he was in possession of it, in spite of which he suffered the world to feel the want of it for seventeen years.

The identity of the two lenses throws another very singular light upon him. Having heard Prof Petzval repeatedly deny my working according to his calculations on account of the want of those indispensable tabulas, we meet here with two lenses of his, one made *seventeen years later* than theo ther, by *two different opticians*, and, of course, of quite *different materials, but both with exactly the same curvatures*, which proves to evidence, for a second time, that Prof. Petzval *has not made use himself of his own tabulas*, in spite of their often mentioned necessity.

What must we think of Prof. Petzval when comparing that fact with the following passage in one of his letters: "Perhaps in a whole century optical glass is not produced twice of the same identity. Therefore the calculator is obliged to extend his calculations over all descriptions of crown and flint glass," &c., &c.

There is in the English language, such a word as *humbug*. It is certainly not a very polite one, yet there are occasions where it may appear well applied, and could not easily be replaced by another expression.

I shall now pass on to Prof. Petzval's lens for portraits.

We have seen that the first lens of the combination for landscapes as well as portraits of Prof. Petzval is the same as that stated in the document.

I shall now examine his third lens, forming the second lens of the combination for portraits of which the curvatures are found as follows :

r=12 166"	r=4·216"	r=8.216"	r=—17 662"
1	2	3	4

Comparing these curvatures with those resulting from the document and stated previously, it will be seen that *also this lens* *is exactly the same as the corresponding one in the document*, with only this difference in one of the curvatures,

$$\frac{\triangle r = 0\ 589''}{4}$$

which shows that also the portrait combination of Prof. Petzval is no new one, but exactly like mine. Be it observed that in the drawing the second pair of lenses are in direct contact, while all my lenses had, from the first moment, been separated by a ring. Prof Petzval and I finding that, by this ring, we could compensate some errors, which must have taken place in the calculation. As theory did not demand such a separation, as we see from the drawing, and as the second pair of lenses in the new portrait-lens of Prof. Petzval are separated in a like manner, I consider myself fully authorised to say that this lens cannot be the result of a new calculation. Indeed, it would be a very strange coincidence of circumstances, if two lenses, made according to two different theories, within 17 years, of quite different materials, should have the same curvatures with the sole exception of a difference in one of them, and that in *both lenses the same means to compensate an error* should have been adopted. I can perfectly well account for the circumstance of one of the curvatures differing. This lens has been made of crown glass of a *greenish color* and of *different density* To correct that difference, one of the curvatures was changed a little, and, for the same purpose, the lenses were also a little more separated than mine are. I invite every photographer in possession of this new lens made by Mr. Dietzler, to exchange this second pair of lenses for the second pair of one of my 3 ins. lenses, and he will improve the lens somewhat, for he will get more light and rather more flatness of field.

If I am well informed, Prof. Petzval has proved to the Academy at Vienna, in consequence of my memorial, that his new lens is the result of a new combination. We have seen how far this has been the case; but even allowing it to be a fact, he cannot make me change my view on this subject. Prof. Petzval has not presented to the Academy his calculations, but only the lens, as the result of it; therefore this lens, being neither new in principle nor in construction cannot be called new.

The way by which Prof. Petzval had arrived at the same former result may be new, but this cannot vindicate for him the right to transfer that name to the object itself, as we may arrive at the same end by a multitude of different ways, and as we have not to do with *mechanical speculations*, however new and interesting they may be, but with a *practical object*. If Prof. Petzval had presented his new lens as an improvement or as a revival of his former calculation, and if he had mentioned at the same time, as he was in truth and honor bound to do, that a lens had formerly been made on the same principle by me according to his calculations, no protest or controversy would have been possible on my part, and the merits of Prof. Petzval as to that new lens would have remained the same. So far the question whether the lens may be regarded as new or not, seems to be decided, but this question has still another side more important to me. Prof. Petzval has denied my even knowing the new lens; he has accused me of saying untruths, and of deceiving the public by pretending to have made such a lens according to his calculation at the time already mentioned, all with the malignant purpose of impairing my character. The proofs I have given for all I have stated would, indeed, save me the trouble of any further comments, the facts speaking sufficiently for themselves, and I fear that by my long discussion, I have already bestowed upon Prof. Petzval and his conduct more importance than he really deserves; however, it is my earnest desire to bring, by all means, this angry controversy to a close, the more so, as I feel neither the desire nor the inclination to ward off those new attacks, with which my adversary may assail me from his inexhaustible store of malice, calumniation and sophistry, in spite of all the facts I have stated. It must therefore be my desire to prove them in a legal way, and to that effect, I should, at once, proceed against Prof. Petzval in Vienna, but having been informed by my attorney there of the impossibility of this proceeding on account of Prof. Petzval not having attacked me in Vienna, I must adopt such measures as to force him to proceed against me, and it is with this particular view that I publicly denounce him to be a LIAR and CALUMNIATOR, in PARTICULAR reference to his denials of my having received from him the document referred to, and, therefore, of my having known the lens in question, in which points I have proved that he has been lying and calumniating. I think I have left to Prof. Petzval, in order to ward off this insult, no alternative but proceeding against me, which I shall expect him to do in Brunswick. Should he content himself only with writing letters in the style of his former ones, instead of clearing himself of my charge, any honorable man will be able to draw his conclusions upon such proceeding, and must shrink from coming into contact with a man *who puts up with such an insult*. Being much afraid that, in spite of all this, Prof. Petzval will *not* proceed against me, but rather try to screen himself behind some pretence or other, such, perhaps, as he alleged, viz: that the dispensation of justice in cases of intellectual property is very expensive, *my purse is offered to him*, inasmuch as *I pledge herewith my word to pay all the expenses* of his law-suit against me in case he should be able to prove *that I am not in possession of that document*.

The conduct of Prof. Petzval is so very strange that many a man raises with me the question how he will escape the public censure, when in case of a law suit, the document will be produced against him, *as well as in case he should avoid proceeding against me*, as I have challenged him to do. *Should he dare to disown his hand-writing the document not being signed?* For that even my measures are already taken, that paper having been presented only a short time ago, to some persons of high scientific standing in Vienna, who have *recognized it as written by Prof. Petzval*, and who have engaged their promise to certify in case of necessity this recognition upon oath. The only answer to this query is that Prof. Petzval knows he only runs the risk of being regarded by some persons more in the light, in which he already appears to those, who know his transaction with Mr. Waibel, his controversy with Prof. Spitzer, and his conduct towards me. He is much like a man who has nothing more to lose, but in staking all on one card, is playing "va-banque," his sole object being to suppress, by any means, my competition. In England some comments have already transpired against me, some persons not having found it credible that an optician like me should have known such a lens for so long a time; the authority of Prof. Petzval has been considered of sufficient weight against me, and so on. I allow that appearance were against me, and must find it excusable that many a man could not suppose Prof. Petzval, in his position, acting in such a manner towards me; yet I cannot conceal that these comments have been to me a source of deep and bitter mortification, considering my social position and the perfect justice of my cause. I have however, the satisfaction that already one of those gentlemen, who had commented against me, after having seen my first answer to Prof. Petzval's letter, expressed in a private letter, his regret at having hurt my feelings, and I hope that *now, as all the facts are known*, the public cannot waver in whose favor to pronounce the verdict. I deeply regret to have been obliged to divulge to the public the private character of a man, to whom the photographic world is certainly much indebted, but no other alternative was left to me, my honor having been at stake. Whatever may be the merits of my adversary, every man of honor must feel with me that these cannot entitle him to have acted in so *mean* and *despicable* a manner towards me. VOIGTLANDER.

Brunswick, November, 1858.

A cheerful face is nearly as good for an invalid as healthy weather. To make a sick man think he is dying, look half dead yourself. Hope and despair are as catching as cutaneous complaints. Always endeavor to feel sunshiny, especially in a sick room, and to look so, too.

Dyspepsia—the remorse of a guilty conscience.

From London Phot. Journal.

CHEMISTRY,

In its Relations to Art and Art Manufacture, Considered as a Branch of Education.*

The object of chemistry is to search out and indicate every alteration which takes place in the constitution of bodies; it is to decompose the compound materials of organic and inorganic matter into their simplest forms, and from these simple forms to compose new conditions of matter. An infinite variety of forms exist around us which, the chemist has shown us, consist of comparatively few simple substances, which, in the present state of our knowledge, are undecomposable. We learn also that we may, under certain conditions, effect a recombination of these elements, and thus produce compounds resembling those which are the result of nature's "wonderous alchemy," and numerous others which are not found in nature. It may appear to many that such a science as this, requiring a well-trained eye, and a hand adapted to all the requirements of the most delicate processes, is not fitted to become a branch of popular education. It is quite certain that all men cannot become chemists—that is, attain to the position of successful analysers, much less become discoverers of new combinations: but every man may know so much of the elements of the science as to avoid the errors which are constantly being made in the details of manufacture.

The advantages of chemistry to the arts are,—

1st. The production of new combinations which can be at once applied to some useful end.

2d. The discovery of methods for utilising products which appear worthless, which have been therefore rejected.

3d. It devises methods by which operations may be much quickened, and results obtained with greater facility: thus economising time.

4th. Chemistry furnishes substitutes for mechanical contrivances, and thus, by relieving, adds to human power.

It is not easy to select examples of each of these from the number which present themselves; we shall, therefore, be content with such as may be regarded novelties. The most curious of those belonging to the first class are probably the artificial essences and extracts of fruit, The extracts of pine-apple, bergamot pear, the apple, the grape, and the flavoring of the cognac brandy, are all of them combinations of carbon, hydrogen, and oxygen in certain proportions. The delicate odors of flowers are but variations of the same elements, Pine-apple oil is prepared from butyric acid, which is developed during the production of rancidity in butter. The bergamot-pear oil is obtained from one of the most offensive of chemical products—fusel oil, which is obtained during the distillation of brandy from potatoes. By a slight change this fusel oil is converted into valerianic acid, and into an extract which in every respect resembles the flavor of apples. The well-known essence of bitter almonds is now imitated exactly by a chemical change effected in the oil of compressed gas. Of these most singular combinations Dr. Hoffman remarks in a letter to Liebig:—"The application of organic chemistry to perfumery is still in its infancy, and we may expect that a careful survey of those ethers and etherial compounds with which we are already acquainted, and those which are daily being discovered, will lead to further results. The interesting caprylic ethers which M. Blouis has lately discovered are remarkable for their extremely aromatic odor; thus the acetate of caprylic oxide possesses an odor as strong as it is agreeable, and promises, if it can be obtained in larger quantities, to yield materials for perfumery."

This subject has been investigated with much care, and we have now thus artificially formed the essences of geranium, millefleurs, new-mown hay, jassimine, and many others. All these are prepared from two or three common and cheap essential oils, and from organic elements. Beyond perfumes of the most agreeable kind, ordors of the most disgusting and nauseous character are likewise produced, showing the extensive applica-cation of the discovery. Nearly all soaps, the largest portion of the fancy confectionary, and most articles for the toilet are now prepared from the productions which were formerly rejected as disgusting and useless.

In all our manufactories an immense amount of material is allowed to flow to waste. The rivers of the north of England run with spirits of salts, and the ponds of our woolen manufactories are covered with dirty grease. These waste products are now collected, the first is employed in the formation of a new white lead of a beautiful character, and the last purified to form soap and candles. The white lead (the oxychloride of lead) requires a little further notice. Few manufactures are of more unhealthful character than the manufacture of white lead in the ordinary way. In this process the ore of lead is attacked by hydrochloric acid (*muriatic*) and a soluble chloride of lead formed. This soluble chloride, having a large surface exposed to the air, absorbs oxygen and falls as a fine white powder (*the oxychloride*) which is at once fitted as a pigment. It is found to possess many most important properties for the house and ornamental painter. It appears also that in the preparation of this variety of white lead, the health of the men is preserved free of any injury. We cannot learn that much has been done by our chemists of late years in the production of new pigments, a purple from tungsten, which has not yet come into use, and improvements on the white oxide of zinc, which have led to its more extended use, are the only instances with which we are acquainted of recent date.

The preparation of artificial ultramarine has been regularly improving, until now, at an exceedingly cheap rate, a color in all respects equal to that produced from the *lapis lazuli* by a tedious and expensive process, is rendered in the color-market at prices which render it available for the most ordinary purposes. The application of this to calico-printing is instructive. It was suggested that this beautiful color might be employed on calicoes and muslins by combining it with albumen, and the flowers on ladies' dresses were printed at the cost of barrels of eggs, though even then the colors on the muslins did not resist the operations of the laundress. Chemistry showed that cheese was soluble in ammonia, and the ultramarine when mixed with this solution, could be applied to the textile fabric. The ammonia soon evaporated leaving the cheese and ultramarine combined with the fibre of cotton, and perfectly permanent. Madder is employed in great quantities in the process of calico printing. The spent madder has been for years accumulating in the calico works. A chemist proving that these heaps of refuse still contained one-third of the original quantity of the coloring matter, showed how it could be readily extracted, and these are now become new sources of wealth. Stannate of soda is most extensively used as a mordaunt; its mode of preparation was most difficult, and it is now rendered remarkably easy. Tin ore and salt are roasted together, the soda of the salt combined with the oxide of tin, and thus by one process all is accomplished, The requirements of the tallow-chandler have been constantly increasing, chemistry has been taxed to the utmost to provide fats, and in their search to supply these wants, the chemists have preduced fats from the vegetable world which remove us from entire dependence upon those of Russia, and even the oils produced from the mineral kingdom promise to remove the necessity of the whale fisher's incurring the dangers of the Arctic seas.

Such are but a few of the great advantages which chemistry has afforded us. They have been selected as showing the real utility of the science, in answer to those who ever desire to see at once the useful in a discovery. We hold that every truth must sooner or later become useful, and that by improving the general acquaintance with the sciences we shall dispel the doubts which some have of its advantages.

Art and Science are closely connected; in some cases art precedes science, and in others science leads the way to the improvements of art. Iron and steel were prepared of the finest quality by art: science discovers the cause, and imitates the productions, of art. But all, or nearly all, our vast manufactories, our cotton factories, bleaching establishments, cotton printing establishments, chemical works, engineer's shops, gas-

* Continued from page 350.

works, soap and candle manufactories, and many others are obviously the results of science. The advantages of chemistry—of science—in our educational systems are therefore evident. But let us not run on too hastily, and, by forcing, destroy the plant to which we desire to give strength. Knowledge is not power unless the possessor knows how to wield the instrument he holds. A giant's club in a child's hand is not more useless than scientific knowledge is to him who has not received that educational training which enables him to use the truths he has learnt. Therefore let us first train the mind in those habits which are necessary to the correct cultivation of inductive science, and to enable the student to advance carefully to the generalitias of a deductive philosophy.

Sir Humphrey Davy's remarks some years before his death should bu applicable now : "You have excelled all other people in the products of industry; but why? Because you have assisted industry by science. Do not regard as indifferent what is your true and greatest glory. Except in these respects, in what are you superior to Athens or Rome? Do you carry away from them the palm in literature and fine arts? Do you not rather glory, and justly too, in being in these respects their imitators? Is it not demonstrated by the nature of your system of public education, and by your popular amusements? In what, then, are you their superiors? In everything connected with science—with the experimental arts. These are your characteristics. Do not neglect them. You have a Newton who is the glory, not only of your own country, but of the human race. You have a Bacon, whose precepts may still be attended to with advantage. Shall Englishmen slumber in that path which these great men have opened, and be overtaken by their neighbors? Say, rather, that all assistance shall be given to their efforts; that they shall be attended to encouraged, and supported."

Robert Hunt.

From Photographic Notes.

EXPERIMENTAL PHOTOGRAPHY.

We insert at page 302,* a communication from Mr. Belfield Lefevre, of Exeter, which we consider to be the most valuable contribution that has been made for some time to the Chemistry of Photography. It relates to the Theory of the Daguerreotype process. That process is so little practised now that the title of this paper may not perhaps recommend it to the notice it deserves, but it must be remembered that there are many strong analogies between all the processes in which iodine, bromine and silver occur, and that any investigation which throws light on the theory of one of them is likely to clear up some difficulties in the others. Take for instance any collodion negative of a view in which the sky or some strongly lighted objects occur, and which has received sufficient exposure to bring out the details of dark objects in shadow, and examine such a negative by reflected light, it will be seen that the over-exposed lights have a *blue*, the properly exposed lights a *brown* tint. The same thing happens in the daguerreotype; the over-exposed lights being *blue*. Or compare the solarized parts of a glass positive with those of a daguerreotype, and the same blueness is in both cases perceived. This similarity in the effects due to over-exposure proves, we think, more than anything else, that a strong analogy exists between the action of light on the sensitive daguerreotype plate, and the sensitive collodion film; so that if we can make out the theory of one process, we shall be very likely to gain valuable practical information with respect to the others.

In the daguerreotype process the effect of bromine as an accelerator is very marked, while in the collodion processes difference of opinion exists as the effects of bromine, and the general belief is that it is *not* an accelerator. Until very lately our experiments with bromides added to iodides in collodion led us to believe that for some reason or other the analogy between the daguerreotype and collodion processes was imperfect as regards the effects of bromine; and although there was reason to suppose that such an analogy might exist, yet experiment seemed to settle the point the other way. Now, however, our opinions are changed, and a number of convincing experiments which we have recently made lead to the conclusion that bromine *has* the *same* accelerating influence in the collodion as in the daguerreotype process; that is to say, that collodion may, *under certain conditions*, be made six times as sensitive with a mixture of bromide and iodide, as with an iodide or bromide alone. These experiments we will now describe :

Take plain alcoholic collodion, such as we have described in back numbers of the *Notes*—also two solutions, one composed of alcohol S. G. ·825, containing 14 grains of iodide of potassium to the ounce, the other of alcohol S. G. 825, saturated with bromide of potassium. Then iodize some collodion with the iodizing solution by adding one part to three of plain collodion, and call this collodion I, because it contains iodide alone. Next, bromise the plain collodion by adding one part of the bromide solution to three of plain collodion, and call this collodion B, because it contains bromide alone. Lastly, make a mixture of equal parts of the iodizing and bromizing solutions, and bromo-iodize the collodion by adding one part of this mixture to three of plain collodion, and call this collodion M, because it contains the mixed iodide and bromide.

We have now three collodions ready for use. In order to compare them in the positive process, make a nitrate bath of *pure* nitrate of silver, and acidify it with one minim to the ounce of *nitric* acid. Make the experiments with a twin lens stereoscopic camera, furnished with single view-lenses, and a quarter-inch stop. (Mr. Thomas is quite right in saying that portrait-lenses are of no use for testing collodions) Coat one-half of the plate with one collodion, the other half with another collodion, place it horizontally upon the dipper, immerse it in a large bath, and develop the pictures with the same ordinary developer for positives. Point the camera at a view out-of-doors, including high lights and strong shadows.

This being understood, first coat one half of the plate with collodion I, and the other with collodion B. I gives a creamy film; B a film which is exceedingly pale, in fact scarcely visible. Give a reasonably long exposure, say ten seconds, so as to bring out all the details fully. On developing, both pictures will come out together; there will not be much difference between them except in tone. Now compare collodion I with collodion M. The latter gives a very pale film, but not so pale as B. On giving the same exposure as in the first experiment the picture taken with M will be greatly over-exposed. Next reduce the exposure to two seconds, or less, and the picture taken with M will be correctly timed, and all the details in the shadows fully brought out, while that taken with I will only exhibit indications of the high lights.

From these experiments we learn that the analogy between the daguerreotype and collodion processes holds good as regards the accelerating influence of bromine, *under certain conditions*, that is, as we shall see presently, when *organic matter is excluded from the nitrate bath and developer*.

Now, since we have found an exceedingly sensitive process, and the means of accelerating iodized collodion by the addition of a bromide, let us repeat the experiments with a nitrate bath acidified with *acetic* instead of *nitric* acid, and use a developer composed of proto-sulphate of iron and *acetic* acid; that is to say, let us introduce organic matter into the nitrate bath and developer, and note the results. The peculiar sensitiveness of collodion M now nearly disappears, and instead of being six times as sensitive as I, the ratio is only perhaps as five to four.

But to render the retarding effects of organic matter on bromized collodion still more evident make use of a *negative* with collodion M. All its good qualities vanish. While I gives a fine negative with a certain exposure, M requires perhaps double the exposure, and then gives a feeble worthless negative.

It appears then from these experiments (which we have re-

*Phot. & F. A. Journal, page 266.

peated so many times and under such varying circumstances as to leave no doubt of their accuracy,) that the most sensitive photographic process at present known is that in which a collodion positive is obtained with a collodion containing a mixture of iodide and *bromide*, a bath acidified with *nitric* acid, and a developer containing proto-sulphate of iron acidified with *nitric* acid. It remains then to consider whether such a positive, consisting as it does of a thin metallic film, can be intensified into a negative.

The attempt to intensify a thin metallic film of this kind with a mixture of a developer and nitrate of silver altogether fails. The plan to which we must have recourse is the following:— After fixing and well washing the positive, pour over it a solution of bi-chloride of mercury. This will bleach the picture and convert the silver image into one composed of chloride of mercury, (calomel), chloride of silver, and perhaps a little black oxide of mercury. This image, when viewed by transmitted light, is more intense than before; but its intensity may be greatly increased by first washing it thoroughly, and then pouring over it a weak solution of sulphide of ammonia, which forms black sulphide of mercury.

With a portrait lens of 4 ins. or 5 ins. focus, a half-inch stop between the lenses, and the sensitive process which we have described, an instantaneous positive may be taken of objects out-of-doors tolerably well-lighted, and the details of the shadows fully brought out. This positive may then be intensified into a negative by means of bi-chloride of mercury and sulphide of ammonium, judiciously applied; or it might be converted into an alabastrine photograph. It seems probable also that with an ordinary view lens and a half-inch stop, large pictures might be taken, sharp to the edges, of such strongly-lighted subjects as breaking waves, skies, &c.

If the experiments described in this article are as reliable and our conclusions as correct as we believe them to be, then this communication has considerable importance, and we advise our readers by all means to repeat the experiments described. It is a singular result that *nitric* acid should not be a retarding agent in the positive collodion process, when organic matter is excluded from the bath and developer. But chloride of silver darkens readily under nitric acid, and iodide of silver does not seem to be affected by the presence of nitric acid, so far as its property of receiving a latent image under the impact of light is concerned. Nevertheless nitric acid acts very differently in the positive and negative processes, for if we attempt to develop with pyro-gallic acid a negative which has been excited in a bath strongly acid with free nitric acid, not only is the negative thin and grey, but the details of the shadows are wanting, while if the very same plate is developed with the positive developer those details will be fully brought out. It appears therefore that nitric acid in the bath does not interfere with the production of a latent image, but simply with the action of an organic developer.

In trying the experiments described, the salts of potassium are recommended in preference to those of cadmium, for this reason, that the cadmium salts tend to gelatinize the collodion and impair its fluidity. In our opinion the cadmium salts ought never to be employed in the collodion process. Alcoholic collodion iodized with iodide of potassium preserves its color, sensitiveness, and good qualities for several months, and more than this cannot be said of collodion iodized with iodide of cadmium. In fact, the cadmium collodion, although it does not change its color and become *visibly* deteriorated, nevertheless undergoes *actual* deterioration and loss of sensitiveness by keeping. We believe the use of cadmium salts in collodion to be a mistake. The best keeping collodion is probably that which is made of *pure* methylic ether and alcohol, (the latter in great excess,) reduced to the absolute state by distillation with caustic alkali. If perfectly pure and good methylated spirits could be obtained with certainty, the best collodion might be manufactured and sold with profit at 3d. per ounce. No collodion that we have used is so good as some we have lately made with pure absolute methylated spirits, and the potassium iodizer, and as soon as we can make sure of this result, we shall offer photographers a first rate Alcoholic Collodion at 3d. an ounce. This will perhaps tempt the paper-men to try the collodionized-paper process described in our last number; and since we have now alluded to that process, we would observe that plain paper may be used instead of waxed-paper, if preferred, and the negative waxed afterwards.

From Photographic Notes.

URANIUM PRINTING.

SPECIFICATION OF WILLIAM CLARK.

No. 396.—PROVISIONAL SPECIFICATION, left by WILLIAM CLARK, *Engineer and Patent Agent*, at the Office of the Commissioners of Patents, with his Petition.—" Improvements in preparing Paper for, and in obtaining Photographic Proofs or Impressions.—*February 27th*, 1858.

" This process is based on the property that all bodies have of absorbing a greater or less quantity of light. This new process of photography, which I call "photography by absorption of light." consists in taking a sheet of paper which has been kept in the dark during a certain number of days, and immersing the same in a solution of salt of uranium, (this salt has the property of absorbing a very large quantity of light,) but I prefer to use azotate of oxide of uranium. This latter is produced either in treating oxide of uranium with diluted azotic acid, or in dissolving in water crystals of azotate of oxide of uranium in proportions of about ten per cent. The sheet of paper must be impregnated with salt of oxide of uranium in a sufficient quantity, that its tint may be of a nice straw yellow color, and after it is dried it is to be kept in the obscurity mentioned. Other salts of uranium will answer the purpose, and which I substitute for the bi-chromate of potass usually employed in photography.

"When it is desired to operate with this sheet of paper, it is covered by a photographic negative impression or proof either on glass or on paper. This sheet is then exposed to the action of the sun for about a quarter-of-an-hour, and afterwards kept in the dark, the proof which covered it is withdrawn and the sheet is treated with a solution containing about six per cent. of azotate of silver. The operator then sees the appearance of a very distinct positive image of the chestnut colored tint of the ordinary proofs. In order to fix this image it suffices to immerse it in pure water which dissolves all that part of salt of oxide of uranium, which by reason of the dark parts of the negative proof have not received the action of light, after which the image or impression is fixed.

" If after having well washed the proof with pure water, it is desired to transform it into a black tint, the said proof must be treated with a solution of commercial chloride of gold in proportions of about two-tenths of a per cent., and then washed again with pure water. All these operations do not require more than half-an-hour, after which the photographic image is entirely finished.

" The proof obtained with azotate of silver may also be transformed into a black tint by using the two following processes: They consist in passing the sheet of paper after it has been impregnated with salt of oxide of uranium, and exposed to the sun, in a solution of bi-chloride of mercury, and in which it is left only a few minutes according to the length of time it is exhibited to the light, which time must be three times longer than in the first process above specified. After the proof has been washed in pure water, it is introduced in the solution of azotate of silver, and left in the same till the image is perfectly obtained with a black tint like ink; it is afterwards washed again with pure water, and then the proof is fixed. After the passage of the proof in the bi-chloride of mercury, the solution of azotate of silver may be replaced by a solution of chloride of gold, which latter will give the proof a blue-black tint or color.

" After the sheet of paper impregnated with salt of oxide of uranium has been exposed to the light, the image may be instantaneously obtained by treating the said sheet with a solution of commercial chloride of gold ; in this case the proof has a very dark blue tint , it is at last washed with pure water, after which the proof or image is fixed.

"The photographic images being obtained, as before mentioned with a salt of uranium, combined with salt of gold, or of silver and of mercury, are capable of resisting and are not liable to be effaced by the energetic action of a boiling solution of cyanide of potassium ; aqua-regia alone alters them.

"As no sulphur exists in these impressions or images in contra-distinction to those obtained with chloride of silver, it appears that such images will be much more stable than the photographs obtained by the ordinary processes, and that this new mode of obtaining positive proofs, which is very simple and very rapid, is the desideratum long sought for in photography.

"The solution of azotate of uranium may be replaced by a solution of tartaric acid, or of citric acid, or of oxalic acid, or of sulphate of alumina, or of citrate of iron, or of arsenious acid, or of neutral tartrate of potash, and of lactic acid, all the above substances having much the same property as the salt of uranium, but they will not produce an indelible impression, as does the salt of uranium.

"Negative proofs or impressions may be produced by placing in the camera-obscura a sheet of paper impregnated with salt of uranium, but as this process is of long duration, it would serve only for obtaining views of inanimate objects. Very fine and beautiful negative proofs are obtained in the camera by putting on a sheet of glass a solution of azotate of uranium mixed with gelatine, and preferably in gum diluted. A salt of uranium, mixed with gelatine or gum, give to these matters the property of being insoluble, like the bi-chromate of potash, when these substances have been exposed to the light, which would allow of substituting them instead of the bi-chromate of potash in the processes of engraving on steel or of litho-photography on stone.

"Positive proofs on glass for the stereoscope may also be obtained by replacing the albumen by a coating of gum containing azotate of oxide of uranium, and in developing or producing the image either with chloride of gold or with azotate of silver. For attaining this result the subjection or exhibition to the light must be sufficiently long to allow the instantaneous development of the impressions or images, and in order that the gum shall have no time to dissolve where it is not acted on by the light.

"This process has the advantage of giving the proofs blue, red, black, or chestnut-colored tints, according to the combination of the salts of gold and of silver."

From Photographic Notes.

POUNCEY'S CARBON PROCESS.

Any of our readers can now, by enclosing to Mr. Pouncy a subscription towards the purchase of his process for publication, obtain from him by return of post a printed paper describing the full particulars of his manipulation. Most of the Subscribers have, we believe, paid their subscription and received this paper, but the £100 have not yet been made up, and until that sum has been realized, the paper must be considered as strictly private, and intended for the sole use of the Subscriber. As soon, however, as the above sum has been subscribed, the particulars contained in that paper will be published in this Journal and given to the public. Already then a great number of photographers, and among them the highest personages in the realm, and the Secretaries and leading members of the Photographic Societies of Scotland, Birmingham, and Manchester, are in possession of a simple and economical method of printing positive proofs in Carbon by a process which has been brought to the same perfection as any other photographic process, by the persevering industry of a man who well deserves to be rewarded for the great benefit he has conferred on Photography. And now that so many skillful operators are in possession of the means of Printing in Carbon, we hope soon to see the process extended to a variety of beautiful pigments of ascertained permanency, and tinted papers employed, so that prints may shortly be produced by the new method which are as superior in artistic beauty to those printed by the process now commonly employed as they are superior to them in permanency. And since the end of the present year is approaching, and we are beginning to collect materials for an article in our concluding number which is to contain a *resume* of what has been done in photography in 1858, it is a matter of congratulation to us to find that the most important step which has been taken is due to one of our own Subscribers, and to the working out of a hint given by ourselves in the first number for the year. The *Notes* have therefore not gone forth in vain, and the principal photographic event of the year, viz., direct Printing in Carbon, is an accomplished, and, to some extent, a published process, through the means of this Journal.

The paper which Mr. Pouncy has printed and forwarded to Subscribers contains full information with respect to the manipulation of the process. His chief difficulty has been to find a suitable paper, as the vigor of the print depends greatly upon the paper. He has had a few reams manufactured of the kind which answers best, and this is so thick that the prints do not require to be mounted, for by attaching a margin to the negative the margin of the print is preserved, (absolutely white, for in Carbon-Printing the whites are preserved perfectly pure). This paper he will supply, in small quantities at first, to Subscribers, at cost price, viz., 2s. for twelve sheets 15 × 12. Being by trade a painter, he will also supply the other materials, so that Subscribers need not be inconvenienced by any delay in procuring the proper materials for the process; and we can assure them, from our own experience and knowledge of it, that they will encounter no difficulties, but succeed at once; for Carbon-Printing is of all photographic processes the most simple.

Since very few specimens have been exhibited lately, we shall take the liberty of mentioning that Mr. Kinnear, Secretary to the Photographic Society of Scotland, after having received some Carbon prints from Mr. Pouncy a few days ago, wrote us the following :—

"Dear Sir,—Mr. Pouncy has sent me some specimens of his Printing in Carbon. I think the process gives good promise, and therefore enclose half-a-guinea, which please add to the Pouncy fund.

"C. G. H. Kinnear.

"Edinburgh, Nov. 18."

We would also observe that those gentlemen who have subscribed most generously to the Pouncy fund, have, in every case, including His Royal Highness the Prince Consort, previously seen specimens of Mr. Pouncy's process. These remarks are simply made to meet the objection that no specimens have been lately exhibited. We would also add that Mr. Pouncy, a few days ago, wrote to us to advertise for him a Carbon print for sale, but we dissuaded him from taking this step, for a reason now to be explained. It will be remembered that in 1855, M. Poitevin took out a patent for Photo-Lithography, and also for printing in pigments, and that this patent includes vaguely the process of Mr. Pouncy, so that, although we firmly believe that M. Poitevin's patent would not be considered valid by a jury in the event of his attempting to enforce it, yet the sale of Carbon prints just at present might possibly involve Mr. Pouncy in a law-suit with M. Poitevin. Our reasons for supposing M. Poitevin's patent for Carbon-Printing mere waste paper are these :—A patent, in order to be valid, must contain such full particulars of the process that a commonly skillful workman may at once by following the directions therein contained, produce the article described, and unless these full particulars *are* given the patent is worth nothing. A patent is a monopoly granted by Government to the patentee, not for the mere fee paid at the patent office, but on the condition that the full particulars of the process patented are given to the public; so that while the patentee has for a certain term the monopoly of manufacturing the article, the public have the *knowledge* of how it is done; a patent would otherwise be a very one-sided transaction. Now, the patent of M. Poitevin does not include such full particulars of Carbon-Printing as that any photographer could at once produce a Carbon print;—and besides, in its vague generality, it includes a process published by Mr. Mungo Ponton in 1838, so that it might be set aside on these grounds. Should therefore M. Poitevin attempt to enforce in England his patent for Carbon-Printing, which nobody had heard of until we raked it up in June last from its obscurity, we are perfectly sure that a jury would decide against him. As for the patent of M. Beauregard, that expressly states that Carbon prints cannot be obtained by the very process which Mr. Pouncy employs. It is a serious evil that patents should be so frequently granted without due consideration on the part of the authorities. However, Mr. Pouncy does not appear to be afraid of any patents, for he has disregarded our advice, and his advertisement is inserted. Those therefore who wish to see a Carbon print can now obtain one by purchase.

While on the subject of patents, we find that in February last, M. Niepce de St. Victor patented in England his process of Uranium Printing, but the patent was not completed, probably because he found that his process had been already published in this Journal in a communication from Mr. Burnett. We give M. Niepce de St. Victor's Specification in *extenso*, at page 278, thinking it likely to interest our readers.

We insert the following letter at the particular request of Mr. Pouncy. It appears that he has been playing off upon Mr. Crookes a particular joke, by adding some brickdust and flour of sulphur to the carbon, then taking a print with this mixture, smearing it over with white of egg, and passing it off successfully upon our unsuspecting contemporary for a silver print.

When the "News" was started, Mr. Pouncy was invited to become an agent, and to contribute to its columns. He has replied by palming off upon the Editor a print in brickdust for one in silver. That gentleman, after patting Mr. Pouncy encouragingly upon the back, has now turned the tables against him, and every fresh number of the "News" contains an anonymous letter against "Permanent Printing," and the like. These occupy space in that Journal harmlessly if not amusingly, and if the readers of it are satisfied, so are we.

And now we leave Mr. Pouncy to tell his own story in his own way. [Ed. P. N.]

THE CARBON PROCESS.

Dear Sir,—Having acted by your advice in making public my *practical* discoveries, and their ultimate improvement, to the Subscribers only to the Publication Fund, I have extreme pleasure in announcing to you the gratifying success which has hitherto attended this step, and the complimentary acknowledgements received from all quarters, and from the most competent authorities, certifying fully the triumph of the mode of manipulation I have propounded, as well as attesting the satisfactory nature of the results attained by it. Amonst others, H.R.H. the Prince Consort has seen, and expresses himself in the most flattering terms of the Carbon prints, through the medium of Dr. Becker; and from His Royal Highness having further honored me with his commands for materials, I have every reason to believe that it is his intention to test the process practically. Mr. Brown, a practical photographer, of Newcastle upon-Tyne, has likewise written to me, after having been afforded an opportunity of strictly investigating the details of the process and its results, amply apologising for his previous scepticism and enthusiastically entering into the practical adoption of the process, to which he now gives his unreserved confidence. I have every reason to believe, that amongst the highly distinguished personages who intend operating practically are the Countess of Rosse, (Lady of the celebrated astronomer), and Lord Alfred Churchill.

Whilst these, and many other testimonials, not less flattering because proceeding from more strictly professional sources, continue daily, and I may say hourly, to flow in upon me, so that I can hardly supply materials fast enough to meet the demand, I must confess myself entirely puzzled to account for the conduct of the London Photographic Society, and more especially of a Mr. Crookes, who was its Secretary, as both profess to be devoted to the advancement of photographic art, and both have had unusual opportunities of attesting what my process was able to effect. Yet both have embraced every opportunity of casting doubt or even condemnation upon it, because I was not prepared, perhaps, to throw myself upon their mercy, or to make either of them the *medium* of giving my invention to the public.

1. This Mr. Crookes for example, while Secretary of the Society, professed his utter inability to decide whether my prints were Carbon or not; at the same time, that, with what I must call great dishonesty, he, although refusing to publish all that *was* said with reference to them at the meeting of the Society which I attended in London, 6th April, 1858, felt no scruple in publishing the direct falsehood, that a long discussion had taken place respecting the probable process and the chances of permanency. Need I say that I confide so entirely, even at this moment, on the good faith of the Subscribers who *alone* have obtained information regarding the practical details, that no discussion whatever is likely to be entered into of this sort; and as to the *chances* of permanency in carbon,—those only who own themselves unable to say whether carbon is carbon, like Mr. Crookes, will attempt to call *that* in question.

2. This Mr. Crookes, in his Photographic News, started after he had left the Society, seemed, at first, inclined to pursue the same obstinate and ignorant course towards me; but, in pity for the man's blindness, I wrote a letter to his paper, offering to produce before him a Carbon print by my process, and a silver print from the same negative, that he might decide for himself of what my process was capable. You, who know this well, will readily believe me when I tell you that I had no difficulty in actually deceiving Mr. Crookes for a time, (and until I chose to enlighten him), by allowing him to believe a Carbon print to be silver. Mr. Crookes did not know, and could not tell, the one from the other—literally, he mistook the Carbon print for silver!

3. This Mr. Crookes behaved to me, after being thus brought to the lash, with, as I consider, still *greater* dishonesty, in not acknowledging to the world, as he had promised to do, that the effects attainable with my Carbon, were of equal delicacy and indeed not capable of benig distinguished, even by authorities infallible as Mr. Crookes, from those produced by nitrate of silver. He still had the meanness, when saying anything of my prints, to effect to doubt their *being* Carbon. Of course, there is always one supposition—the most charitable construction that could be put upon such conduct—that Mr. Crookes labored under incompetency and inability to decide, that, what the *Times* of Aug. 7 had on the authority of the *Bulletin de la Societe Francaise de Photographie*, pronounced to be "the ligitimate results of Carbon—they have resisted a long immersion in concentrated nitric or hydro-chloric acids, in aqua-regalis, in cyanide of potassium, in cyanide of potassium strengthened with iodide, and lastly, in alkaline sulphurets,—not one of which powerful agents influenced them in the least."—*were Carbon prints!* But with submission, I am much afraid that the real want of ability under which Mr. Crookes labors, is the want of ability to speak the truth!

4. This Mr. Crookes moreover has rendered himself memorable in the history of my discovery, by professing to have an original print of Mr. Fox Talbot's, some fifteen years old, which he pretended it was his intention to produce for the purpose of showing that the Talbotype, or photography in its infancy, produced results as good as the results obtained by my process. Neither has that first print of Mr. Fox Talbot's been forthcoming, nor has Mr. Crookes had the honesty to publish my letter which I addressed to him on the subject, on receiving from the portfolio of a friend in Dorchester, where it had been as carefully as possible preserved, and describing to Mr. Crookes the now invisible condition of a print of Mr. Fox Talbot's of "Orleans on the Loire, 1843."

I would not have troubled you with these vagaries of Mr. Crookes, but that I am persuaded he means mischief, and has a fixed purpose of slandering me and my process, although I sincerely hope I may not be under the necessity of administering to him any further castigation, which is eminently distasteful to myself. And I am happy to know, by the letter I have alluded to from Newcastle, and from others competent to judge, that those who now KNOW my process are satisfied with it. I am also glad to learn that photographers are turning ther attention to the important subject of Printing in Carbon. But allow me to remind you, that up to the present time absolutely NO PRINTS HAVE BEEN PRODUCED EXCEPT BY MY PROCESS.

Yours faithfully,

Dorchester, Nov. 27th, 1858. JOHN POUNCY.

ON THE THEORY OF THE DAGUERREOTYPE,

To the Editor of Photographic Notes.

DEAR SIR:—In the article "Daguerreotype," of your *Photographic Dictionary*, I find the following passage:—"The theory of this process is so exceedingly obscure *and uncertain*, that at present any attempt at explanation of it must involve much that is hypothetical. The sensitive film is supposed to be at first in an amorphous state, but to be crystallized and roughened by the action of light. The mercurial vapour adheres to this roughened surface and forms the lights of the picture by amalgamating with the silver. The iodine and bromine are removed by the hypo-sulphite of soda..................Such appears to be the theory of this very beautiful process."

Perhaps I might fairly conclude from the above passages, that the explanation which I gave some fifteen years ago of the formation of the Daguerrean image has not found more favor in your eyes than it did in those of "M. Daguerre" himself; but I would rather believe that the three papers which I present to the "Academy of Sciences" on that subject, buried as they are in the voluminous *Comptes Rendus* of that learned Society, have not come beneath your notice. No facts which have since come to my knowledge, have awakened any misgivings in my mind, as to the soundness of my views. They have explained for me all known phenomena, and they have suggested new fields of experimental research; and I have some hope that I shall make you a convert to a theory, which is at least as plain, as simple, and as elementary, as the theory to which you allude is obscure, abstruse and transcendental.

The following are the simple facts on which my theory relies:

1. When a piece of pure metallic silver is exposed to the action of an atmosphere containing iodine in solution, the surface of the metal is tarnished or encrusted by what might be designated, by analogy, as an iodide rust. This rust, porous, amorphous, and of pale yellow color, absorbs, and retains a certain amount of atmospheric air, of aqueous vapour, and of pure uncombined iodine.

2. When pure amorphous iodide of silver is exposed to the action of mercurial vapour, the latter is absorbed, and the double affinity of the mercury, both for iodine and silver overcomes the affinity by which these two elements are bound together; and an iodide of mercury and a silver amalgam are formed. But, when the iodide of silver retains mechanically pure and uncombined iodide in excess, iodide of mercury is formed by the direct action of the iodine; and between these two Haloids, iodide of mercury and iodide of silver, no further reaction can take place.

3. All halogene elements are alike characterized by an affinity, more or less strongly marked, for hydrogen, and a consequent tendency to form hydracids at the expense of any organic substance of any hydrogenated compound with which they may be brought into contact. It would appear however that this tendency to combine with hydrogen cannot result in actual combination without the presence of light; and the quantity of hydracid formed is *ceteres paribus* proportional to the intensity of the light and the duration of its action. In this respect however the halogene substances with which the photographer is most concerned, iodine, bromine, and chlorine, differ widely one from the other. The affinity of iodine for hydrogen is weak: the combination can only take place under the influence of the most refrangible rays of the spectrum, those situated below the double band F of Frauenhofe; the hydracid formed is unstable; and it is said that it may be again resolved into its component elements of iodine and hydrogen, under the influence of the least refrangible rays. The affinities of bromine and chlorine for hydrogen are far more strongly marked; the combination takes place, though with widely differing intensity, under the impact of all the different rays, and the acids formed are stable. Again, the nature of the organic compound, with which the halogene element is brought into contact, appears to be of some importance; thus, iodine dissolves slowly in alcohol, and the formation of iodhydric acid is gradual in the extreme; in essence of turpentine or essential oil of lavender, the rapidity of the combination amounts to explosion; whilst, on the other hand, if a few drops of bromine are poured into a small quantity of alcohol the formation of the bromhydric acid is so violent as to project the liquid in all directions and seriously to endager the eyesight of the experimentalists.

These are the leading facts on which my theory of the formation of the Daguerrean image is founded. I have purposely refrained from offering any illustrations, as your readers will find them at every page of your Photographic Dictionary. Let us now see how they can be made available for my purpose.

Besides its more generally known constituents, oxygen, nitrogen, carbonic acid and aqueous vapor, our atmosphere contains another element, towards which the investigations of science have been as yet but partially directed. I allude to that organic matter, which, poured forth into the atmosphere under the form of a volatile or essential oil, from the repiratory organs and the skins of animals, from the leaves and petals of plants, and from vegetable and animal matter in every stage of decomposition, is there more completely oxidized, and is again thrown down under the form of a wax or resin on all the surfaces which are freely exposed to the action of the air, and to which it forms a protecting varnish. In our domestic economy this organic matter is but too familiar to us: it dims the transparency of our window panes, deadens the lustre of our mirrors, and tarnishes the brilliancy of all the polished surfaces on which it is deposited. Physiologist and Sanitarians are seeking in it the vehicle by which epidemic and infectious diseases are wafted about and propagated, and by them its nature and properties have already been submitted to investigation and analysis; and physicists, we have no doubt, will some day find in this same natural varnish an easy explanation of many anomalous phenomena: thus, the images of Moser, attributed by him to the somewhat obscure agency of *invisible light*, were shewn by M. Fizeau to depend on the transfer of this organic matter from one surface to another.

The adhesion, or the non-adhesion of the deposited metal on the cathode or mould, an uncertainty of no importance to electrotypists—the unequal action of acids used in etching upon metallic surfaces;—the disposition of metallic surfaces themselves now to retain, and now to repel liquids, and the singular optical phenomena they present when the breath is condensed upon them; these and many other as yet imperfectly explained phenomena will perhaps some day find an easy explanation in the presence or absence, the composition, the thickness, and the unequal distribution of this same atmospheric varnish. Rather must it be believed that varnish can be removed by the chemical agency of dilute acids, or by the mere abrasion of the polishing pads. The abstract surface of the geomatrician "length and breadth without thickness" is not the surface with which the phisicist or photographer has to deal. Our surfaces, be they of metal, glass or porcelain, must all be considered as thin layers or strata of a more or less porous substance in which this organic matter is absorbed, and from which it can be removed only by incineration or carbonization; incineration if the surface be heated to a temperature of 500° over a spirit-lamp or a charcoal brazier; carbonization, when a saturated solution of caustic potash is boiled, evaporated to degrees, and the residue fused on the surface.

There is reason to believe that the existence and properties of this substance was not unknown to the modest and sagacious "Niepce," to whose great merits as originator and founder of the heliographic art in all its branches, a due meed of praise has never yet been awarded. Indeed I have been informed that the accidental observation of an effect attributed by him to his cause first drew his attention to the action of light on thin organic films extended on highly polished surfaces. Be this as it may, however, it is certain that M. Daguerre, whom Niepce, during his lifetime, had initiated into all his secrets, and to whom at his death he entrusted his papers, was perfectly aware of the existence of this element in the atmosphere, and of its inevitable presence in the sensitive coating of his silver plates; but he appears totally to have misapprehended the very important part which it there performs; at least he strongly repudiated the idea that the formation of the Daguerrean image could in anywise be attributed to the action of light on organic matter. Perhaps this was in Daguerre the result of scientific conviction, perhaps he was unwilling to admit that the admirable process which he named and claimed as exclusively his own, was in reality bound by so strong a link of affinity to those earlier and far inferior processes which he had received from his friend and master.

M. Daguerre has never told the world by what steps he was led to his marvellous discovery, and we can only conjecture the clue by which a man, so strangely ignorant of the first rudiments of chemistry and physics, was guided through the intricate mazes of these most delicate reactions.

A highly-polished Daguerreotype plate then must be considered as a thin layer of silver, amorphous, and eminently porous, on which the atmosphere has deposited an organic substance which the pores of the metal have absorbed and which the action of the polishing pad has extended in a thin, even, continuous, homogeneous and transparent film, over the surface of the metal. The dilute acids can but have removed the soluble metallic particles; and the velvet buffers, loaded with powdered charcoal, must have added to, rather than taken from, the organic coating of the plate, for, it must be remembered, that vegetable charcoal is the most powerful absorbent of atmospheric organic matter which we possess. When the plate thus prepared, is exposed to the action of iodine, the organic film becomes rapidly impregnated with its vapor, whilst the surface of the underlying silver is transformed into a layer of iodine, each molecule of which is, as it were, surrounded by an atmosphere of uncombined iodine. The action of the light on the film thus iodized is simple in the extreme; it transforms the iodine into an hydracid at the expense of the organic matter, in which it is dissolved; whilst the iodhydric acid thus formed takes up the uncombined iodine of the mineral layer beneath. Thus the image formed by the lens is permanently impressed on the sensitive film, the shadows being represented by pure iodhydric acid, and the quantity of acid formed being exactly proportional to the local intensity of the light.

The metallic vapor which ascends from the heated surface of the mercury bath is condensed by the colder surface of the silver plate into minute globules; and these penetrating the outward or organic film, are brought into contact with the iodide of silver beneath; wherever that iodide still retains uncombined iodine the contact is but mediate and indirect; for the metallic globules are at once encrusted with a coating of iodide which interposes between the mercury and the iodide of silver, and at once arrests all future chemical action: but, wherever the iodide of silver has been denuded by the impact of light of its protecting atmosphere of iodine the contact of the metallic globules with the idide is direct and immediate; and the two-fold affinity of the mercury is called into action; the iodide of silver yields up its iodine to the mercury, and the formation of iodide of mercury, and the amalgamation of the reduced silver are the result. Finally, the solution of hypo-sulphite of soda dissolves out of the sensitive film both the uncombined iodine and the haloids of silver and mercury, and nothing is left on the surface of the plate but an unaltered varnish in the blacks, and, in the lights, altered organic matter, reduced silver, and silver amalgam. This is the Daguerrean image.

The familiar process of soldering or tinning copper offers a simple illustration of these chemical reactions. If you place a small piece of tin on a clean and bright copper plate and heat the plate in the flame of a spirit lamp, as the temperature rises a thin iridescent film of cupric oxide, will be formed, which will expand in concentric rings over the surface of the plate. When the melting point of tin is attained, that metal will assume the liquid form, but instead of flowing like a liquid over the surface of the copper, it will gather itself up in globules, as though repelled, and constrained to limit its contact with the underlying metal to a single point. Now let a few grains of powdered resin, be sprinkled over the two metals; the cupric oxide will at once be reduced by the deoxydizing agency of the organic matter, and, in an instant, the globule of tin will spread itself out like a liquid which has burst the pouch which contained it —and the *tinning* process is complete. But if, before exposing the plate of copper to the action of heat its surface has been melted with a weak solution of chloride of ammonia, the oxide of copper would be replaced by a chloride of the same metal. In this case, as soon as the tin assumes the liquid form, the two-fold affinity of that metal for chlorine and copper will be called into play. The copper will yield its chlorine to the tin and the tin will at once combine with the reduced metal.

I need hardly point out the analogy which exists between these reactions and the origin which I have ventured to assign to the Daguerrean image. It must not however be concluded from that analogy that I consider the presence of organic matter as absolutely indispensable. Such is not the case. As a matter of fact, organic matter is always present, in the sensitive film; but, it must be remembered that, even if it were possible to free the surface of the silver from all foreign matter, and to expose it, chemically pure, to the action of iodine the iodide of sillver thus formed would still retain both aqueous vapour, and uncombined iodine, however small its quantity, would afford an ample supply of hydrogen for the required reaction, so large is the equivalent of iodine (126), as compared to that of hydrogen (1). I shall perhaps at some future time have occasion to shew that one-hundred-thousandth part of a grain of aqueous vapour would suffice for the formation of the Daguerrean image over a surface of twelve square inches. But if organic matter is not *essential* to the formation of the image, it tends, at least, greatly to its perfection; for, to the combination of organic matter with the reduced silver or the silver amalgam, is due that purple tint which so greatly enhances the beauty of the whites; whilst its action, as a simple mechanical screen in the blacks of the image, prevents the condensed globules of mercury from accumulating on the iodide of silver, and thus overpowering the feeble obstacle which the iodide of mercury opposes to the affinities of that metal. That such is the twofold action of the organic matter is clearly shown by those proofs in which the effective means have been taken to reduce that element to a minimum; the image is still formed as usual, but the lights are faint, meagre, shadowy and lead-colored, whilst the blacks, after a slight exposure to the mercury, become blanched and apparently dusted over by a grey powder which totally destroys their lustre and transparency.

It is possible that some other agency besides those which I have pointed out may contribute in some measure to the final result, thus: as silver is an eminently porous metal it may be presumed that the silver plate itself exercises on the iodide of silver and the mercury a catalytic action which calls into play their mutual affinities, as a plate of platinum will determine, even in the dark, the combination of hydrogen with chlorine which has been previously exposed to solar light. Or it may be presumed that the molecules of iodide of silver themselves, formed as they are, beneath a superincumbent layer of varnish, are retained in a non-natural axial position, from which they are freed only by the partial disintegration of that varnish by the action of light, and are thus rendered more amenable to the reducing agency of the mercury. Again it may be argued, that the mercury itself, in its passage from the metallic bath to the surface of the plate, is iodized and that this oxide is reduced only where it is brought into contact with the hydracid formed by the action of light. These and many other purely hypothetical causes, may undoubtedly be pointed out as contributing more or less to the formation of the Daguerrean image; but if indeed they have any real existence, their influence, I feel convinced, can only be secondary, the true explanation of that beautiful phenomenon will be found in that physical constitution of the Daguerrean sensitive film, and those simply chemical reactions which have been described above, and which may be briefly summed thus :

1. The Daguerrean sensitive film is essentially composed of two distinct layers, an upper or outer layer of organic matter, and an under layer of iodide of silver. Both are equally impregnated with free uncombined iodine.

2. The action of light converts iodine, contained in the upper layer, into iodhydric acid at the expense of its organic matter ; and the hydracid thus formed takes up an equivalent of iodine from the mineral beneath.

3. The minute globules of mercury which are condensed on the surface of the film are absorbed into it, and are thus converted into iodide of mercury, either by the free iodine which that film still retains, or, where the free iodine has been converted into an hydracid by the iodide of silver itself, the silver yielding its iodine to the stronger affinity of the mercury, becoming amalgamated, and thus constituting the lights and half-tints of the image.

I am fully aware how unavailing such an exposition must be to carry conviction to the mind of the reader, unaccompanied as it is by any of the collateral circumstances which alone would give it weight, but I have been unwilling to intrude at too great a length upon the patience of your readers a subject which appears far more important to me than it probably will to them. If time and space were allowed me I could show how all those phenomena, which may be considered as secondry in the formation of the Daguerrean image, and which the theoricians of Photography have in general passed over in mute despair, unable as they were to square them with their hypotheses, present themselves on the contrary, as the natural and self evident consequences of the constitution which I have assigned to the Daguerrean film, and the action which light exercises upon it. I here allude more especially to the action of iodine, bromine, and chlorine, in restoring the sensitive film to its integrity after it has been exposed to the action of light ; to the greatly increased sensibility produced by chlorine and bromine in the iodized film ; the phenomena of hyper-bromization, commonly designated as the fog, or the veil of bromine ; to the cyanization of the high lights, by exposure once improperly called the solarization of the proof ; and to many other phenomena, which I need not here enumerate. But you will at once perceive that this theory suggests a *modus operandi* differing widely from that generally in use, and recommended in most treatises on this subject The first, the most important, and the most difficult operation of the Daguerreotype process assumes an entire different aspect : its only object is no longer to remove from a metallic surface every trace of foreign matter, so as to expose the silver chemically pure to the action of the iodine, but also, and *rather* to extend over that pure silver surface a thin and even film of well selected varnish, on whose properties, chemical, physical and optical, the beauty of the future image will in the main depend. How this object could be attained, I endeavored to show in a short paper presented to the Academy of Science in 1843. Subsequent experience has taught me to modify in some of its details the method I then recommended though it has but the more confirmed the theory on which that method was founded. If you will allow me, I will describe minutely, in a subsequent number of the *Photographic Notes* the process which I have for some years followed. To such of your readers as may wished to make themselves masters of the most perfect, the most scientific, and the most beautiful of all photographic processes, it will, I think, commend itself for the simplicity and obvious directness of the means employed, the logical sequence of the operations, the constancy and the perfection of the results. Let them not however indulge the hope that any method can lead to unfailing success. I for one, know of no means by which unskillful, or ill-trained hands can be taught to perform, without reiterated failures, the most delicate operation of modern chemistry ; and those Photographers who boast that they *never* fail would perhaps by less partial judges be thought *never* to succeed. If my own experience has taught me anything, it is, that a very small per centage of faultless proofs is all that can be looked for ; and, even this result can be attained only by untiring patience, by the most fastidious attention to details the most minute, by the constant habit of scruitinizing every stage of the process by the light of its own peculiar tests, by allowing no phenomenon to pass unexplained, and lastly, by considering no explanation valid which does not place the phenomenon under the complete control of the operator—to produce or avoid at will.

Yours, very truly, BELFIELD LEFEVRE.

Uplands, Exeter, November 21st, 1858.

From Photographic Notes.

COLLODIONIZED PAPER PROCESS.

The Collodionized-Paper Process is one well deserving the attention of photographic tourists, and we submit to our readers the following method of working the process, as likely to interest them; acknowledging at the same time our obligations to M. Corbin, and the Rev. Wm. Law, for the hints which we have taken from their communications on this subject, published in back numbers of the *Notes*.

To take a negative upon collodionized waxed-paper, proceed thus :—

Take a sheet of Canson, or Marion, or Saxe paper, free from spots and defects, and before waxing it submit it to either of the following modes of treatment :—

(*a.*) Immerce it for half-an-hour in a dilute solution of muriatic acid, say one part of acid to three of water. This removes any metallic spots, and softens the size so that the paper imbibes the wax uniformly and without granulation, which is a very important point. Then wash it in several changes of water and hang it up to dry. In doing this be very careful, for the paper is extremely tender.

(*b.*) Soak the paper in boiling water, in order to soften the size and enable it to take the wax without showing granulation. Dry it as before, very carefully.

The next operation is to wax and iron the paper, which is so well-known that it need not be described. Waxed-paper, prepared in the above manner, should be compared with the same paper, waxed, without being submitted to either of the operations (*a*) or (*b*);—the importance of these operations will then be perceived, because the waxed paper thus treated is free from grain and irregularities, while the common waxed-paper is very granular, and quite unfit for photographic purposes. Let us not be mistaken in making this assertion; we mean to say distinctly that waxed-paper prepared in the usual way is totally unfit for photographic purposes, and that a *first-rate* negative never has been, and never can be taken upon such paper.

Having thus prepared the waxed-paper, it must be cut about half-an-inch smaller every way than the glass plate which fits the dark slide used in the collodion process. Then, brush it over on both sides with absolute alcohol, and apply it immediately to the glass plate, pressing it into close contact by means of the camel's-hair brush. The paper adheres perfectly to the glass, and lies quite flat, but the edges require to be well wetted with the alcohol, and pressed closely to the glass.

The collodion is then to be poured upon the paper precisely in the same way as upon a glass plate. It flows beautifully upon the alcoholized surface of the paper. The entire plate must be coated up to the edges of the glass; the outer border of collodion then protects the back of the paper from the action of the chemicals, and fastens it firmly to the glass.

The plate is then dipped into the nitrate bath, exposed in the camera, developed with pyro-gallic acid or proto-sulphate of iron in the usual way, fixed with cyanide or hypo, and washed well in water. After which the paper negative may be removed from the plate and immersed in a dish of water to soak for some time; then dried, and ironed again at any future time.

The time of exposure is about the same as in the ordinary

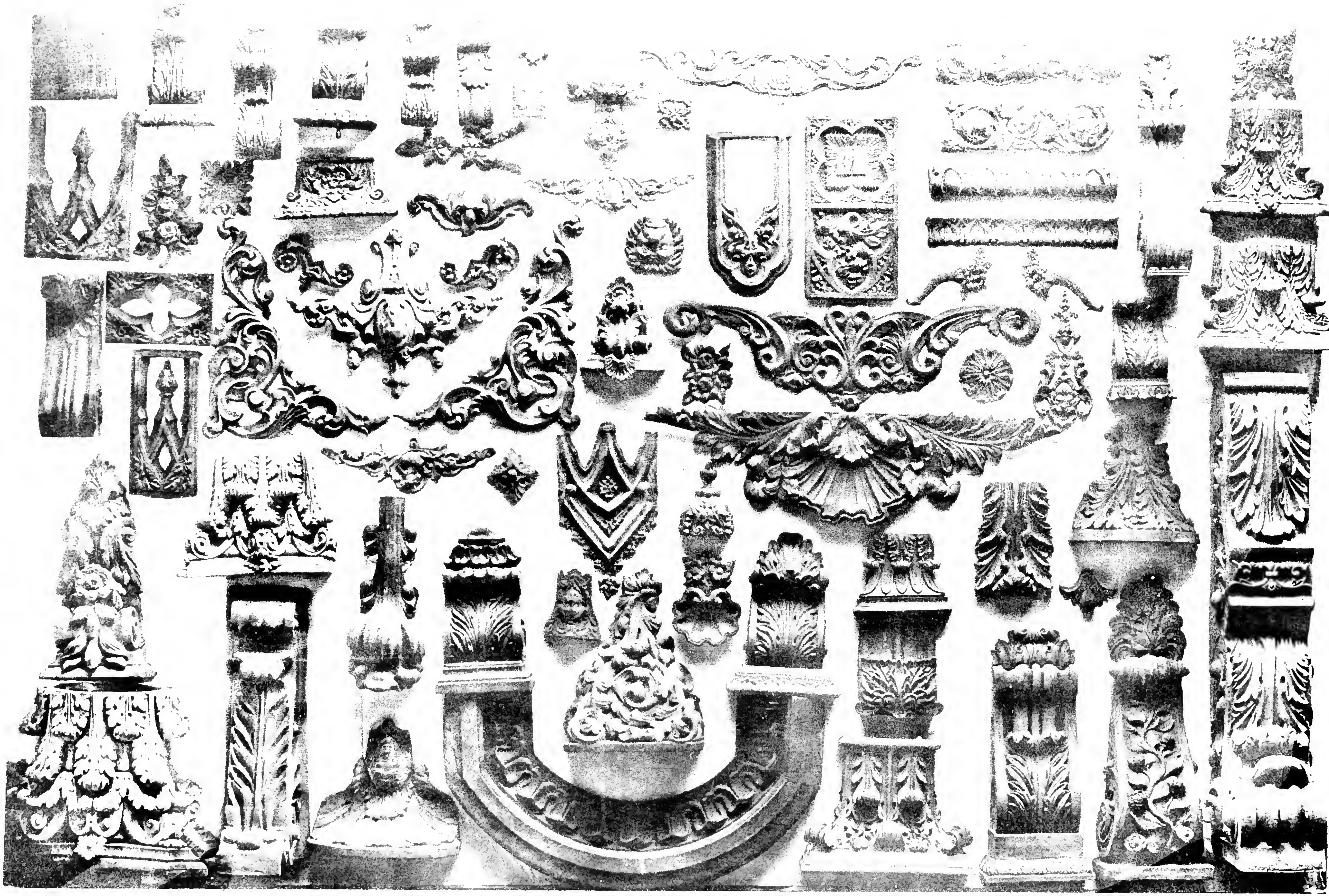

Photo-Lithographed by Cutting & Turner.

process, perhaps a little less, but certainly not longer. The picture exists entirely in the collodion film, and not at all in the waxed paper, for if, while the film is still wet after the development, it be rubbed with the finger, the picture comes off entirely, leaving the waxed-paper perfectly clean. This is a very important feature of the process, because all the delicacy and beauty and sensitiveness of the collodion process is preserved, without incurring any of the disadvantages of the paper process, such as insensitiveness and grain.

When the negative is removed from the dish in which it is finally washed it must be hung up to dry, and when dry it will be found that the collodion adheres so perfectly to the paper that it cannot possibly be removed by any kind of rough treatment, such as scratching with the nail, &c. It is then like a waxed-paper negative in which the picture is entirely superficial and free from all the defects due to the absorption of the chemicals by the paper; and the back of it is perfectly clean. Prints from such a negative are very fine, and for bold artistic subjects of large size quite equal to those from glass plates; the difference between prints from paper beautifully waxed and glass being only perceived in small delicate subjects.

Having thus described a very simple process, with which any of our readers may succeed at once, we will endeavor to point out some of its advantages over the paper and glass processes at present employed by tourists.

For Stereoscopic, or very small pictures, the process offers no advantages over wet collodion, because in such subjects the utmost possible delicacy of detail is required, and nothing should be sacrificed to convenience; but for large bold subjects the process would be quite suitable, and its principal merit is that paper negatives are more portable than glass, and less liable to injury.

For the sake of example, let us take the case of one of our readers starting next summer for a photographic tour in Germany and Switzerland, and desirous of taking pictures 12 × 10. Say that he is familiar with the Wet Collodion Process and anxious to take, in addition to such subjects as might be taken upon paper, others which could not, such as skies, instantaneous pictures, atmospheric effects, interiors, and so forth. Well, by employing glass, he would have to encumber himself with such a load of plates that a trip of a few weeks would involve serious expense and trouble; but by employing collodionized paper, only a few glass plates would be required, while the manipulation of the process would remain the same as before. Again, there is great advantage to the tourist in any process which enables him to excite and develop his pictures at the inn where he happens to be staying, instead of being obliged to excite and develop in a dark tent or van; now the collodionized paper retains its moisture much longer than collodionized glass, and this would allow an hour or two to elapse between exciting and developing.

Suppose, for instance, that a proper plate-box were provided for holding damp plates, and that a piece of damp thick blotting paper were stuck to the back of each plate, so as to be immediately oppposite and quite close to the film upon the adjacent plate, and that such a box could be closed air-tight, and carried with the plates horizontal, film side downwards;—the collodionized papers would then certainly retain their moisture for several hours, and they might be excited in the morning and developed in the evening without any loss of sensitiveness or risk of failure. The tourist might then work the Wet Collodion Process with all the advantages and conveniencies of paper,—and his negatives might be packed in a portfolio, and only half-a-dozen glass plates and a single plate-box be required. Putting all these advantages together, we would strongly advise our readers to experiment with this process during the winter months, so as to be *au fait* with it before the next season for out-of-door operations. The damp-plate box might be made of wood lined with gutta-percha, or coated with several applications of water-glass; or it might be made of japanned tin, and wrapped round externally with a damp towel and enclosed in a cover of Mackintosh cloth.

From Photographic Notes.

ON A NEW, CHEAP, AND PERMANENT PROCESS IN PHOTOGRAPHY.

BY MR. W. M'CRAW.

[*Paper read before the British Association at Leeds.*]

"I now set myself to repeat in writing the mode I use for producing the specimens which attracted your notice to-day, of permanent photographic prints, produced without either silver, gold, or the noxious hypo-sulphite of soda. I need not expatiate to you upon the advantages of such a process. It is, indeed, felt to be the great photographic desideratum wherever photography is practiced—and that is nearly all over the world—particularly by the conscientious photographer and the considerate collector of photographs. The labors of the Committee appointed by the Photographic Society of London, to inquire into the cause of the fading of photographs, after a lapse of two years, have only amounted to this: that photographs of a certain kind have all faded: and that some of those of the kind that have stood best have unaccountably faded,—the sad presumption being, that in time all photographs produced in the usual way, by the means of chloride of silver, and fixed (as it is called) by hypo-sulphite of soda, will perish. These considerations, and the fact of a prize being offered by a French nobleman for the discovery of a process for printing photographs in carbon, set me to experiment in that direction. But my experiments with carbon and various pigments led me to think that no material applied mechanically, or that could not be made to take the shape of a dye or chemical solution; would ever give results with the exquisite half-tints of the present beautiful but perishable process. The photographic properties of bi-chromate of potass were pointed out by Mungo Ponton twenty years ago, giving photographs of a pale tawney color. A piece of paper is washed over with the saturated solution of the bi-chromate, and when dried in the dark is of a bright yellew color, and very sensitive to light. If a negative photograph, or a piece of lace or a leaf, be placed over the prepared paper, and put in sunshine, in a few minutes a perfect impression of the object is obtained. The light darkens the color of the bi-chromate, and renders it insoluble in water, while the yellow color washes out from the parts protected from the light by the lace or leaf, or negative photograph, as the case may be. But pictures of this kind have little or no practical value; for although the lights are good enough, the deep black shadows are only represented by a tawney shade. Some eighteen months ago a process was patented for deepening those photographs by treating them with gallic acid and a salt of iron, which went by the name of 'Sella's process.' I tried this process at the time according to the specification of the patent, but failed to make one satisfactory specimen. They wanted every thing that a good photograph should have,—pure lights, clear half-tints, and deep shadows,—and as I found that others had not been more sucessful, I abandoned my experiments. But in the course of further experiments, a year afterwards, with carbon, I was struck with the fact that a drop of a solution of bi-chromate of potass allowed to fall on a piece of white paper and afterwards dried and exposed to the sun, when washed with a solution of proto-sulphate of iron, and then with gallic acid, while the spot became perfectly black, the surrounding white paper was unaffected by the liquids. Knowing the photographic properties of the bi-chromate already described, I believed that this might be the foundation of a good photographic process; and that if the bi-chromate could be kept from penetrating the pores of the paper, by being kept on its surface, the defects of Sella's process might be avoided. With this view, I began by filling the paper with albumen, and then to render it insoluble, immersing the paper in ether. This, however, did not answer. But as it would be tedious to detail all the pains I took to discover what whould not do, and to find in what proportions and in what order the right materials could be best applied. I will briefly give the formula which I have adopted, and by which the specimens alluded to were produced:—First, take the white of eggs, and add 25 per cent. of a saturated solution of common salt (to be well beat up, and allowed to subside); float the paper on the albumen for thirty seconds, and hang up to dry. Secondly, make a saturated solution of bi-chromate of potass, to which has been added 25 per cent. of Beaufoy's acetic acid. Float the paper on this solution for an instant, and when dry it is fit for use. This must be done in the dark room. Thirdly, expose under a negative, in the pressure-frame, in the ordinary manner, until the picture is sufficiently printed in all its details, but not over-printed, as is usual with the old process. This requires not more than half the ordinary time. Fourthly,—Immerse the pictures in a vessel of water in the darkened room,—the undecomposed bi-chromate and albumen then readily leave the lights and half-tints of the picture. Change the water frequently until it comes from the prints pure and clear. Fifthly,—Immerse the picture now in a saturated solution of proto-sulphate of iron in cold water, for five minutes, and again rinse well in water. Sixthly,—Immerse the pictures again in a saturated solution of gallic acid, in cold water, and the color will immediately begin to change to a fine purple-black. Allow the pictures to remain in this until the deep shadows show no appearance of the yellow bi-chromate; repeat the rinsing. Seventhly,—Immerse, finally, in the following mixture:—Pyrogallic acid 2-grs.; water, 1-oz.; Beaufoy's acetic acid, 1-oz.; saturated solution of acetate of lead, 2-drms. This mixture brightens up the pictures marvellously, restoring the lights that may have been partially lost in the previous parts of the process, deepening the shadows and bringing out the details; rinse, finally, in water, and the pictures are complete when dried and mounted. The advantage of this process may be briefly stated as follows:—First, as to its economy. Bi-chromate of potass, at 2d. per ounce is substituted for nitrate of silver at 5s. per ounce. Secondly, photographs in this way can be produced with greater rapidity than by the old mode. Thirdly, the pictures being composed of the same materials which form the constituent part of writing ink, it may be fairly inferred that they will last as long as the paper upon which they are printed.

A beautiful photograph of Sir Walter Scott's monument, obtained by this process, was exhibited in the section.

—The above process only differs from Sella's, published in *Notes*, No. 30, in first albumenizing the paper, and in the final application of pyro-gallic acid and acetate of lead. Mr. McCraws prints are exceedingly sharp, and good in the half-tones, but feeble and bad in color. The shadows are glazed,—the lights not. [Ed. P. N.]

BIRMINGHAM PHOTOGRAPHIC SOCIETY.

WINTER SESSION, 1858.

The members of the above society held a meeting at the Odd Fellows Hall, on Tuesday, November 30th, 1858.

The Vice-President, W. Howell, Esq., in the chair.

The minutes of the last meeting having been passed, Isaac Smith, Esq., was elected a member of the society.

Some carbon prints from Mr. Pouncy, of Dorchester, were then exhibited. These prints were especially interesting, as illustrating some peculiarities of the process, more especially with reference to the kind of paper used. One print on albumenized paper having all the detail, but being singularly deficient in depth, while one on slack-sized paper rather thick, was deep in color, and the half-tones quite perfect. For landscapes, copies of engravings, and subjects of that class, the process leaves nothing to desire. The portraits were not quite so successful, but this may be owing to faulty negatives.

Mr. Osborn then read a paper on "Photographic Dodges." [This will appear in our next number.]

From Photographic Notes.

PRACTICAL DETAILS OF MR. POUNCY'S CARBON PROCESS.

1. Prepare a saturated solution of Bi-chromate of Potass.
2. Prepare a common solution of Gum Arabic, about the consistency of thin varnish.
3. Prepare Vegetable Carbon, by grinding it with a muller on a paint-stone or slab, in the same manner that a painter grinds his colors; and be careful that it is ground very fine. It is to be ground with water.
4. Mix together equal parts of solutions (1) and (2), say four drachms of each, and then add one drachm of No. 3.
5. Stir the whole well together with a glass rod, and strain it through the finest muslin that can be obtained.
6. Now apply the prepared solution in the following manner:—Lay the paper, face uppermost, upon a glass slab, or a very level and smooth board; the glass is the best of the two. Commence coating freely with a broad camel's-hair brush, laying on a copious supply over the whole surface; and then allow the paper to absorb for about two minutes.
7. This done, remove the superfluous liquid thus:—Take a painter's 4-ins. hog's-hair "softener," and work it regularly over the paper, with an alternate vertical and horizontal motion, until the whole presents a smooth even surface, partially dry. The drying may then be completed by the fire.

[Operators will of course infer that the whole of these operations must be carried on in a dark room. They should also be informed, that any other method of application, including floating, &c., will prove ineffectual.]

8. Expose in the usual way, varying the time according to light, say about four or five minutes in the sun, and from ten to fifteen in the shade. This, however, will be affected by the intensity of the negative, time of year, &c.
9. On removal from the pressure-frame, lay the picture, face downwards, in a flat dish of clean water, taking care to exclude all air-bubbles. It will be found advisable to place some slight weight upon the picture, that the back may thus be retained wholly under water and kept free from stains. The time of soaking may be roughly stated at five or six hours; though in some cases of over-exposure pictures may remain in the water for days, and come out equally good.

It may be observed here, that when the high lights of the picture appear soon after immersion, the operator may conclude that he has *under-exposed*, or that his gum arabic is too thick; which last fault may be corrected by the addition of a little more bi-chromate. It is preferable to find the picture developing evenly all over. Each picture must be in a separate dish, and finally washed under a gentle stream of clean water from a tap or a lip cup. Should the margin be not quite clean, pass a camel's-hair brush carefully over it before rinsing from the tap, and, if needful, any parts of the picture, but the best results are obtained by soaking only.

Such is the process about which so much has been said during the last nine months. The particulars of it are now public property, thanks to the liberality of those who have come forward and subscribed about £70 as an acknowledgement to Mr. Pouncy for his services, and for the labor he has bestowed in bringing the process to its present state of perfection.

But the publication of this process is not the only piece of good news with which we are able to commence a new volume of the *Notes*. We are happy to inform our readers that M. Poitevin's patents for Photo-Lithography and Carbon-Printing, Nos. 2815 & 2816, have lapsed, in consequence of his not renewing them by paying some additional fees which became due on the 13th ult. These patents bear date Dec. 13, 1855, and were good for three years; that term has now expired, and M. Poitevin has not renewed them; so that they have become public property. The only patents now to be avoided are that of M. Beauregard, for Carbon-Printing, the Specification of which is given in *Notes*, No. 54; and that of Messrs. Cutting & Bradford for Photo-Lithography, given in *Notes*, No. 63.

It is with great satisfaction that we are thus enabled to bring this matter of "Pouncy's Process" to a successful termination, so far as the public are concerned. But we must inform our readers that Mr. Pouncy has given his process to the public before the £100 was subscribed, and we trust that the remaining £30 will be made up to him. We would throw out a gentle hint to Members of the Photographic Society, that they have been a little backward in this matter, and an opportunity is now offered for exhibiting liberality to one who has worked hard for the advancement of Photography, and whose name will be associated with an important discovery in the future history of the art. We read with much pleasure the Editorial remarks on Mr. Pouncy's process in the leader of the Journal of the Photographic Society, No. 74 ; and have scarcely a doubt that the Society will now act generously in this matter. In whatever light different persons may regard the amount of success which Mr. Pouncy has achieved, it cannot be doubted but that a permanent printing process of this kind is greatly needed, and that a vast deal of labor has been bestowed by him in bringing Carbon-Printing to its present advanced state. Knowing, as all photographers do, the difficulties, anxieties, time, and expense involved in a long series of experiments, and the great benefits conferred by those who bring such experiments to a successful issue, it is surely incumbent on a leading Photographic Society to express in some way their appreciation of a useful expenditure of time, thought, and materials. We have endeavoured, as a Journalist, to do our duty in this matter, and the task has not been without its troubles and disappointments, but it has at length been brought to a successsul issue, and we have our reward in knowing that an excellent process of Carbon-Printing has been first brought forward and published in this Journal. Need we add that we shall always be happy to receive communications from those who are practising this process ; and that these columns are always heartily at the service of any one who may have an improvement in Photography to bring before the public.

[We have been very successful in experimenting with this process, and have produced very fair proofs in *india ink, burnt umber, Prussian blue, raw umber, burnt, and raw sienna neutral tint, green, and vermillion.* We have tried several methods of putting on the color, and find it best to *grind* the *dry* color in the *mixed* solutions of chromate and gum, and after attaining the finest point adding more solution until about as thick as cream ; then standing it aside to settle and evaporate to a cake. When used, wet the brush in water and rub it over the surface of the cake until sufficient is imbibed and spread upon the paper. In this way the paper is not over saturated and the operation is performed in much less time. The color may be also spread, beautifully, in the same manner as stenselling, or theorem painting, is done. Any kind of *well* sized paper will answer.—*Ed. P. F. A. Journal.*]

From Photographic Notes.

A CURIOUS RESULT IN DEVELOPING A POSITIVE.

To the Editor of Photographic Notes :

Dear Sir—As I was testing a sample of collodion a short time ago, I met with rather an unusual occurrence. I was trying a negative stereoscopic portrait, but found, on developing with the usual pyro-gallic solution, that it was rather under-exposed. I thought I would try an experiment with it, so I washed it thoroughly, re-dipped in the bath, (rather hazardous to the bath, perhaps,) and again poored on a protosulphate of iron developer, with acetic acid, but not nitric acid. Instantly a solid positive portrait flashed out, the blacks being as solid and dense as the whites and no transparency in any part. It was still untimed so that the image was dark and sombre. I meant to have sent it to you, but in my absence it was thrown down and broken. I intended to have pursued the subject farther, but my time is so fully occupied that I have had no leisure. I supposed the dense black deposit in the shadows to be gallate of iron, resulting from a portion of the pyro-gallic left in the film. If any of your readers have the inclination and opportunity to try the experiment I should like to hear more of it. The bath was not injured at all.

F. Parsons.

For the Photographic and Fine Art Journal.

THE DAGUERREOTYPE.

Mr. Editor :

I was exceedingly gratified to see, in one of your recent numbers, a hearty, admiring tribute to our old friend, the "Daguerreotype." Gratified, in that it so exactly reaches what I have myself repeatedly declared, within those few past years, which have witnessed the exaltation of the Photograph, the Ambrotype, and sundry "graphs," "types," &c., beside, into a popularity, which, for the time, cast the Daguerreotype in the shade, and threatened to cover it with "blank oblivion." Nor have I thus alone expressed myself in *conversation*, but I have deliberately put this opinion on record in a Treatise on the Heliographic Art, which has long being in preparation, but which has been kept back from the press by my railroad casualty, and consequent permanently crippled condition,— causes, however, which, I trust, will ere long, be *so far* at least obviated, that I may give the results of my labors to the world.

It is not, indeed, strange, that the Daguereotype should, for a while, have fallen into partial obscurity. Our age is abundantly prolific of invention and discovery in all departments, be it the ornamental or the useful, and mankind are proverbially covetous of the new. And in no sphere of Art has there been more rapid progress, or a greater multiplication of discovery of novel and interesting varieties, than in the Art of Sun Painting.

This Art too is, in all its phases, so opulent of beauty and wonder, and every new form, that makes its appearance of the Sun's handiwork, is so attractive and meritorious of admiration, that we have no occasion for surprise, that the original parent of them all, the Daguerreotype, should, for a season, have passed *comparatively* out of sight. This is only what equally occurs in all things, be they of great import or small.

For man, finite being that he is, can give a concentrated attention and an enthusiastic tribute of interest to but *one* thing, at one and the same time. The new novel—the new poem—the new hero—the new belle—in a word, the new *notability*, in whatever kind, always abstracts the popular regards—for the *moment* at all events—from the *previously* known and familiar individuals of their several classes. Truthfully declares the lyrist, that—

"We *must* be *off* with the *old* love,
Before we are *on* with the *new*."

Nor, indeed, is there one reason for *regretting* this tendency in human nature. Created, as we are, to be *improveable* beings, and organically designed for perpetual *progression*, this very passion for *novelty* in all kinds is one of the principal and strongest impulses that push us forward in the path of advancement.

Sooner or later however you will invariably find, that the minds of men *agree* in putting *individuals*, and their performances, in their proper places. The grandest, the most beautiful, the noblest of man's works—as also the greatest, the wisest, the best, and the most admirable among men themselves—eventually become *recognized as such*, and thenceforward assume their places, as Stars in the Firmament of Mind, to which we look up as archetypes of beauty and fountains of inspiration.

Thus, Homer, Virgil, Shakspeare, Milton and Dante, have become our ideals among the poets—Alexander and Cæsar, Hannibal and Napoleon, our types of military genius—Michael Angelo and Raphael, our representatives of the pictorial art, and so on to the end of the chapter.

This principle, so familiar to all, applies exacly to the case of the Daguerreotype As Homer is entitled "The Father of Poetry," so (if I may venture to *personify*) we may pronounce the Daguerreotype "The Parent of Sun Painting." And as Homer, though the earliest of his tribe, has never yet been excelled, and some think never yet *equalled*, so is it, in my own view, with the Daguerreotype not less.

The signs specified by you, Mr. Editor, of a reviving attention to the Daguerreotype and a resurrectionary popularity of the same, are symptomatic of that process in the general mind whereby the majority at last settle what *specimen* of human endeavor, or what *person* is best or greatest, or most admirable, in its class.

It does not, indeed, follow by any means, that *because* we may *prefer* this or that form of Sun Painting, we are to *overlook* or *neglect* the *rest*, or *any one* among them. It is not "that we love Cæsar less, but that we love Rome more."

I myself introduced the Ambrotype, at my establishment, corner of Chestnut and Fifth streets, and yet never for a moment intermitted my careful attention to my "first love;" the Daguerreotype. This establishment passed from my hands into those of George Cook, Esq., prior to my railway injury. I have, within a few weeks, paid visits to the old Root Gallery and other similar establishments in this city, and examined both the Daguerreotypes and the Ambrotypes there produced. The former I found in perfect preservation—radiant in all their original beauty and delicacy of outline. On the contrary, I found the latter fading, blistered, spotted—in a word, passing rapidly out of the number of existing things. In consequence of these signs, the best artists have recently abandoned—mostly, if not entirely—the making of the Ambrotype, and confine themselves to the Daguerreotype.

In truth, for a small portrait, or a miniature, without color, the Daguerreotype transcends every other species of Heliograph in truthfulnes, beauty and durability. It is a style of picture which connoisseurs and all best judges favor, and will, there is little doubt, be taken in all the most respectable establishments of our country, even though the other varieties of the art should be taken also, as the intelligence, judgment and taste of the people at large improve.

The minds of our 30.000 000 of people are rapidly expanding, and are ever ready to give a hospitable welcome to indications of *improvement*, in whatever shape presented. With the diffusion of intelligence, together with general culture and refinement the sentiments of family relationship and of kindred—the ties of human brotherhood—and a common reverence for the great and good of our Land—will tend more and more to create a desire to possess truthfull and life-like representations of the forms and faces, alike of those near and dear to us, and of those, who, through their heroic deeds or their eminent wisdom and virtues, have stamped their names in lasting characters, on the pages of our history.

The Sun Painting Art is also destined to grow in popularity, through the Heliography Sketches, now becoming common, of renowned and interesting localities and scenes in America, Europe and Asia. In this work an important part will doubtless be enacted by the Stereoscopic Societies of Europe and this country. *These* serve to leave in the drawing-rooms of the opulent, the intelligent, and the tasteful, in all sections of the globe, faithful views of the spots cited in history—such, for example, as Egypt's Pyramid, and the ruins of her temples and cities—the reliques of the half-disinterred Herculaneum and Pompeii—in short, of whatever still survives of the empires, cities and people's, that, in ancient days and all different countries, filled the known world with their glory. Through the same agency, we may obtain life-like presentments of the countries and cities, and the populations, together with their costumes, their fashions, and their modes of life, of the modern world not less.

The tendancy of views of this class will be to educate, to elevate, and in all ways to *improve* the minds of the popular masses, and to furnish them with inexhaustible sources of innocent, and at the same time, *edifying* employment.

And the people at large, with their tastes and judgments, thus cultured and refined, will naturally come to desire, not merely *truthful* but *artistically finished*, portraits of their relatives and kinsfolk, Nor will it be long, ere they will be satisfied with *nothing less* than skillfully made products of the Sun-painting Art *in all kinds*.

Thence it will follow, that when Heliographers in general shall shew themselves true to themselves and their art, and shall have the Camera managed by none but capable artists, who, by natural taste and judgment, as well as acquired accomplishment, shall be qualified to *pose* every object artistically and with grace, so as to secure effective lights and shadows, and bring out on each face a thought-speaking expression—*then* this *now underrated* and *misappreciated* art will receive its *rightful dues*, and will assume a high stand among the arts, which are at once useful and ornamental.

Just so long, however, as carpenters, coblers, barbers, assistant-cooks, and their like, who have not adequate capacity to thrive in their legitimate vocations, shall turn their attention to the *Science* and *Art* of Heliography—and after spending a few weeks under the tutelage of *imbeciles*, as devoid of genius, and as illy fitted to promote and elevate the art as themselves, shall set up as Heliographers, and in flaming advertisements promise to picture the "human face divine artistically," and "in all the beauties of nature,"—while I say, *such* persons constitute four-fifths of the profession—take flat, wooden, expressionless shadows of the crowd for a shilling or two each—trumpet themselves, the while, as masters of the Heliographic Art—disparage and decry legitimate, genuine artists of genius, who have studied and practically labored, for years, to win a proficiency in their profession and to acquire a fair repute therein, and who, in this aim, have availed themselves of the advantages to be drawn from long study in the best Art-schools of Europe—while *such* are the facts, as regards our art, no wonder Sun-painting is looked upon by the more intelligent portion of our community, and especially by most of our old artists in oil, with distrust and contempt. But, in the hands of a few skilful faithful and persevering men of genius and character, we feel confident, it will rise gradually into favor with the old legitimate artists and connoisseurs, and, by consequence, with the better educated portion of the public. Nor this alone—but it will win, and deservedly too, the patronage of the community at fairly remunerative prices.

M. A. Root.

Philadelphia, 12th Jan. 1859.

ARCHER'S CAMERA.

To the Editor of Photographic Notes.

Dear Sir :—I saw, some weeks ago, in the "*Photographic News*," an enquiry which struck me as one of great interest and utility, and to which I would fain have seen more answers than have appeared, viz., as to *the smallest quantity of water that can be used in a day's work abroad and in a locality where it is unattainable.* During a sojourn at Lynmouth two years ago, I was much amused at seeing a two-gallon jar on the top of a fly, (a heavy load for even a blue-bottle), placed there as the consumption for the day's requirement , and I have many times since witnessed the distress occasioned by the paucity, or even total want, of this necessary adjunct for photographic field-work. I replied to the letter in the *Photographic News*, and at the risk of appearing a bore, and always seeming to harp on the same subject, viz., the signal advantages that an Archer's camera offers to the photographer, I would venture to occupy a few lines again to reiterate what I have before advanced. *Fourteen ounces* of water I find,—and have done now for three years,—quite sufficient for a day's work, and to enable me *securely* to bring home eight negatives $8\frac{1}{2}\times6\frac{1}{2}$, and as many stereoscopic negatives of the usual size It is certainly the most economical allowance I have ever heard of, *but it is enough*, as proved by nearly 800 good negatives, copies from which are at the service of any one choosing to require them. The form of bath is fully and minutely described in the number of your *Notes* where I described the construction of the camera. It is of wood, strongly screwed and cemented together with marine glue. It is *wedged*-shaped, thinner at the bottom than the top, and in its place in the bag in the floor of the camera, is kept in a slanting position, the bottom of the flat side leaning *towards* the operator; the dimensions externally are as follows:—*without* the lid it is 11-ins. high, $8\frac{1}{2}$-in. broad, 1-in. thick at the top, and $\frac{1}{2}$-in. thick at the bottom ; with the lid, which is clamped on with screws and two brass clamps, and has three layers of sheet India-rubber to make it water tight, it is $11\frac{1}{2}$-ins. high.

*In*ternally it is $7\frac{1}{2}$-in. broad, $8\frac{3}{4}$-ins. high and $\frac{3}{4}$-in. thick. The dipper is of wood, just long enough for the end to flush with the top to allow of the lid being screwed on, and is $10\frac{1}{4}$-ins. high, 4-ins. wide at the top, and at the bottom is a bevelled cross-piece, 7-ins. broad, to carry the plate bevelled *in*. By keeping this pressed against the side of the bath when putting in or taking out the plate, it is impossible, with ordinary care, to rub or injure the film,—the accident has never occurred to me. The bath, when charged with water, and having the dipper in, and *allowing* for the displacement caused by the immersion of the *glass plate*, holds 14-ozs. of *common* water. Mr. Archer always recommended the addition of a little common salt, but I have never used it, and do not find the want of it. Of course, after a day's work, I find the water yellow and discolored, but still it answers well, and efficiently serves the required purpose. Immediately after developing the plate in the ordinary way inside the camera, and by the aid of the yellow blind at the top of the camera, and I am satisfied that the image is as perfect as I require, I plunge the negative gently into the water bath, and then open the end of my camera to daylight. I leave the negative for a minute or so in the water bath, and then bring it out into open daylight, or sunlight, and having satisfied myself that it is what I wanted, put it in the plate-box. I do not mean to assert, that for all practical purposes, it is quite sufficient to enabled the operator to judge if he has obtained a satisfactory or unsatisfactory negative, and if the latter, of course giving him the power of doing it over again before he takes down his camera and quits the spot, which perhaps he may be unable again to visit. This is, in my humble opinion, an immense boon; and coupled with the small size and small amount of weight that the water bath causes, is desiratum not obtainable by any other method that I have seen ;—but then it would be useless for any other form of camera than Archer's,—it is part and parcel of the camera, and forms, with the plate-box, the most complete apparatus that has ever been invented, meeting as it does *every* requirement for the amateur or professional tourist. At home I never use any other camera, and for portraits I find it exceedingly convenient ; the facility of being able to do any sized plate (of course within the limits of the dimensions of the camera), the absence of all chassis, and the inestimable advantage and convenience of not wanting a tent or dark room for producing the picture fit (with the exception of drying it before the fire to varnish it) for the pressure-frame, an advantage that need not be dilated upon. I well remember astonishing a friend at Lynmouth, the day after I arrived there, in taking as good a negative as I ever did, (and which has since been engraved in his presence), in my Archer's camera, and whilst he was engaged in going to take his and developing it in his dark room somewhere in the village, I dried, varnished, and actually copied mine, showing him a good proof in hypo-sulphite on his return, bewailing his non-success.

One might certainly suppose, from my warm advocacy of the Archer camera, that I had some pecuniary interest in thus vaunting its praises, an accusation that any one who knows me will readily refute. I have myself derived so many hours real gratification from the mode of manipulation which I adopt, and have so many hundred pleasing reminiscenses of past days' labor to show, that I should be selfish indeed if I did not try to impart to my fellow-laborers in the vineyard, a means by which they may, if they choose, gather much of the finest fruit, and that too without all the terrible incumbrances that I often meet them laboring and toiling under. As to *describing* a camera like mine it is quite impossible, even with the aid of diagrams ; it must be *seen*, and is then easily understood.

When out for a day's work I always take with me a small and ordinary binocular stereoscopic camera, with its tripod stand, and when I find the view I am taking (I mean my large one $8\frac{1}{2}\times6\frac{1}{2}$) is one applicable for the stereocospe, I coat my stereoplate in my Archer's camera excite it, place it in the stereochassis inside my camera, and then, after exposing it in the stereo-camera, return it to the large one, and develop and place it in the water bath, as before described ; thus I *generally* obtain, with a quarter-of-an-hour's longer expenditnre of time, one view $8\frac{1}{2}\times6\frac{1}{2}$, and a double stereoscopic one of the same subject, with a facility and comfort which must be seen to be believed, and which, should I be enabled to pay you a visit next summer, shall be fully demonstrated to your satisfaction.

I was sorry to see this camera classed in your very useful Dictionary, amogst the amateur's *eccentricities*. "Let him laugh who wins," and he who bewails the ordinary discomforts of photography out-of-doors adopt it. It deserved a longer notice, and I can only attribute the imperfect account you have given of it from your not actually having seen one in use.

From Photographic Notes.

NEW PROCESS FOR ENGRAVING, AND OTHER ITEMS.

An important new process relating to the art of engraving has just been patented by M. Joubert, a French engraver, who has for some years resided in this country. It consists in a method of hardening copper plates by means of a coating of steel, deposited by the electrotype process. A minute account of this process will be found in the Journal of the Society of Arts, for Nov. 24th. There is also a brief account of it in the Art Journal for this month, from which we make the following extract :

"The hardening of the copper plate has long been in this country, as well as on the continent, one of the philosopher's stones of the chemistry of Art, and the more earnestly has it been sought since the discovery of the method of dealing with steel, because a success in this direction must be a certain fortune to the discoverer; and if, as we hope, the surface of the plate, is so effectively enduring as to throw off thousands of well-conditioned prints this will be the fourth great Art-auxiliary which may be almost said to almost signalize the former half of the present century—we mean lithography, the hardening of the steel plate, photography, and, fourthly, this method of multiplying copper-plate engravings."

The above remarks show the importance of the discovery, one which is likely to affect considerably the process of Photo-Glyphic engraving.

A third communication has been published, from M. Niepce de St. Victor to the French Academy of Sciences, relating to a supposed new action of light. Many of the experiments described have already appeared in the *Notes*, but others are new. We shall give a translation of the entire paper in our next number, and offer some comments upon it.

We have received from Mr. Gutch a copy of his Literary and Scientific Almanac for 1859. There is probably no work of the kind in existence which contains so much useful matter condensed into a small compass as this, and we advise our readers by all means to get it.

We would call particular attention to an important communication which we have received from M. Voigtlander respecting the Orthoscopic lens, some comments upon which we shall offer in our next.

A new photographic society has just been established at Nottingham, We are glad to hear of this, for these societies do a great deal of good, and deserve the hearty support of photographers.

Mr. Fox Talbot has kindly sent us a great number of his photoglyphic engravings, some of which are by the process patented in 1852. On examining them very carefully, we are inclined to think the process one of great promise, and certainly an improvement on Photo Galvanography. It would be hypercriticism perhaps to raise objection to the grain, which is scarcely perceptible in these prints; and then the sharply cut lines of the architecture and the gradation of shade in the distances, are very encouraging. The faults seems to be only such as improved manipulation may overcome.

Those who are trying uranium printing should use slack-sized paper, and add alcohol to the nitrate of silver developer. This gives greater intensity to the blacks.

From Photographic Notes.

PHOTOGRAPHIC SQUABBLE.

The council of the Photographic Society, at a recent meeting, passed the following resolution :

"Complaints having been made that the papers communicated to the society appear in other Journals before their publication in the Society's Journal, it is resolved that the secretary be directed to request the proprietors to desist from any such publication."

This resolution is directed against the "Liverpool Photographic Journal" and the "Photographic News," not against the "Photographic Notes," because we have invariably abstained, not only from anticipating the reports of the proceedings at the society's meetings which appear in the society's Journal, but also from copying any articles which have already appeared in that Journal. We have abstained from doing these things from motives of common honesty, and we decidedly think that in passing the above resolution the council are in the right. No honest man would dream of disputing their argument. We take that for granted, and are not going, in what follows, to discuss the right and wrong of this matter, but simply to offer a few comments on an article by Mr. Crookes, relating to this subject, which appeared in No. 12 of the Photographic News, a Journal recently started and edited by him. In that article the writer attempts to defend the course in which he, as editor, has begun, and in which he says he intends to persevere in oppositon to the resolution of the council; and also makes some curious revelations with respect to the Society's Journal, which people may believe or not as they choose. His argument is that the Photographic Society is a *public* body, and its meetings are *public* meetings, at which any reporter has a right to be present; and he informs us that his only object in publishing a report of the proceedings at those meetings is to serve the society by giving to them increased publicity. "We may well ask," says he, "what interest can we be supposed to have in the publication of these reports beyond the desire to be of service to members of the society"; and again, "our real motive is obvious to every impartial and honest man." Of course it is; how could any honest man fail to perceive the true motive, considering that this gentleman was for about a year secretary to the society and no doubt still takes a lively interest in its welfare? It also appears from Mr. Crooke's revelations that the Journal of the Society, of which he was editor for about a year, and which when he first became editor was reported by him to be in a very flourishing condition, gradually dwindled down in its circulation (under his management) until, when he received his dismissal a short time since, it was brought to such a pass as to "depend for its continued existence on its being the chosen receptacle for all the desultory conversation indulged in by a few garrulous members at their meetings"; while in another place he informs us that "not one in five who receive the Photographic Journal ever reads it." His own readers may either believe or disbelieve these statements; but to those who elect to believe them a clue will be afforded by which to account for the change which has recently been made in the editorship of the Journal in question. The remainder of this gentleman's article is such a silly gasconade that the council of the Photographic Society must now feel ashamed that the writer should ever have had the control of their own Journal.

The Photographic Society may not have done all the good that it might, could, and should have done; nevertheless, it has done much good, and will do more. A large part of its income is derived from the profits of the Journal; photographers will therefore no doubt generally condemn and oppose attempts to divert these profits into a private channel. The council have perceived the ill effects of trusting incompetency, and now we are only expressing a general feeling in congratulating them on their present choice of editor. No doubt they will treat the indecent attack of their late secretary with proper dignity, and should they at any time find it necessary to maintain their rights by an appeal to a legal tribunal, they may rely on receiving the support of every upright man to whom the circumstances of their complaint are explained.

[This article shows that the good old motto, "United we stand, divided we fall," is as little regarded in England as in America, and that petty jealousies and self-aggrandisement are equally rampant in both countries. Public Art societies as well as public bodies—according to our views—should "stand upon their own bottoms," and should be free to all who subscribe to their rules, and not depend upon publications for their support ; while periodicals, devoted to the interests of the arts should equally depend upon the talents and enterprise of their editors. All public meetings should be as freely reported by one paper as another. This is the republican view of the matter.—Ed. P. & F. A. Journal.]

From Photographic Notes.

PHOTOGRAPHIC IMPROVEMENTS IN 1858.

We will now give a brief *resume* of the improvements which have been made in Photography during the year 1858.

First and foremost must undoubtedly be placed Mr. Fox Talbot's improved method of Photo-Glyphic Engraving. This process consists in obtaining upon a steel plate by chemical means an etching from a photograph, from which proofs may be struck in the usual way. The Specifications of Mr. Talbot's patents for this process, taken out in 1852 and 1858, will be found in *Notes*, No. 63. The specimens which he has kindly sent for our inspection, twenty-two in number, are not quite equal to the finest silver prints, but are so far good that altho' *all* the excellencies of a fine silver print are not to be found combined in any single Photo-glyph, still they may be found some in one specimen some in another. For instance, there is boldness and vigor in the view of the Court of Lions in the Alhambra,—beautiful half-tone in the views of Notre Dame, the great Bell of Moscow, and the Schools at Oxford ;—and in all the specimens the definition is perfect. We are therefore inclined to think that the faults which a fastidious critic would certainly detect in any one of these specimens are rather to be attributed to the unsuitableness of the photographic original than to any inherent defect in the Photo-Glyphic process. The fact is, photographers have got into the way of taking negatives too dense for any process of printing except that in common use, in which the print is first over-printed in the pressure frame, and then lowered in tone by the fixing and toning bath ; and when any new method of printing is brought forward which is conducted on a different principle, a hue and cry is immediately raised about want of half-tone,—the admirers of the old process forgetting that when *exact* justice is done to their negatives in the pressure frame, even by their favorite process, either the half-tones are wanting, or the shadows overdone. Take, for instance, the snowy lights of a Photo-glyph, or Carbon print, or developed print, or glass transparency ; is it not certain that, other things remaining the same, these snowy lights would have exhibited tone and details if the negative had been sufficiently transparent in those parts? Our belief is that no known process of printing is to be blamed for the non-production of half tone, but that the fault in every case lies with the negative. The first step theretore towards the improvement of any method of reproducing positives is to obtain a suitable negative.

On first hearing of Mr. Talbot's improved process of Photo-Glyphic engraving we expressed doubts as to the possibility of avoiding the grain and smudginess which characterize the photogalvanograph ; but the sight of the specimens removed at once those doubts, and we now regret that we expressed them. There is so little grain in a photo-glyph that it is scarcely perceptible under a high magnifyer, and most of the proofs we have seen exhibit considerable delicacy and artistic beauty. The great value of the process will no doubt consist in the ready means it affords of illustrating books by photography, and for this purpose its importance cannot be overrated. To Mr. Fox Talbot is therefore due the honor of a second discovery which may prove to be scarcely less important than that of Photography itself.

To those who have not seen any of Mr. Talbot's photo-glyphs it will convey some idea of what may be expected from this process when we say that on comparing a photoglyph with a good albumenized sun-print, under a high magnifyer, the latter looks much the coarser of the two. Albumenizing a sheet of paper does not render the surface so smooth and even as cylindering it in an engraver's press; and on the smoothness of the tablet the delicacy of the print of course greatly depends We are inclined to think that a cylindering press, like that sold by M. Poirier, would be a valuable addition to the paraphernalia of the dark room, and its extensive introduction would *probably* bring plain printing (which is certainly the most artistic), into higher repute.

The next great step in Photography which will render the year 1858 remarkable in the history of that science, is the discovery of Printing in Carbon, by a method extremely simple and inexpensive, and which any amateur may easily master, and practise with success. The process may be modified in a variety of ways by substituting various pigments for carbon, and using tinted papers. Carbon-Printing has been brought to a very advanced state during the past year by Mr. Pouncy, of Dorchester; and photographers owe him a debt of gratitude for the persevering industry which he has displayed in experimenting in this direction. Everything relating to this method of printing has been fully discussed in our back numbers for the last year, and the full particulars of the manipulation are given in the present number, so that we need not introduce these matters again.

The principal objection raised to Carbon Printing is, that the material exists in a state of mechanical division instead of in the form of a chemical precipitate But it should be remembered that the surface to be printed on is *paper*, and this is coarse even when albumenized, at the same time that paper positives are valued rather for their artistic qualities than their microscopic perfection. Besides, on examining a fine architectural drawing in Indian ink, (that is, carbon in a state of fine mechanical division), it would indeed be hyper-criticism to find fault with the coarseness of the medium employed; and it may be questioned whether the most even tint which could be obtained by holding a sensitive chloride paper in the light would exhibit any superiority in evenness to the tint produced by applying to the same paper a wash in Indian ink or water colors. Photography must be greatly in advance of its present state before such an objection as we mentioned can be considered valid against a process of Carbon-Printing upon *paper*. We would observe however, that some months ago, Mr. Osborn, of Birmingham, in a private letter, informed us of a method of Printing in Carbon which had been suggested to him by Mr. Johnstone, and which would consist in applying to a sheet of paper a mixture of bi-chromate of potass and sugar, exposing it to light under a negative, washing off the unaltered chemicals, and acting on the parts which had been fixed by light with sulphuric acid, which it was supposed would carbonize the sugar which was combined with the reduced chromium salt, without affecting the whites of the picture. A similar suggestion has been lately offered by Mr. Mabley, of Manchester. The idea is good, but we have not heard of any one having tried it. We shall do so ourselves shortly and report results.

It appears now to be generally admitted that Mr. Pouncy's process is an important step. We strongly advise our readers to apply to him for their materials; and in making their first experiments, to follow his directions implicitly. Hard, smooth paper gives results in no way inferior to silver prints as regards detail and half-tone, but the blacks are feeble, and resemble black lead; slack-sized paper, on the other hand, gives very vigorous blacks, but the details and half-tints are not so fine as before. If the latter kind of paper were cylindered before being put into the pressure-frame it would perhaps be a great improvement. Perhaps also a little indigo might be added to the carbon with advantage to the tint.

Among other photographic processes which have been brought forward last year are, Fothergill's Dry Collodion Process; —a method of bleaching glass positives with a solution called "Alabastrine Solution," (the composition of which is a Trade secret); —and a method of Printing by Development upon Opal glass, which has been patented by Mr. Glover.

With respect to Mr. Fothergill's Dry Process, we believe that more has been said about it than it deserves. It is closely allied in principle to Dr. Norris's Dry process, and the only point in which it differs from his appears to us to involve an *error* of principle, if the plates are intended to be kept for any length of time The mode of exciting and developing the plates is the same in both processes, but in Dr. Norris's the plate is *thoroughly* washed after removal from the nitrate bath, and gelatine (which is a comparatively inert substance, containing no sulphur) is applied to it; while in Fothergill's process the plate is not so thoroughly washed to remove the free nitrate, and albumen is first applied to it, and then washed off. Now knowing what we do of the properties of albumen when mixed with nitrate of silver, it does not require a ghost to rise from the dead to tell us that Dr. Norris's plates are more likely to keep well and develop clean than Mr. Fothergill's; and it is really surprising to see questionable modifications of old processes caught at and run after by amateur photographers without their first examining the *principle* on which the modification is founded, or considering the *end* which it is proposed to gain by it.

Dr. Norris, alluding to Fothergill's process, in a letter which we received from him in October last, writes as follows:—

"How ridiculous to attempt keeping open the pores of the collodion film by introducing *coagulated albumen*. What sort of development could be expected? Will such rival wet collodion in celerity and consequent clearness and brilliancy? Certainly not. I find, from experiment, that the best results are obtained by my process. When the plate has been thoroughly washed before applying the albumen you get little or no coagulation, and the plate is in much the same condition as a simply washed and dried plate, save that it developes rather worse.

"But is it not a fact, that a plate, having a pellicle on its surface of a soluble character, is in a better condition for preservation than one in which the atmosphere, with all its impurities, is in direct contact with the delicate film of iodide? One would think this had been disproved, seeing how ready photographers seem to take up processes having no such protection.

"As to sensitiveness, the *maximum* point *attainable* is that of a simply washed and dried plate; past this no Dry process has ever yet gone, and if you will make a few comparative experiments you will find that this is the sensitiveness of my plates. The notion that an organic salt of silver, as the albuminate, confers sensitiveness, is unfounded, and however pretty in theory is baseless in practice If photographers would make their experiments more accurately we should hear fewer contradictions in our science. Whenever I make an experiment as to sensitiveness, I place the rival plates in one slide and expose with the same lens; by this means error is precluded."

The Dry processes, in which the free nitrate of silver is washed off, certainly give exquisite details and the negatives, when developed with gallic acid, are not liable to the fault of excessive density so common in the wet collodion process with a pyrogallic developer.

Dr. Norris's is the simplest of all dry processes that have yet been published, and the success of the Dry Plate Company, at Birmingham, sufficiently proves that his process is good. Why in the face of such evidence any photographer should desire to turn his back upon gelatine and seek to substitute for it such substances as albumen, honey, raspberry syrup, &c., or why the journals continue to be filled with endless stories about such modifications, we cannot conceive. We have for months past entirely closed these columns against the introduction of any of the above complications of a good process; and we would suggest that in future a fine be levied upon any Editor who publishes a Dry Collodion Process which cannot be *proved* to be *better* and *simpler* than that of Dr. Hill Norris; the proceeds of such fines to be handed over to the discoverer of a dry process in which *no* preservative of any kind is required. The endless modifications of the Dry Collodion and Wax-Paper Processes with which the pages of certain Photographic Journals have for a long time been filled have lowered the character of Photographic Journals generally in the opinion of men of science,—and all clever practical photographers look on such communications as sheer impostures, and only calculated to seduce unwary amateurs into subscribing for so much mere writing against space. We have no doubt that this strong and frank expression of opinion will be echoed in many quarters, and be productive of good.

The Alabastrine Solution has been analysed by Mr. Horsley, F.C.S., of Cheltenham, and the method employed and results obtained are given in two letters from that gentleman, which will be found at page 18. Some beautiful results have been obtained with this solution in bleaching positives upon glass, and the matter deserves the attention of all who practise the Positive Collodion Process. Mr. Keith, of Liverpool, has succeeded in obtaining some fine positives with the following re-developing solution :—

Distilled water	1 ounce.
Saturated solution of bi-chloride of mercury in hydro-chloric acid	12 minims.
Pro-sulphate of iron	20 grains.
Nitrate of potass	12 "
Alcohol	½ dram.

The picture is taken, and fixed in the usual way ; then put into hot water for three minutes, and afterwards washed in cold water. The re-developing solution is then poured over it. At first it causes the picture nearly to disappear but after a few minutes, it is re-devoloped ; the process occupying about half-an-hour.

It is worthy of remark that Alcohol is a much better solvent of bi-chloride of mercury than water.

The printing process upon Opal glass, patented by Mr. Glover, yields beautiful results. The glass is roughened by grinding it with emery, and the rough side is coated with collodion, and any of the dry processes employed by contact with the negative,—or the wet process, the negative being copied by a lens. The print is then toned with gold, if necessary. We received a year ago, from Messrs. Ross & Thompson, of Edinburgh, a very fine print taken upon porcelain in this way. We think the method of Printing by Development upon opal glass so well worthy of attention, that a short time ago we ordered £10 worth of the glass from Messrs. Forrest & Co. ; but nearly the whole of it was unfortunately destroyed at the burning of our laboratory. Prints taken in this way are positive both by reflected and transmitted light.

While on the subject of printing we must call attention to a paper by Mr. Hardwich, read at the Meeting of the Photographic Society on the 7th ultimo, and published in No. 74 of the Society's Journal. The object of the process described is to tone albumenized prints with an alkaline solution of chloride of gold, instead of sel-d'or, as we recommended some years ago for plain paper. This process appears likely to solve the difficult problem of obtaining permanent silver prints upon albumenized paper ; and as regards the tone and qualities of the prints, we can only say that nothing we have yet seen of the kind is superior to two specimens which Mr. Hardwich has kindly sent for our inspection, accompanied with the following note for insertion in this Journal ;—

To the Editor of Photographic Notes.

"Dear Sir,—Some time back the Members of the London Photographic Society were much interested in giving publicity to a toning process by sel-d'or, communicated by you to their Journal, and now extensively known and practised.

"We do not find, however, that this mode of coloring prints is altogether adapted for employment with albumen, although it gives excellent results upon paper simply salted. I wish, therefore, to call your attention to a process with alkaline chloride of gold published on behalf of the "Printing Committee" in the last number of the Society's Journal, which ought to produce upon albumenized paper the same color as that yielded by sel-d'or on plain paper.

"Perhaps you will oblige me by testing the value of this process and recommending it to your readers if you find it to succeed. I may add that to obtain the black tones the paper ought to be rather strongly salted, and rendered sensitive upon an 80-grain solution of nitrate of silver.

"Yours, most truly,

"F. Hardwich.

"Ming's College, Dec. 13th."

We conclude from the tenor of the above note that it will be furthering the wishes of the writer if we insert the process in this Journal in his own words, copied from the Journal of the Photographic Society, p. 96.

"TONING BY ALKALINE CHLORIDE OF GOLD.

"This mode of toning is adapted for any kind of sensitive paper : but its peculiar value is seen in the albumenized paper, which is sometimes difficult to color by the sel-d'or process, and, even in the ordinary fixing and toning bath of hypo-sulphite of soda and gold, does not reach an agreeable tone unless the bath be kept in a very active condition. Take of—

Solution of chloride of gold	1 fluid drachm.
Sesqui-carbonate of soda	1 drm.
Citric acid	20 grs.
Water	12 fluid ozs.

"The solution of chloride of gold contains 1 grain to each drachm, and is the same which the writer advises for the ordinary toning-bath and for the sel-d'or process. The carbonate of soda is of the kind sold by druggists for making effervesing draughts ; and the water is either distilled or pure rain water, free from lime salts, which, if present, would be precipitated white by the carbonate of soda. Pure citric acid, free from tartaric acid, must be obtained.

"It is not recommended to keep the solution ready mixed, since it gradually undergoes a change, becoming colorless, and toning more slowly. When frequently in use, however, it would be a simplification to substitute measure for weight, by making standard solutions of the carbonate of soda and of the citric acid ; say 1 ounce of the former to 16 ounces of water, and, separately, 160 grains of the latter to a similar quantity, taking in each case two fluid ounces of the solution, and making up the bulk to 12 fluid ounces of the distilled water. Solution of citric acid, however, when kept for a length of time, decomposes and becomes mouldy.

"The writer prefers a strongly albumenized paper for this process, and especially one which prints rather red in the frame, since the gold will otherwise be liable to give too blue a color. It is also important to use a full strength of sensitizing bath, so as to promote a rich and velvety appearance in the image ; 60 grain to the ounce will do very well for a paper salted with a 10 grain salting solution.

"The prints, after removal from the frame, may be kept for some hours, if desired, but not beyond that time advantageously. Begin by washing them in common water, allowing two or three changes until the fluid ceases to flow away in a milky state. Some use a final bath of salt and water to convert the last traces of nitrate into chloride ; but the writer believes this to be unnecessary, since a trace of nitrate of silver in this process does not discolor the toning-bath as it does in the sel-d'or process, but simply forms insoluble carbonate of silver, which remains in the print until the fixing solution of hyposulphite is applied. Having prepared a stock of prints, leave them in the water until a convenient time for toning, which is done in the following way :—

"The warm liquid is poured out into a flat dish : and the prints are put into it, two or three at a time. A little discoloration of the toning solution may be disregarded, since it is caused by a quantity of gold quite microscopic, and will not injure the whites of the proof. Keep the pictures moving, and watch the changes in color. The first two or three may perhaps be fully toned in about five minutes ; but afterwards, as the liquid cools down, and the quantity of gold decreases, twenty minutes or longer may be allowed. The quality of the paper, however, will influence this point considerably. English papers strongly albumenized always requiring a longer action.

"The time in the toning-bath must be regulated according to the color desired. If the prints are removed as soon as the blue color of the gold is seen they will usually change in the fixing-bath to a warm shade of brown ; but when left for two or three minutes longer in the toning-bath the darker tint is permanent. Hold them against the light, and when they cease to appear red by transmission they are ready for fixing.

"Over-printed proofs always yield the blackest colors, because they may be kept for a longer time in the gold without losing the half-tones : and, indeed, the state of the lighter shades of the proof is a good criterion of the time for removing it, since the chlorine previously combined with the gold has a bleaching action.

"Do not attempt to get pure black and white tones on pictures printed from a feeble negative. Unless there be a perceptible amount of bronzing, the deep blacks cannot be obtained on albumenized paper.

"Each grain of chloride of gold ought to tone six or seven prints of 5×4, and two or three 10×12, which is rather more than the number yielded by the same quantity of gold in the sel-d'or process.

"*To fix the proofs.*—After removal from the gold bath, wash back and front for an instant under a tap, and fix in the following bath :—

Hypo-sulphite of soda	6 ounces.
Water...........................	1 pint.
Carbonate of soda................	½ ounce.

The object of the carbonate of soda is to prevent the fixing solution from gradually acquiring sulphur-toning properties to an injurious extent. The bath may be kept for many weeks, and gives a slightly improved color when it has been much used. Add fresh crystals of hypo-sulphite occasionally. The time of immersion is from ten to 15 minutes, but the proper guide is the appearance of the finished prints after washing , if imperfectly fixed, they will show mealy spots in the substance of the paper when held against the light.

"Wash in the usual way ; but if the water contain lime-salts in any considerable quantity, change it quickly at first, lest a white deposit should be produced by the carbonate of soda remaining in the paper. N.B.—These pictures will stand hot water , but it is not required so far as removing the size is concerned, since this is effected by the alkaline liquids used in toning and fixing.

"*Failures.*—No fear need be entertained of the whites turning yellow ; they ought, on the contrary, to be unusually pure and good. *Blisters*, appearing in the washing, have been spoken of, but the writer has found that they mostly disappear on drying. Possibly they may be due to acidity in the size of the paper, liberating carbonic acid from the carbonate of soda, and thus inflating the albumen. Their non-occurrence when an acid solution of chloride of gold is employed in toning, in place of an alkaline solution, favours this idea."

The prints sent by Mr. Hardwich are upon a moderately thin English paper, highly albumenized. The whites are absolutely white, and the blacks intensely vigorous, and of a rich chesnut black, without the slightest tinge of inkyness. Nothing could be more satisfactory, and there is every reason to hope that they will be at least as permanent as any silver prints by any process. If then photographers are to accept this process as the final result of the labors of the Printing Committee, it must be admitted that their mission has been satisfactorily fulfilled. We hope soon to have time to try this mode of printing, and exhibit our results. Although we have strongly advocated Carbon-Printing, yet our faith in the permanence of silver prints, *when properly toned and fixed*, has never been for a moment shaken.

We now turn to an improved view-lens, called the Orthoscopic Lens, invented by Professor Petzval, and introduced into this country last year by Herr Paul Pretsch, and M. Voigtlander.

The chief merits of this new lens have been so ably pointed out in a paper by Mr. Andrew Ross, in No 56 of this Journal, that it is needless for us to go over that ground again. We shall merely offer a few brief remarks on the history of this invention, and the mode of its introduction into this country.

The facts connected with the invention of the Orthoscopic lens are stated in the letter from Voigtlander which was published in our last number, and they are so well attested as to leave no doubt of their truth. It appears then that about 17 years ago, shortly after the discovery of Photography, Professor Petzval calculated the curves for two different combinations of lenses, and deposited the formulæ with M Voigtlander to be carried out practically. One of these combinations is the portrait lens which has come into general use,—the other is an Orthoscopic lens *in which the posterior lens is the same size as the front lens.* This latter combination was not then found to answer, simply for want of a small diaphragm to the back lens, and it remained on the shelf for 17 years. A year or two ago, however, Prof. Petzval discovered that by the addition of a small diaphragm to the back lens this combination could be converted into an excellent view-lens ; he therefore took out a patent for it, and, having quarrelled with M. Voigtlander some years before, employed M. Dietzler to manufacture the instrument for sale. But M. Voigtlander having the original drawings in his possession, and finding the admirable qualities of the lens for views, when furnished with an appropriate stop, determined to manufacture them also, notwithstanding M. Petzval's Patent. This led to a good deal of angry controversy between these gentlemen, with which our readers are familiar. As soon as the Orthoscopic lens was introduced, a Committee was appointed by the French Photographic Society to examine and report upon it, and their report was highly favorable. A Committee appointed by the Photographic Society of Scotland also examined and reported favorably of the lens. In the meantime also we procured one from Messrs. Knight, and found it to be an improvement in one or two important particulars on the view-lens in common use ; and after the lapse of two or three months, Mr. Ross pronounced an opinion, and declared that this new lens afforded "unprecedented means of obtaining a correct photographic instrument" ; at the same time he contributed a valuable paper to this Journal, which we were glad to see was shortly after copied into the leading Photographic Journal in America.

Such appears to be the the history of the invention and introduction of the Orthoscopic lens. It is the only important novelty in Photographic apparatus which was brought forward last year.

Among the contributions to the Chemistry of Photography, the most valuable are the papers read by Mr. Hardwich at the Meetings of the Photographic Society,—the papers communicated by Messrs Davanne & Girard to the French Photographic Society,—the communications of M. Niepce de St. Victor and M. Becquerel to the French Academy of Sciences,—and the paper on the Theory of the Daguerreotype process, by Mr. B. Lefevre, in our last number.

In the Literature of Photography, M. Van Monkhoven has published a new edition of his "Traité General de Photographic," which is the most comprehensive work on Photography published on the Continent ; and we have ourselves published a "Dictionary of Photography" in which an attempt has been made to include a considerable range of information useful to the photographer. In addition to these works a few shilling pamphlets have been issued by some of the principal Photographic Firms, and a very nice little work has appeared on Landscape Photography, by Mr. Joachin Otté. There have also been published a Stereoscopic Magazine,—a Photographic Art Journal,—and a Photographic Almanac for 1859.

During the past year the various Photographic Societies throughout the Kingdom have held periodical Meetings, and by the discussions and papers read on those occasions, have contributed many useful hints on various points of manipulation, improvements in apparatus, &c. These Societies do a great deal of good, and deserve to be supported by every intelligent photographer who lives within range of their head-quarters.

Such, then, appears to be a brief, *resume* of what has been done in Photography last year. We will conclude by recalling to the memory of our readers two or three matters which we have ourselves suggested, and which we think worthy of their consideration.

One suggestion is for a Panoramic Camera, having a moveable slide for including a very wide angular field of view upon a flat plate. The description of this instrument is given in No. 45, and the optical principle of it is certainly quite correct. We have no doubt it would answer perfectly.

Another suggestion is for producing stereoscopic works of imagination; the method is described in No. 59. We were much amused by observing that about a month after the publication of that article, Mr. Sang, of Rirkaldy, N. B., produced a series of stereoscopics from the plates in a work by Mr. Cruikshank, entitled "The Bottle," and sent them to the Editor of the *Times* as a great novelty, *not describing how they were done*. Mr. Shadbolt, however, ignoring our article, which perhaps he did not understand, volunteered to inform his readers how the marvel of producing stereoscopic effect from a flat surface might be accomplished by *cutting out the figures from the original picture*, and tracing their outlines upon a pair of pictures intended to be viewed in the stereoscope; and he ends his description with the following facetious remarks:—

"If it were possible to apply this operation to a painting, which we doubt, it would at any rate involve the destruction of the work, which, though of little consequence as regards a single copy of an etching, would be a somewhat costly proceeding in the case of a valuable painting, even if we were to ignore altogether the barbarism of such a piece of folly." (!).

If Mr. Shadbolt will consult the article "Tracing paper" in our "Dictionary of Photography," he will see that artists can copy correctly any part of a picture without necessarily *cutting it to pieces*. And if any of our readers take an interest in a matter which will assuredly some day assume considerable importance, they will find in our article in No. 59 the best and in fact only proper method for doing what Mr. Sang has so ingeniously accomplished in the case of the Bottle.

Another suggestion which we made last year, and to which we attach importance, is that of Alcoholic Collodion, that is, collodion made with absolute ether and alcohol, and containing the minimum quantity of ether, and the maximum quantity of alcohol. We trust that before long the merits of this new formula will be fully tested by competent operators.

Such then are the principal improvements and novelties in Photography which have been brought forward in the year 1858. Should the present year be equally prolific in useful discoveries, which we do not doubt but it will, Photography will advance at a rate sufficient to satisfy all reasonable expectations. It must be remembered that the way to advance an art is by free discussions,—unanimity among the Members of Photographic Societies, the removal of stumbling blocks from the path of progress,—and the frank and generous acknowledgment of services rendered by industrious experimenters and inventors.

[We must not only give credict for this article to "*Photographic Notes*," but close it by the remark that for excellence and impartiality it is superior to any Photographic Journal in Europe, and we venture to say that if not looked upon as such now it will eventually be acknowledged the leading periodical on Photographic Art matters in England.—*Ed. P. & F. A. Journal.*]

An old lady, possessed of a fine fortune and noted for her penchant for using figurative expressions, one day assembled her grand-children when the following conversation took place:

"My children," said the old lady, "I am the root and you are the branches."

"Gran-ma," said one. "What, my child?"

"I was thinking how much better the branches would flourish if the roots were in the ground."

From the New York Daily Times.

BRADY'S GALLERY IN NEW YORK.

No feeling is more common everywhere than a desire to see great or famous people. In Europe, everybody turns out to see a victorious general; many will go far to catch a glimpse at a great statesman or a famous dancer, and there is a perfect mania for a glimpse of the cocked hat or bonnet of a reigning sovereign. In this country we carry the passion a great deal further, and with more reason. We rush in crowds to see a man who has distinguished himself on the field of battle or in the councils of the nation, and we are content to wait an hour for the satisfaction of taking such an individual by the hand. The reason is obvious: The popular mind loves the uncommon and when the uncommon is also admirable, the popular love is apt to merge into popular adoration—which is that unwise extreme of veneration known as hero-worship, for which Americans are said to be peculiarly distinguished. For ourselves, we do not care to be hero-worshipers. It is an unstable and very variable sort of passion, which we would be the last to encourage. But we confess that, in common with all the world and his estimable brother, we do like to scan the features of men whose talent has commanded for them a high position in the respect of their countrymen.

It is not, however, always possible to see many great men together; but as it is quite easy to see their portraits, which answer the purpose almost as well as the originals, we went to BRADY's Gallery in Broadway a few days ago, expressly to pass an hour in an inspection of the features of the numerous people of note whom BRADY keeps "hung up" in photograph. We found the amusement agreeable. It is pleasant, after reading what Senator HALE, said to look at the features of the man who said it. When we hear that Senator MASON has been pitching into Senator SEWARD, it is agreeable to inspect the features, in a state of placidity, of the two belligerents. So, also, when we learn that the President has been doing something tricky and evasive, it is not bad to have one's surprise immediately removed by a glance at the corresponding expression of features in the portrait of that venerable man. For the President is there—at BRADY's—and almost opposite to the master stands the man, in the person of JAMES GORDON BENNETT, whose pleasant features excite, in the portrait, the same sensations of doubt suggested by the inspection of the original, as to the actual direction of his visual orbs. Our affectionate Brother GREELEY is also there, the malicious photographer having placed him side by side with *his* affectionate Brother BENNETT, just mentioned. Brother RAYMOND is also in the collection, and faithfully rendered, to the last hair of his moustache. We sought in vain for Brother WEBB, who begins to appear in plaster with great frequency as a sign for image makers in the side street; he shines not at BRADY's.

The most striking picture now in the Gallery is that of JOHN C. CALHOUN, a half-length portrait, photographed, life-size, from a daguerreotype minature, and finished in oil. It is a beautiful piece of work, and wonderfully life-like. The ragged, wiry character of the face marking nervous energy,—the overhanging brow and broad intellectual development,—all mark CALHOUN at a glance. We found, Mr. Speaker ORR—a right proper, staid sort of gentleman, with an expression of countenance speaking loudly of red tape. Then we have the high and mighty General LEWIS CASS, Secretary of State, &c., &c., &c., with the peculiar, "shut up" cast of countenance, which belongs to the high and mighty diplomatist. Mr. BRECKENRIDGE, the Vice-President, occupies a prominent place in the gallery—gentlemanly but rather disputable face, with a nose somewhat of the Edwin Forrest pattern. The Hon. HOWELL COBB and the Hon. HUMPRHEY MARSHALL may be said to be eminently the solid men of the establishment, the Secretary's face being indicative rather of good living than of specific duties, good humor than political intrigue—an expression which is heightened perhaps by total absence of whisker. In this last particular, Mr. COBB finds himself in the same category with Mr. MARSHALL, and with Senators SEWARD, of New York, HAMMOND of South

Carolina, and Hunter of Virginia, the Hon. Mr. Stevens of Georgia and the Rev. Henry Ward Beecher. Senator Hunter, however, suffers from the want of whisker, in the absence of which he looks more like a great boy than a great man. Senator Wilson, has the genuine and original look of a lively Yankee, his expression impressing you with the idea that he is a clever (English clever) man, and that he is fully aware of the fact. Judger Parker appears on a lower row—with one of the most intelligent and even powerful set of features in the Gallery. Governor Wise is also present in photography, with the decidedly *premonce* face belonging to the Calhoun class—and near him is our beloved President, sunk in his chair—James Buchanan, with the "Buck" forehead thrust forward, and his eyes a long way behind, peering at you from ambush as though it is not a delight to the old gentleman to look anybody in the face—the features expressing a strange mixture of obtuse stolidity and sharp cunning. Judge Kane is also there, looking like "a fine old English gentleman, one of the olden time," with Chief Justice Taney near him, a plain scholarly-looking and lawyer-like, though somewhat hard-featured man. In the front row, stands the portrait of the Autocrat of the Breakfast Table, as quiet and sensible a looking man as you would wish to see—at breakfast or anywhere. The great financiers are represented by Erastus Corning, two of the Messrs. Brown, of Wall street, and Cornelius Vanderbilt—commonly called by persons who desire to impress you with their intimacy with the great "Kurnele Vanderbilt"—whose portrait, by the way, is one of the best-looking in the gallery: there is an air of aristocracy about the face which does not altogether accord with "Kurnele's beginnings, but there is also a shrewdness which is quite in keeping with the little trifle of $50,000 a month which the Commodore is said to receive as a bonus for not running his Nicaragua steamers. These gentlemen are just below Senator Hale, of New Hampshire, a sober, quiet face in contrast with Mr. Giddings next to him, who looks as if he could eat up every Southern man in Congress without so much as winking.

Senator Douglas is, of course, present in the canvass, or paper, or whatever it may be. Nobody fails to pay his frame a visit and note the somewhat fiery and slightly dogmatical, but highly intellectual character of what the Cockneys would call his "fizzog." Senator Crittenden is near "the gentleman from Illinois."

Senator Toombs, of Gorgia, with what might, in Hibernian language, be called his bull-headed face, looking obstinacy and contradiction, stands near that most impressive of "mugs" belonging to Ex-President Pierce. The Hon. Edward Everitt is in company with Judge Daniels and John Cochrane, the last named of whom looks mild enough, in spite of his moustache and beard, and not at all like the "Fiend Incarnate"

The clergymen are in the background—or, in other words, in an apartment at the back of the principle gallery. They gather there, however, in great force; and it is pleasing to see Archbishop Hughes looking so amiable in the midst of the divines of the Blue Light sects, and apparently not at all disturbed by the proximity.

The best portion of the gallery, however, is that which contains the ladies; and it is in that part where the sight-seers most do congregate. At the head of a goodly array of beauty is the portrait of Mrs. Senator Douglas, a fine, tall, elegant woman, with a sweet, intellectual face, of somewhat dark complexion. The type of feature is rather French than American; and the expression, which is very *spirituelle*, is marked with a slight shade of seriousness which has the effect of enhancing its beauty. Mrs. Douglas is dressed most tastefully, and without that ostentatious display of jewelry so common at the present day, and which marks such miserable taste. A bracelet and a ring are the only articles of jewelry in the picture. The hair, too, is worn in simple flowing *bandes*, which are so much more becoming than the "combed back" style, in which we have seen the original to less advantage than she appears at Brady's Gallery.

Next in order comes Mrs. Crittenden—a matronly face, bespeaking firmness with good humor, and showing just so much of the mark of age as to enable you to admire the remarkable preservation of former beauty.

Miss Lane, the niece of the President, a fine, handsome girl, with an imperious rather than a winning, a handsome rather than a loveable style of countenance, is next to Mrs. Crittenden on the one side, and, on the other, to Madame Le Vert, the lady wit, authoress, and leading spirit of Southern society. Her face is more French than American, but the archness which pervades the features is decidedly American, and still more decidedly Southern. The features are, indeed, more full of pleasing expression than of striking beauty.

Miss Hale, the daughter of Senator Hale, is next to that of her mother. Both portraits are specimens of beauty, but the observer who permits himself to imagine from the portrait of Mrs. Senator Hale how handsome she must have been twenty years ago, would be apt to assign her even a higher place in the scale of beauty than that now occupied by her daughter. The portrait of Lady Gore Ousely exhibits the diplomacy which has been so effective on the weak-minded person at the head of this nation. Lady Ouseley's is not a handsome nor a very striking face, its chief peculiarity being a sort of *hauteur* which belongs rather to the other side of the water than to this. Mrs. Senator Pugh's portrait is a picture of a happy, mirthful little woman, with just a little dash of temper in to make the character spicy. The face is more of the Yankee cast than of that which one sees most frequently in the middle or Southern States. Mrs. Conrad's is one of the handsomest portraits in the collection. There is rare grace and elegance of manner in the figure, while the expression of the features does not belie the gift of charming conversation for which this lady is famous. Mrs. Postmaster-General Brown, if one of the stoutest, is by no means one of the least pleasing faces in the collection.

On the whole, it is a decidedly agreeable thing to look at these portraits when you cannot see the originals. There are historical associations awakened by the features of many of the celebrities whom we have named which are full of retrospective pleasure, not the less delightful because of the croaking cant of the day, which seeks to decry the present generation as unworthy to share the fame of previous ages. There are living statesmen and jurists now upon the scene of active life who will not be justly appreciated until they shall have been removed from among us, and whose virtues and ability will then be as highly lauded as are those of the preceding century. At any rate, that finer or better women never lived than those who live to-day, we are fully persuaded, and any gentleman who desires to question this assertion can find our card on application.

From Photographic Notes.

FRENCH PHOTOGRAPHIC SOCIETY.

The French Photographic Society purpose opening an Exhibition of Photographs at Paris, in May next. Works intended for exhibition must be sent, carriage paid, to M. Laulerie, No 11, Rue Druot, Paris, on or before March 15th. They will be submitted for approval to a jury to be appointed at the next Meeting of the Society.

M. Bayard described at the last Meeting of the above Society, a method of

TONING ALBUMENIZED PRINTS.

It is no doubt very good, for M. Bayard is a high authority on printing. The method is as follows:—

"In 500 grammes of water, dissolve one gramme of chloride of gold, and add it, in small quantities at a time, to the following solution:—

Water	500 grammes.
Hypo-sulphite of soda	5 grammes
Chloride of ammonium or common salt	15 grammes.

"The mixture, which is at present orange red, soon becomes colorless, and is then ready for use.

"Wash the print in water after taking it from the pressure-frame, and immerse it in the above toning-bath. The tone it assumes is first red, then violet, then black, and finally blue.

"To stop the action remove the print and immerse it in a fresh bath of hypo, strength 15 per cent. Leave it there a quarter-of-an-hour, and wash and finish it in the usual way.

"The hypo-sulphite affects the tone very slightly; the proofs should not therefore be printed too deep."

A correspondent once facetiously observed that "grammes are very liable to produce d—mns." For grammes in the above formula, grains and ounces, or any other unit may be substituted, and we trust our readers will perform the necessary arithmatic with good temper.

At the meeting in question M. Rive exhibited a jewel of a glass dish. It was moulded in one piece, and had a perfectly flat bottom. A committee appointed to examine it pronounced it to be the right thing, but too dear. Is there no one in England who can manufacture such a dish, and sell it cheap? Glass dishes and baths are sadly wanted by photographers. Is there no one in this age of invention and competition who will supply this want, and turn an honest penny by so doing?

We shall shortly have a good deal to say about a new lens for views, which we have invented. Distortion is totally got rid of, and in other respects the lens works well, and gives a field free from curvature. In a few weeks a pamplet on the subject will be published, and the lens offered for sale. We have decided not to patent it.

We cannot find space in the present number for M. Niepce de St. Victor's last communication. It contains some curiosisities but no matter of immediate practical interest, so we defer it once more without compunction, referring the more curious among our readers to *La Lumiere*. No. 50 and 52.

From Photographic Notes.

OBITUARY.

The journalist has occasionally the sad task of recording the death of one whose name and works are familiar to his readers. Within the last two months Mr. Fallon Horne, of London, and Mr. Ivan Szabo, of Edinburgh, have been taken from us. To these we have now to add the name of Robert Howlett. He died on the 2d inst., aged 28, from an attack of typhus fever which followed a severe cold *caught by working in a new and damp operating room!*

Photography has its perils as well as its pleasures. One day we have to tell the story of a photographer who enters his laboratory with a lighted candle, a thing which he has foolishly done a hundred times before; he cracks a bottle of ether, and half-an-ounce, not more, is spilled upon the floor; presently the vapor reaches the light, and in two minutes the whole place is a raging furnace. But this photographer, after passing through an imminent danger from the explosion of a pound of gun cotton, escapes with his life; his career is not suddenly brought to a close through an act of thoughtlessness. But shortly after, another, and a far sadder story has to be told. In the prime of life, and vigor of health, a photographer returns from a holiday trip, during which he has tried a new lens, and with it obtained negatives such as he has never taken or seen before. Full of ardor and professional enthusiasm, he attends a meeting of the Photographic Society, exhibits his results, and publishes a letter in the Society's Journal, that all may hear of the success of his experiment and profit by it. A few days after we hear from a mutual friend that this photographer has caught a severe cold through working in a new and damp operating room; then follows the sad tale of typhus fever, and before the society of which he was a member can publish its next number, or hold its next meeting, a letter reaches us announcing his death! We conjure our readers to take warning from these events. Let them be more careful than ever how they meddle with ether and collodion by candle-light, but above all let them be careful of working in a damp room, or dabbling at this season in the wet. When the terrible penalty of an act of imprudence is exacted to the full, who is to blame but a man's own self?

In Robert Howlett we have lost a valued friend. In his profession he was an excellent manipulator, and a man of considerable taste, originality, and mechanical genius. We have seen a microscope, the lenses and brasswork of which he made with his own hands when a mere boy. To the exhibitions of the Photographic Society he was a constant and a large contributor; he has executed many important commissions for the Queen and the Prince Consort; and published several very interesting letters in this Journal and that of the Photographic Society. He was the son of a clergyman in Norfolk. It is with deep regret that we record the premature death of this young and distinguished professional photographer.

From the Photographic Journal.

GOLD TONING ON ALBUMENIZED PAPER.

Mr. Hardwich has communicated to the Photographic Society of London some observations on photographic printing, in which he depreciates, as unjust, the prevalent disposition to decry the methods of toning and fixing now in use. In skilful hands, doubtless, the methods in vogue are fully adequate to secure permanency, but the host of pictures "fading away" that meet us on every hand, prove too forcibly that some radical defect exists, if not in the formula at least in the manipulation. It is better to seek to improve the former than the latter; therefore Mr. Hardwich proposes an improved toning by *alkaline* chloride of gold This mode of toning is adapted for any kind of sensitive paper, but its peculiar value is seen in the case of albumenized paper, which is sometimes difficult to color by the *sel d'or* process, and even in the ordinary fixing and toning bath of hyposulphite of soda and gold, does not attain to an agreeable tone, unless the bath be kept in a very active condition. Make a solution of chloride of gold, one grain to the ounce of water; take of this

Solution of chloride of gold........	1	fluid drachm.
Sesquicarbonate of soda	1	drachm
Citric acid	20	grains.
Water (pure)	12	fluid ounces.

This solution will not keep when mixed, as it gradually undergoes a change, becoming colorless, and toning more slowly. It is not clearly understood what part the citric acid plays in this mixture; in a warm alkaline solution of chloride of gold it throws down an indigo blue deposit of metallic gold.

A strongly albumenized paper is to be preferred for this method, especially one that prints rather red, otherwise the gold is liable to yield too blue a color. A rich velvety appearance is promoted by using a sensitizing bath of full strength: sixty grains of silver to the ounce for a paper salted with a ten grain salting solution.

The prints may be kept for a few hours after removal from the printing frame, but it is best to tone them at once. Wash them in two or three changes of water until milkiness disappears; they may be left in the water until it is convenient to tone them, which is done as follows—

Mix the ingredients of the formula given above in an evaporating dish, and when effervesence ceases, place a spirit-lamp beneath, and raise the temperature, with constant stirring, to about 120° F., which is indicated by the steam beginning to rise, and a bluish discoloration, due to commencing reduction, is seen. The lamp must now be removed, else much of the gold will be reduced, changing the color of the fluid to an inky black, after which it will be nearly useless. Filtering is unnecessary.

This warm liquid is poured into a flat dish, and the prints are put into it, two or three at a time. A little discoloration of the toning solution may be disregarded, since it is caused by a quantity of gold quite microscopic, and will not injure the whites of the proof. Keep the prints constantly moving, and watch the changes of color. The first two or three may perhaps be toned in about five minutes; but as the liquid cools down, and the quantity of gold decreases, twenty minutes or longer may be allowed. The time, however, is greatly influenced by the quality of the paper; English papers strongly albumenized requiring a longer action.

If the prints are removed from the toning bath as soon as the blue color of the gold is seen, they will generally change in the fixing bath to a warm hue of brown; but when left for two or three minutes longer, the deeper tone acquired is permanent. The proofs are ready for fixing when they cease to appear red by transmitted light. Over-printed proofs yield the blackest colors, because they may be kept in the gold a longer time without losing the half tones. It is not advisable to attempt to obtain pure white and black tones on proofs printed from feeble negatives, for unless there be a perceptible amount of bronzing, the deep blacks cannot be obtained on albumenized paper.

Each grain of chloride of gold ought to tone six or seven prints, 5×7, and two or three of 10×12, which is rather more than the number yielded by the same quantity of gold in the *sel d'or* process.

Fixing—The proofs must be rinsed on both sides upon removal from the gold bath, and fixed in the following solution—

Hyposulphite of soda	6 ounces.
Water	1 pint.
Carbonate of soda	½ ounce.

This solution will keep many weeks, and imparts a slightly improved color after being much used. The carbonate of soda is added to prevent the fixing solution from acquiring sulphurtoning properties to an injurious extent. The time of immersion is from ten to fifteen minutes, or until no mottling appears in the proof when held against the light. The proofs are washed in the usual way.

From Photographic Journal.

PHOTOGRAPHIC PAPERS.

One of the greatest difficulties the photographer has to contend with at the present day, is in the papers manufactured expressly for photographic purposes. Of Foreign papers, we have *Papier Saxe*, Canson's, and Marion's; of English, there are Hollingsworth's, Harrison's, and others. Although the pulp of the papers of these different makers is in all respect the same, being composed of linen and cotton rags, yet very different photographic properties are produced from them, in consequence of the sizing being different. English papers are, for the most part, sized with gelatine, while those of the Continent are sized with fecala, or starch and resin soup. Now, the sizing greatly influences the color of the proof; papers sized with gelatine give very red hues in the printing-frame, while those sized with starch are sepia or violet: still the *quality* of the sizing does not influence the color of the proofs so much as the *quantity*; for by increasing the quantity of starch in the paper, hues as red as those from gelatine may be obtained.

The sizing not only makes the proofs more vigorous, but also makes them sharper and more delicate. A proof taken on unsized paper, is dull and leaden in hue, and in every respect repulsive. If but slightly sized with albumen, the unsized paper is but little improved: strong starch produces bright orange hues, and if the unsized paper be immersed in a strong solution of gelatine (5 per cent.) fine reddish hues are produced.

The quantity of sizing contained in the paper as delivered by the manufacturer is insufficient for photographic purposes; for proofs taken on plain paper, although very pleasing and satisfactory in an artistic point of view, lack transparency in the shadows, and that general brilliancy of tone which is indispensable to suit the popular taste. However, at the present time, the extra sizing is carried to excess, and except in stereoscopic pictures should be avoided. For portraits, landscapes, architectural subjects, &c., paper prepared with a mixture of albumen and water, in equal parts, has quite sufficient surface and gloss to bring out all the detail, and at the same time to secure adequate transparency in the shadows.

In fact, the higher albumenized paper now sold is to be regarded with suspicion, as the very high glaze is not due to pure albumen, but to an admixture or adulteration, either dextrine or gelatine; the presence of the latter is recognised by the chocolate red color of the proofs when removed from the pressure frame; and if the wet proofs are allowed to dry while in contact, they adhere together and are spoiled.

Oxide of silver, in combination with gelatine, and exposed to light, becomes an insoluble black varnish, which reflects a golden red hue; but when the combination is first made, the compound is of a mahogany red color. These facts explain the cause of the variety of hues given by papers sized with different materials. If the paper be unsized, then the salt of silver enters into combination with the fibre of the paper, and the silver tends to decompose and reduce itself; or perhaps, as suggested by Schönbein ozonized oxygen plays a part in this change. But in the case of sized paper, the particular affinity of the sizing material for the silver overcomes the disposition of the salt of silver to combine with the paper, or to reduce itself, and forming the compound spoken of, the chemical action is not exercised *on* or *by* the paper itself; the picture therefore requires both greater sharpness and the red hue due to the sizing material. Whatever the kind of sizing employed, or the quantity, it does not appear to have any influence upon the rapidity of printing; other things remaining the same.

Nor does the thickness of the paper appear to have any influence upon the result, beyond what is due to the greater abundance of sizing it contains; but thick paper is easier to manipulate, although more liable to tear while wet. From what has been stated, it appears that it is a matter of indifference what paper is used, provided it be not used plain, but sized with albumen, dextrine, gelatine, or starch. Some attention must be paid however to the sizing strength of equal weights of these materials, as the results will be materially influenced thereby. Of all the sizing materials, albumen, more or less diluted with water, is to be preferred.

From Photographic Notes.

STEREOGRAPHY.

Dear Sir—Will you give me your opinion which lens you consider best for stereoscopic pictures generally—the double one or the single?

I should like to be able to take groups and portraits, but I don't wish to sacrifice the views. I am afraid the portrait combination does not possess sufficient depth of focus for the latter.

Which camera do you recommend; one with two lenses, or Latimer Clarke's arrangement? The latter seems to me the most correct in principle, but instantaneous views are, with it, impossible.

Is the black tone one sees in paper portraits obtained from plain salted paper or from ammonio-nitrate?

From some cause which I cannot yet detect I have failed to develop a single negative with iron. They all look like miserable positives, and possessing no more density.

I possess a double quarter-plate lens by Chevalier, of Paris, the focus measured from the middle of the combination, is eleven inches. What sized plates for views would it cover? A plate 5×4 is covered quite sharp to the edges.

W. Syring.

Worth, near Crawley.

—We think the best arrangement for taking stereoscopic pictures is a twin-lens stereoscopic camera, furnished with a pair of portrait combinations, having a stop between the lenses not exactly midway between them, but slightly nearer the back lens. Our reasons are as follow:—

1st. Stereoscopic pictures should always be taken simultaneously, because when an interval of time elapse between taking the first and second picture, figures move, or shadows change, or the lights vary. This can only be done by using a twin-lens camera, or a pair of cameras which can be opened and shut at the same instant. The latter would be found very troublesome, while the former is extremely simple, because both picture are taken and developed upon the same plate.

2nd. When it is required to see things in the stereoscope exactly as we see them in natural vision, the stations should not exceed two-and-a-half inches apart, and the pictures should be properly mounted and viewed through whole lenses, the focal length of which is equivalent to that of the lenses with which the pictures are taken. The twin-lens camera is therefore suitable for taking stereoscopice pictures in which the natural appearance of things is truthfully rendered: and the parallelism of the axes of the lenses is strictly correct in principle because the pictures are always mounted upon a plane surface and not upon a cardboard bent in the middle. For the demonstration of this statement see *Photographic Notes*, No. 39, or the article on the Stereoscope in our "Dictionary of Photography." On the other hand, when it is required for any special purpose to represent things in the stereoscope with greater relief than they appear to have in natural vision, the stations mus be taken wider apart than the distance between the eyes, and then the twin-lens camera offers no advantage over Latimer Clark's, but it labors under no disadvantage because it can be slid along a board screwed to the tripod stand, and the picture from the right station taken with the left lens, and *vice versa*, which saves the trouble of cutting and transferring the positive prints. The board should have a raised straight edge, against which the camera travels.

3 The twin lens camera, furnished with portrait combinations, has this advantage, that it is suitable either for views or instantaneous pictures or portraits. In portraiture, however, a little more relief is sometimes required than is obtained in this way. In views the distance between near and distant objects varies greatly, while in portraiture it varies but little, therefore stations are in general taken about five inches apart; but natural truth is in this way sacrificed to effect, a practice which should not be encouraged.

4th. The stop should be placed a little nearer to the back lens in order to cure distortion. When the stop is placed nearest to the front lens the image of a straight line at the margin of the picture is curved *inwards* at its extremities; and when placed too near to the back lens it is curved *outwards* at its extramities. There is a point between the two extremes where the image remains perfectly straight, and that is the proper place for the diaphram. It must be found by trial. It lies nearly midway between the lenses but nearest to the back lens, because the focal length of this lens is shorter than that of the front lens. Distortion may be very nearly got rid of in the portrait combination when the stop is properly placed, but it cannot be got rid of in the common view lens, and in that instrument it exists to a fearful degree.

Observe, however, that the portrait lens with a stop between the lenses is not suitable for taking ordinary views, for this reason, that the curvature of the image is so great that it does not satisfactorily cover a field of more than 20° even with a small diaphram. This is angle enough for stereoscopic pictures, but not enough for photographic views generally.

There is also this serious objection to using the portrait combination for views, viz., that it frequently gives a round spot of diffused light in the centre of the picture, whether the stop be placed in front of the front lens or between the lenses. This, however, may be prevented and the objection removed by pasting an annulus of blackened cardboard round the outer face of the front and back lenses at their circumference.

With respect to the development of negatives with iron, the process is quite satisfactory when the collodion is good and the nitrate bath in proper order; we have frequently taken dense and good negatives without adding any silver to the developer, and the half-tones are beautifully brought out in this way; but sometimes the nitrate bath gets incurably out of order for this process, at the same time that it works well with pyro-gallic acid. This difficulty is no doubt to be traced to the impurity of the nitrate of silver.

The quarter-plate Chevalier would not cover a field more than five inches diameter. [Ed. P. N.]

From Liv. and Man. Photographic Journal.

NEW STEREOSCOPIC CAMERA.

BY MR. W. HISLOP.

The following is a description of a New Stereoscopic Camera exhibited by Mr. Hislop at the meeting of the North Loudon Photographic Association, April 29th, 1858.

The Camera is of any ordinary construction, and is mounted on a slide moving easily on a straight platform, which may be made of extra length, and be hinged in the middle for the convenience of packing. The camera is affixed to the slide by means of a belt or screw, in such a manner that it can be placed at an angle with the platform on which it slides. A small screw, seen at one end, bears against the side of the camera towards the front, when it is pushed to the left for the second picture. At the other end is a bent piece of brass, which can be placed in a series of holes made along the platform at different distances, commencing at $2\frac{1}{2}$ inches from the left hand, the minimum angle for stereoscopic pictures. This bent piece of brass also bears against the side of the camera when brought up to it, and thus adjusts it to a right angle with the platform. To adjust for convergence, the camera is first pushed to the right against the stop. The point of the picture on which the pencil dots on the focussing glass fall having been noted, the camera is passed to the left, and the screw is turned until the dots fall upon the same point again. It is now pushed back to its first position (the stop adjusting it at right angles), and the first picture is taken. The slide is pushed in, the camera passed over, and bearing against the screen is forced into exactly the same amount of convergence for which it had been previously adjusted, and the second picture is taken.

The advantages of this plan are,—simplicity of manual adjustment in the first instance, one operation being sufficient, and afterwards, its perfect self-adjusting action, as the camera *must* be brought to the same bearing if pushed home. Its cheapness and portability will recommend it to the amateur photographer

From Liv. and Man. Photographic Journal.

APPARATUS FOR PRODUCING TRANSPARENT POSITIVE STEREOGRAPHS On wet Collodion, or for Multiplying Negatives.

BY MR W. HISLOP.

In addition to the camera described above, Mr. Hislop also exhibited an apparatus for producing transparent positive stereographs on wet collodion, or for multiplying negatives.

It consists of a camera about nine inches long with the ordinary back and dark frames for stereoscopic plates. The camera is clamped upon a board, about two feet long, by a screw passing through a slot, thus enabling the camera to be placed at a greater or less distance from the negative or picture to be copied. The latter is placed within grooves on a frame, screwed at the end of the deal board. The whole is fastened to an inclined frame, hinged to admit of being placed at any angle pointing to the sky. The lens may be the ordinary stereoscopic view lens or a portrait lens with a small stop. To use the apparatus, place the slide to be copied with its *right hand* picture in the opening in the frame, and the plate being prepared in the ordinary way and placed in the dark frame, take the first picture. Pass the slide from left to right and the dark frame from right to left, and take the second picture. I prefer a single lens as perfect uniformity in the picture is thus secured. The advantages of this method of producing transparencies, or copying negatives, are its simplicity combined with economy and expidition, the possibility of altering the size of the picture, and the capability of copying a picture through glass, thus allowing negatives to be protected from injury by covering them with a plate of glass.

From Photographic Journal.

PHOTOGRAPHIC ENGRAVING ON METAL PLATES.

BY C. J. BURNETT.

From a paper read before the Edinburgh Botanic Society, March 1858, given as apparently superior to that of Mr. Fox Talbot then published (and it may possibly be in some respects fully equal even to his new one).

I first describe the process in the simpler state, in which it is sufficient for copying pen and ink, or pencil line drawings of plants, scenery, and other objects, wood-cuts, line-engravings, and every thing else consisting of lines alone; and next consider the additional contrivances necessary in etching from true photographs of plants, scenery, natural objects, architecture, paintings, Indian ink drawings, and every thing in fact *not* made up of lines equally translucent. Where a drawing is on thin paper, we may, of course, print from it directly, but generally, of course, the plan is to take first a negative and then a positive to print from.

1. Coat your plate of zinc, iron, steel copper, or other metal, with the sensitive mixture of bichromate of soda, potash, ammonia, or other bichromate, chromic and uranic, or ferric nitrate, or other salt, with gelatine, gum, meta-gelatine, or allied substance.

2. Dry the plate gradually or by the aid of heat.

3. Print in pressure frame.

4. Connect the plate, metallically, by means of a screw clamp or other arrangement, with a plate—say the same size—of silver, plantinum, platinized silver, or other less oxidable metal, and coat the *back* of the first plate with varnish.

5. Plunge the two plates into a weak solution of sulphuric, muriatic, nitric, or other acid, or etching fluid, watching carefully the process, and putting into a weaker or stronger etching bath if required.

6 Wash off the remaining gelatine mixture.

Instead of coupling the plates in the manner now described, we may connect the plate (first varnished on the back) with the wire of *one* (the oxidizing) pole of a galvanic battery or cell, and a plate of silver, copper, or other less oxidable metal, with the wire of the *other* pole, and plunge the two plates, opposite each other, into the etching bath, containing a solution of, say, sulphuric, muriatic, nitric, acetic, tartaric, chloric (oxalic?) or other acid; or of sulphate of soda, muriate of soda, nitrate of potash, chlorate of potash or of soda, acetate, oxalate, or tartrate of soda or other, salt—the strength of action being regulated either by the strength of the battery (which may have its metallic elements raised or depressed in their cell or trough), or by the strength of the etching bath. If the plates are connected as first described, it is, of course, by the latter that we regulate it.

N.B.—The object of the galvanic current connexion which I have introduced, is to prevent the production of a deposition of gas-bubbles on the metal plate being etched. It will be evident, that these bubbles being evolved *under* the gelatine, would be apt to cause a separation or blowing up of it at the surface of the metal. It might be fancied that the washing away of the soluble gelatine before etching, generally recommended in such processes, would remove this difficulty; but besides other objections to such washing, it does not appear that it can answer any such purpose, except in the case of a picture composed entirely of lines, and those lines all of the same depth of blackness. Any attempt to remove the gelatine or other mixture, before etching, is, therefore, it appears not only useless but likely to interfere seriously with the delicacy and uniformity of the etching. It will be seen at once by any one having the slightest acquaintance with galvanic action, that the gas is on this plan evoked on the less oxidable metal, or at the opposite pole instead of on the metal being etched.

As the plan of applying resin-powder *above* the gelatine or other coating before etching would not be likely to answer,* we may apply it below, as suggested by Mr. Fox Talbot or *far rather* follow out a plan or plans suggested to me by the shade of fine guaze, mentioned by Mr. Talbot as adopted by him in one of his old processes. I would recommend a set of fine *crossed* or uncrossed lines or dots, photographically or otherwise produced (we may get very fine lines or dots by photographing, on a *smaller*, from those accurately *drawn* on a *much larger* scale); they may be either on a separate glass, or on the print itself *from* which we are prinitng on to the metal, or a little charcoal powder, lycopodium, or other fine powder may be sprinkled on the back or front of the print, or on a seperate glass to be placed above it. The same set of lines, if on a *seprate* glass, may answer for printing from any number of different negatives, and we may make glasses or paper for the same purpose, by photography, from a charcoal or other powder-sprinkled surface.

This same mode of procuring grain will answer equally as well for photolithography, or photoxylographic blocks, with gelatine and bichromate, or any of the allied mixtures already alluded to.

* Mr. Fox Talbot's new process has shown that I was quite mistaken in supposing that there was any impossibility in this, but I leave it as written, and still it would app ar to m that some of the plans here specified (founded as I have mentioned, on another of Mr. Fox Talbot, to whom we owe so much) are likely to prove more convenient and give equal if not more, satisfactory results than any aquatint application to the plate.

Personal & Art Intelligence.

With the present number we close the eleventh volume of the *Photographic & Fine Art Journal;* having carried it through a year of more than ordinary financial depression, with much trouble, but with a degree of success beyond, perhaps, what we had reason to expect. During the next year we hope to be better sustained by our friends and patrons, and it lies in their power, to give us the inducements to sustain its character as the best Photographic Journal published in America, and to increase its influence. If we have not presented anything decidedly original we have been instrumental in introducing all the improvements worthy of note which have been invented both in Europe and America, and we hope we have done something towards the elevation and character of the Art in the United States. If the Photographers of America—m ny of whom have, not only the time, but the ability to produce new results and improvements, as well as to commit them to paper and communicate them to us—will study more the necessities of the art in this country, devise improvements, and when made impart them to their brother artists through our columns, they will not only be doing a noble work, but obtain some pecuniary remuneration for their time and labor. It is a growing shame to the whole body of Photographers in the United States that so few can be found willing to put their thoughts and actions to paper. The contrast between Eurepeans and Americans in this particular is painfully great, and we hope that the year 1859 will effect a decided change for the better, and that hereafter we will go before the world as thinking, inventive beings, instead of being, as now, considered mere machine artists. The fact that we can produce a host of unqualifiedly excellent artists does not militate against the assertions, that they are simply *photographic machines*, for, from among them all, how many can be selected who *approach* perfection—not one. One may excel in the depth of tone and strength of image, but is deficient in all else that goes to make up the truly skilfully artist. His positions may be good and his manipulations bad. He may understand fully the method of toning a positive, but be perfectly incapable of producing a good negative; or he may thoroughly understand what belongs to a good negative, and fail to print from it a good positive. All these are points which daily meet our eyes, and we constantly find deficiency in some one of them among all, while few, very few, are still less capable of understanding, much less practicing the rules that govern high art. In no branch of Photography is this more evident than in the attempts of our photographers to produce stereoscopic pictures. The majority of the specimens made by Americans—and we must also say of those imported from France—are perfect failures—abortions—and if continued on sale to the public must eventually produce for them disgust in the public mind. They indicate that the makers of them consider it only necessary to plant their camera stand, point their double tube box at an object, secure two pictures on the same glass or paper slide, and put them into market, and all necessary work is done. Now, it is our, opinion, that no true artist will ever use a double tube box, because the results obtained by the single are more perfect in every respect, and we doubt the possibility of producing a pair of lenses so completely identical as to give pictures precisely alike and at the proper angle, to the degree necessary for the production of natural pictures. In regard to the artistic production of photographs nothing has been published either in Europe or America, so conducive to improvement in this particular, as the graceful, piquant and truthful articles which have been communicated to this *Journal* by M. A. Root, Esq , and we feel more pride in those articles than in any other matter we have given to the public ; and it gives us great pleasure to have it in our power to state that we have secured Mr. Root as a regular monthly contributor to our Journal for the future. There are others connected with the Photographic Art in this country who could, if they would, do a vast amount of benefit to the art by following his example, but it appears to be a Herculean task, not only for them to devote a few hours each year, thus to benefit themselves, but to draw them out.

The decision in regard to the Cutting photographic patents has produced considerable excitement in the photographic ranks, and we sincerely trust this excitement will result in the public good. So far as we have become informed in the matter, we find that the greatest opposition to the decision comes from the manufacturers of collodion. Among the artists themselves nine out of ten with whom we have conversed, express themselves satisfied with the result, provided Mr. Cutting carries out the views he has expressed. The New York patentee, however, comes in for an extra large share of expletive, in consequence of the intemperate manner in which he has attempted to proceed with many of our city photographers. The ready manner in which the Boston photographers have given in their adhesion to the demands of Mr. Cutting, and the acquiescence of those with whom we have conversed, would seem to show that the general opinion was averse to further contention. Some there are, however, who bluster and fume, and our friend Seely has gone so far as to issue a circular calling upon the artists of the United States to combine and send him the means for further contesting the point at issue, pledging to give half the proceeds of subscriptions to the "*only American Journal of Photography*" for the next six months to the good cause; and strange to say the opening of this circular confesses the truth that the "*patents have been sustained.*" If the photographers of the United States, or any portion of them, are determined to pursue the matter further, the plan of Mr. Seeley is the only true and honest one, for it would be unjust to require, or expect, that any single individual should bear the whole cost of an expensive suit for the benefit of the thousands, when he can procure immunity for the nominal sum of twenty-five dollars (the amount Mr. Cutting proposes to charge for the rights). As we said in our last, we cannot go behind this decision of the Court, no matter how obtained, but must bow to it, and submit to Mr. Cutting's demands, until it can be reversed, if that is possible, which attempt at reversion must be obtained by the means indicated above. We also remarked in our last that it was for photographers themselves to decide which course they should pursue. Thus far the indications are that they consider it the wisest to get out of the scrape in the cheapest manner possible. So far as we are concerned, individually, it is of very little interest, and we can only speak of it in its bearings upon our friends and patrons. Thinking it wrong, and making assertions without sufficient evidence to bear us out, will not mend the matter, and although we have repeatedly expressed the opinion that these patents were invalid, that opinion was based upon our supposed recollections of data involving the first employment of the bromides. Now, we must search and labor to d scover how far facts will uphold or disappoint us. But we must here say our opinion has been still further staggered by the assertions of some, who profess to be well versed in the facts, that the bromides were used as collodion sensitizers at a date we know to have been anterior to the introduction of collodion into the Photographic Art Even now the bromides are very little, if ever used, out of the United States, if we are to judge by formulas given by foreign publications.

Our brother editor of the "*Photographic Notes*" in his *resume* of Photographic improvements, which will be found in another page of this number, ignores entirely those of Brother Jonathan, notwithstanding that in a previous number he had spoken in terms of high praise of Mr. Cutting's Photo-lithographic process, Woodward's Solor Camera, &c. Our readers, by turning to our November number will find his article on Photographic Engraving, the carbon process and Mr. Cutting's Photo-lithographs, spoken of in terms they richly deserve, and the comparison drawn between the European photolithographic processes and that of Mr. Cutting is decidedly in favor of the latter. Among other American improvements, are the lenses of Mr. Harrison, the Stereoscopic instruments of Mr. Gordon and Mr. Churton—the latter being a double tube box and a decided improvement, so far as convenience is concerned, on that style of instrument. We have also improved the camera box in various ways, as well as the formulas for enlarging portraits &c.

M. Voigtlander has pointed out the following errata which occur in his letter, commencing on page 353, and which it is important to correct:

The name of the Professor who signed the document is not Elhde but Uhde.

Page	301,	for	8·216	read	5· 216.
"	"	"	mechanical	"	mathematical.
"	"	"	0 589	"	0·529.
"	300,	"	Dr=0·048 1	"	Dr=0·045. 1
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"	"	"	r=—17·183 4	"	—6·22.
"	296,	"	£25	"	£85.

The columns in the document, which are marked in pencil, are the second and fourth.

We have again to close the year with the regret that no decided move has been made towards the formation of a Photographic Society. A few amateurs are talking about it ; we trust that their talking will ere long result in action.

Our Illustrations this month are two photo-lithographs from Messrs. Cutting & Turner—one exhibiting the applicability of the process to views, and the other to architectural design. Mr. Davie is printing four photographs, which will be sent with this number if completed in time, otherwise with our next, and which will complete our complement for 1858. We shall also give an illuminated pictorial title page printed by the, so-called carbon process, to illustrate the formula given in this number'

We have received a spicy communication from Mr. D. D. T. Davie, in reply to Mr. Parson's letter, published in our last, which, being too late for this number, will appear in our next.

We refer our readers to our advertising pages for a *Notice to Photographers* from Mr. Whipple, which is of great importance to every one. The subject of photographic patents is becoming decidedly interesting All writers have conceded to Mr. Whipple priority in the use of glass and albumen for negatives.